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# PLUMBING DICTIONARY



**Sixth Edition**

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**ASSE International**

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# PLUMBING DICTIONARY

Sixth Edition

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Edited by  
ASSE Plumbing Nomenclature Committee  
Carl Schroeder, FASSE, Chairman  
Diana Corcoran, ASSE Staff Liaison

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Mokena, Illinois

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# Foreword

This edition is for practical and widespread use to fill a void in existing technical literature for this field of knowledge. It will be tested through use and improved as needed. It is to be expected that omissions will be discovered by readers and critics, and that some of the entries will engender criticism and comment. The Nomenclature Committee of ASSE International will welcome every criticism and suggestion for inclusions and deletions in future editions.

Almost every professional society has a nomenclature committee. Ours decided to venture where no one in plumbing had gone before us – that is, to this actual publication. It is a beginning.

Let special legal meanings be decided by constituted authorities and the courts. It is the purpose of this book to be “descriptive,” not prescriptive; to describe, define, and explain, and not to prescribe limitations or establish fixed and restrictive meanings; to record the words and combinations of words used in plumbing, and to give the definitions and meanings of these words and terms. Wherever possible, nontechnical language has been used, but specialized and technical terminology have been retained wherever necessary to help give the truest pertinent meanings. It is intended, thereby, that either the knowledgeable sanitarian or the student who seeks to learn, can rely on the information to be found in this book.

Plumbers’ work encompasses many fields of knowledge. Plumbing is affected by advancements in technology, new inventions, improvements of materials, and discoveries in seemingly unrelated fields. Similarly, the terminology of plumbing is derived from everyday human language, which is constantly changing. In this dynamic environment, the Nomenclature Committee of ASSE International collected the terms and words of plumbing for this Plumbing Dictionary.

This dictionary includes many words that are not common in daily speech. On the other hand, it has many words that are regularly used by everyone, but have become specialized and thus have, in the sense used, become plumbing terms – like “vent,” “fixtures,” and “water closet.” To prepare this book, we started to collect words and terms from plumbing trade publications, product catalogues, text books, plumbing code books, reference books, and dictionaries. We solicited lists from people in all phases of plumbing; from manufacturers, plumbers, plumbing inspectors, and educators ... and we are extremely grateful for the enthusiastic responses we received.

Trade names and brand names have been purposely omitted from this book. Several grammatical functions such as pronunciation symbols, inflectional forms, and etymologies have been omitted as they are in most technical dictionaries. When two or more words have similar meanings, or are used interchangeably, the definition given under the term is the most-used or preferred. Use of varied terms and meanings, due to geographical differences, has resulted, in several instances, in a polysemous entry (many meanings for the same word).

The main entry appears in bold type without capitalization. Filing is in strict alphabetical order by letter, without regard to spacing, hyphens, etc. – as shellac, orange, and shellac white; before shell, tank. A word having more than one syllable is usually divided into phonetic syllables, retaining correct spelling. This is shown in parenthesis. (pa-ren-the-sis).

Definitions are shown in sentence form. Wherever examples follow the definition sentence, the first word of the example sentence is capitalized. Cross-references are encouraged by use of "see" and "see also" in small letters, no punctuation; followed by the referred-to term.

Special acknowledgment and gratitude of all contributors to this edition is due to lexicographer Amy Jacobson for the dedication and diligence that provided the wealth of information that was gathered for the first edition. The Library of Congress in Washington, D.C., The Cleveland Public Library in Cleveland, Ohio, and The Library of The American University in Washington, D.C. were used at various stages in the preparation of this book. The committee resubmitted sections to the subject authorities for their comments and criticism, and thus were able to maintain cross-checks for accuracy and completeness. We were capably assisted in cross-referencing and in keeping format by our librarian, Amy Isaacs.

The pursuit of this project has given many great personal pleasures, not the least of which were the pleasures of friendships proved over and over again in the cooperation of all who participated in preparing this book. The patience shown and the encouragement given by ASSE officers and members is gratefully acknowledged. Since the work of all contributors was voluntary, it was performed in time not otherwise preempted in busy schedules. Perhaps this patience will be rewarded by the early establishment of a repository for a library of catalogues and a long list of tradenames, the beginnings of which has been collected by the Nomenclature Committee in the course of preparing this book.

# Dedications

## **I.D. "BUDD" JACOBSON**

ASSE International, by action of its Board of Directors, dedicates the Sixth Edition of the ASSE Plumbing Dictionary to I.D. (Budd) Jacobson, who, as Chairman of the Nomenclature Committee, originated the idea of the ASSE Plumbing Dictionary. Through his efforts, the first four editions of the Plumbing Dictionary were published – each containing more and more definitions and other information, to the point where the book is now used internationally as a basis for plumbing terminology. As its author, his name will be remembered for generations to come.

## **JOHN E. MATTHEWS, P.E.**

ASSE International, by action of its Board of Directors, dedicates the Sixth Edition of the ASSE Plumbing Dictionary to John E. Matthews, P.E., through whose efforts the Fifth Edition of the Plumbing Dictionary was published.

# Nomenclature Committee

## **SIXTH EDITION**

Carl Schroeder – *Chairman, Michigan Chapter*

Sean Cleary – *Northeastern Pennsylvania Chapter*

Shannon M. Corcoran – *Northern Ohio Chapter*

Robert L. Cross – *Texas Gulf Coast Chapter*

Joseph Fugelo – *Pennsylvania Chapter*

Thomas Molnar – *New York Chapter*

Richard J. Prospal – *Northern Ohio Chapter*





# Aa

**A. 1.** in plumbing, a designer's abbreviation. for air. **2.** less common in plumbing terminology but sometimes used to abbreviate acres or absolute.

**Abbr.** in this book, used to mean abbreviation.

**abdominal cavity discharges** (*ab-dom-i-nal cav-it-y dis-charg-es*) **1.** the body wastes from the abdomen. **2.** the discharges from the intestines, bladder, etc.

**abs.** *Abbr.* for Absolute.

**ABS** *Abbr.* for Acrylonitrile-Butadiene-Styrene.

**absolute** (*ab-so-lute*) a term frequently used to indicate a thing as being perfect or exact. *Abbr.* abs.

**absolute pressure** (*ab-so-lute pres-sure*) fluid pressure measured above a perfect vacuum. It is the pressure indicated by an ordinary pressure gauge plus the atmospheric pressure.

**absolute scale** (*ab-so-lute scale*) a temperature scale based on absolute zero (approximately - 460 °F on the Rankine Scale or -273 °C on the Kelvin Scale)

**absolute temperature** (*ab-so-lute tem-per-a-ture*) temperature measured on the absolute scale. Symbol is T.

**absorber** (*ab-sorb-er*) that portion of a solar energy collector which receives incident radiant energy and transforms it into thermal energy. It usually has a solid surface through which energy is transmitted to a surface through fluid. The transfer fluid itself can be the absorber in the case of black liquid.

**absorption** (*ab-sorp-tion*) if a solid takes up a liquid or a gas or a liquid takes up a gas and the latter permeates the former through its entire substance, absorption is said to take place.

**abv.** *Abbr.* for above.

**accepted engineering practice** (*ac-cept-ed en-gi-neer-ing prac-tice*) that which conforms to accepted principles, tests or standards of nationally recognized technical or scientific authorities.

**access door** (*ac-cess door*) See ACCESS PANEL.

**access panel** (*ac-cess pan-el*) usually a sunken or raised section of a surface in an appliance or machine, in a wall, floor or ceiling of a building, made to be opened so that the interior may be reached for service. Also called access door.

**accessary** (*ac-cess-a-ry*) See ACCESSORY.

**accessible** (*ac-ces-si-ble*) **1.** capable of being easily reached. **2.** in a plumbing code accessible usually means having access thereto even though removal of an access panel or door may first be necessary. Compare with readily accessible which has come to mean direct accessibility without removal of doors or panels.

**accessory** (*ac-ces-so-ry*) **1.** a thing of secondary or subordinate importance as in achieving a purpose or an effect. **2.** an adjunct or accompaniment. **3.** an object or device that is not essential in itself but that adds to the beauty, convenience, or the effectiveness of something else such as: toilet seat, soap dish, beaded chain, towel bars, rubber stoppers, grab

rail, curtain pins and hooks, etc. **4.** a component which can, at the discretion of the user, be readily added, removed or replaced and which, when removed, will not prevent the device from fulfilling its primary function.

**accurate** (*ac-cu-rate*) without error; precise; correct; conforming exactly to a standard.

**acet.** *Abbr.* for Acetylene.

**acetylene** (*acet-y-lene*) a colorless gaseous hydrocarbon  $\text{HC}\equiv\text{CH}$  made especially by the action of water on calcium carbide. Used for illuminating and in welding and soldering.

**acid** (*ac-id*) the name of a group of organic or inorganic compounds with common characteristics. One of the characteristics is that it will ionize in water to produce hydrogen ions. Turns blue litmus red. Inorganic acids are used in producing metals, plastics, explosives, and dyes. See ALKALINE; CORROSION; ION; pH.

**acid lead** (*ac-id lead*) See HARD LEAD.

**acid proof** (*ac-id proof*) not susceptible to acid attack. Compare with "acid resistant."

**acid proof drain pipe and fittings** (*ac-id proof drain pipe and fit-tings*) piping and fittings resistant to many acids. Used in laboratory waste, vent, and drainage systems.

**acid resistant** (*ac-id re-sis-tant*) term used to describe a surface or material which is not normally affected by contact with acid. Compare with acid proof.

**acid resistant pipe** (*ac-id re-sis-tant pipe*) a conduit made of material which is resistant to corrosive action of acid. Used in laboratories, acid conduits, etc.

**acid sink** (*ac-id sink*) a receptacle properly trapped and connected to the acid waste system. The sink is usually made of acid resistant materials.

**acid waste** (*ac-id waste*) in plumbing,

the term used to describe any form of waste in which acids appear in stronger concentration than normally found in household waste.

**acid waste fitting** (*ac-id waste fit-ting*) a pipe fitting made of acid resistant materials, suitable for use in acid waste piping systems.

**acid waste pipe** (*ac-id waste pipe*) pipe made of acid resistant materials. Some of these are combinations of silicates and iron, stainless steel, glass.

**acid waste system** (*ac-id waste sys-tem*) in plumbing a system of pipe and fittings, paralleling a plumbing drainage system, except that it is installed where acids are formed in stronger concentration than normally found in household waste, i.e.: a laboratory, research or medical building. The system is constructed of materials resistant to the acids encountered.

**acme thread** (*ac-me thread*) a screw thread, the section of which is between the square and V threads. Used extensively for feed screws. The included angle of space is  $29^\circ$  as compared to  $60^\circ$  of the National Coarse or U.S. Thread.

**acre-foot** (*a-cre-foot*) the volume that would cover one acre to a depth of one foot.

**acrylonitrile** (*a-cry-lo-ni-trile*) a colorless volatile flammable liquid nitrile  $\text{CH}=\text{CHCN}$  soluble in most organic solvents that is usually made by reaction of hydrogen cyanide with acetylene or with ethylene oxide with subsequent dehydration of the ethylene cyanohydrin formed and that is used chiefly in organic synthesis - as an insecticide, and as a raw material for polymerization especially to synthetic rubbers and acrylic fibers. Also called vinyl cyanide. *Abbr.* ABS. See ACRYLONITRILE-BUTADIENE-STYRENE.

**acrylonitrile-butadiene-styrene** (*a-cry-lo-ni-trile bu-ta-diene sty-rene*) a thermoplastic compound from which fittings, pipe, and tubing are made. *Abbr.* ABS. See ACRYLONITRILE; BUTADIENE & STYRENE.

**actinometer** (*ac-ti-no-me-ter*) in the field of solar energy the general name for any instrument used to measure irradiance of the sun.

**actinometry** (*ac-ti-nom-e-try*) branch of physics devoted to the study and measurement of radiation; especially in meteorological, solar, atmospheric and terrestrial radiation.

**activated carbon** (*ac-ti-va-ted car-bon*)

1. a highly absorbent carbon or charcoal, used for absorbing gases. 2. a highly absorbent powdered or granular carbon usually made by carbonization and chemical activation and used chiefly for purifying by absorption. Also called activated charcoal.

**activated charcoal** (*ac-ti-va-ted char-coal*)

See ACTIVATED CARBON.

**activated sludge** (*ac-ti-va-ted sludge*)

sludge floc produced in raw or settled sewage by the growth of zoogaea and other organisms in the presence of dissolved oxygen, and accumulated in sufficient concentration by returning floc previously formed.

**activated sludge process** (*ac-ti-va-ted sludge pro-cess*) a biological sewage treatment process in which a mixture of sewage and activated sludge is agitated and aerated. The activated sludge is subsequently separated from the treated sewage (mixed liquor) by sedimentation, and wasted or returned to the process as needed. The treated sewage overflows the weir of the settling tank in which the separation of the sludge takes place.

**active sludge** (*ac-tive sludge*) sewage sediment, rich in destructive bacteria, that can be used to break down fresh sewage more quickly.

**active system** (*ac-tive sys-tem*) in the terminology of solar energy collection, a solar heating or cooling system that requires external mechanical power to move the collected heat.

**active system** (*ac-tive sys-tem*) in the terminology of solar energy collection, a solar heating or cooling system that requires external mechanical power to move the collected heat.

**A.D.** in plumbing, *Abbr.* for area drain.

**adapter fitting** (*a-dap-ter fit-ting*) 1. any of various fittings designed to mate or fit to each other two pipes or fittings which are different in design, so that connecting the two together would otherwise not be possible. 2. a fitting that serves to connect two different tubes or pipes to each other, such as copper tube to iron pipe, etc.

**additional grade** (*ad-di-tion-al grade*)

to elevate or to move the floor plane by additional flooring material, i.e.: plywood, tile, etc.

**adiabatic** (*ad-i-a-bat-ic*) a process that involves no gain of heat by, or loss from, the system.

**adiabatic temperature change** (*ad-i-a-bat-ic tem-per-a-ture change*) a

temperature change within a gas due to compression resulting in a temperature increase or due to expansion resulting in a temperature decrease.

**adjustable die stock** (*ad-just-able die stock*)

a tool to hold adjustable dies that are used for cutting threads on more than one size of pipe or rod, as opposed to a fixed die stock which is only used for one size pipe or rod. See DIE STOCK.

**adjustable hanger** (*ad-just-a-ble hang-er*)

a hanger consisting of a beam clamp, and an adjustable ring. See PIPE HANGER.

**adjustable open end wrench** (*ad-just-a-ble o-pen end wrench*)

an open ended wrench with a moveable lower jaw.

**adjustable pipe support** (*ad-just-a-ble pipe sup-port*)

a stand to support pipe while cutting and threading.

**adjustable reamer** (*ad-just-a-ble ream-er*)

a reamer which can be increased in size, usually by means of a central bolt or screw, the tightening of which causes an expansion of the reamer. See EXPANSION REAMER; REAMER.

**adjustable tap** (*ad-just-a-ble tap*)

an instrument for cutting the thread of an internal screw usually made with inserted blades, or chasers, capable of radial adjustment.

**adjusted roof area** (*ad-just-ed roof area*) in plumbing, the roof space which must be added to the projected roof area to take into consideration the effect on roof areas of parapets and other projections of a building. See PROJECTED ROOF AREA.

**adjustment** (*ad-just-ment*) the placing and setting of parts or pieces in related positions.

**adjustment range** (*ad-just-ment range*) the lowest to highest pressure to which a valve can be adjusted by the existing means under static (no flow) conditions.

**administrative authority** (*ad-min-is-trative au-thor-ity*) an individual official, board, department or agency established and authorized by a state, county, city or other political subdivision created by law to administer and enforce the provisions of the plumbing code as adopted or amended. Shall include the administrative authority's duly authorized representative. See PLUMBING INSPECTOR.

**A.DR.** *Abbr.* for Access Door.

**adsorption** (*ad-sorp-tion*) the adhesion in an extremely thin layer of molecules as of gases, solutes, or liquids, to the surface of solid bodies or liquids with which they are in contact. Compare to absorption.

**advance (of an offset)** [*ad-vance (of an off-set)*] the forward distance in a piping offset.

**aeration** (*aer-a-tion*) an artificial method in which water and air are brought into direct contact with each other. One purpose is to release certain dissolved gases which often cause water to have obnoxious odors or disagreeable tastes. Also used to furnish oxygen to waters that are oxygen deficient. The process may be accomplished by spraying the liquid in the air, bubbling air through the liquid or by agitation of the liquid to promote surface absorption of the air.

**aerator** (*aer-a-tor*) **1.** any of a number of types of devices designed to deliver a mixture of air and water. **2.** any specialized

apparatus for aerating a liquid, especially water. **3.** a drain, waste, and vent fitting designed to control the flow of waste within the stack(s).

**aerator fitting** (*aer-a-tor fit-ting*) **1.** any of a number of types of devices designed to deliver a mixture of air and water. **2.** any specialized apparatus for aerating a liquid, especially water. **3.** a drain, waste and vent fitting designed to control the flow of waste within the stack or stacks.

**aerogen** (*aer-o-gen*) any of various gases producing bacteria.

**A.F.F.** *Abbr.* for Above Finished Floor.

**agglomeration** (*ag-glom-er-ation*) the uniting of dispersed suspended particles into larger particles which settle rapidly.

**air** (*air*) a colorless, odorless, tasteless, gaseous mixture of nitrogen, oxygen and other gases forming the atmosphere enveloping the earth.

**air admittance valve** (*air ad-mit-tance valve*) a device installed on a plumbing drain, waste and vent system to allow air to enter the drainage piping system, thereby relieving negative pressure in the system.

**air break** (*air break*) a physical separation which may be a low inlet into the indirect waste receptor from the fixture, appliance or device indirectly connected. See DRAINAGE SYSTEM AIR BREAK.

**air chamber** (*air cham-ber*) a vertical or expanded pipe with its upper end sealed, and its lower end connected to a pressurized liquid system to absorb the shock caused by sudden obstruction of flow. See SHOCK ARRESTOR.

**air chamber calculated** (*air cham-ber cal-cu-lated*) an air chamber designed in accordance with the Dawson and Kalirski formula for reducing the water hammer pressure.

**air compressor** (*air com-pres-sor*) **1.** any device used to compress air. A common type works on the same principle as a pump. It has a piston that moves back and forth within a hollow cylinder, compressing the air and forcing it into

a closed chamber. Rotary (fan type) compressors are used in gas turbines, jet engines and other devices. **2.** a machine, usually driven by a gasoline engine, electric motor or steam power, in which a gas is compressed so that its expansion may be utilized as a source of power.

**air-cock** (*air cock*) See AIR VALVE.

**air conditioning** (*air con-di-tion-ing*) the artificial process of treating air to adjust its temperature, humidity, cleanliness, distribution, and ventilation to meet the requirements of the conditioned spaces.

**air duct** (*air duck*) a duct, conduit, or pipe for conveying air.

**air furnace** (*air fur-nace*) a type of furnace used in the production of malleable iron castings. A furnace that depends on a natural draft, as a reverberatory furnace, and not on a blast.

**air gap** (*air gap*) in a water-supply system, is the unobstructed vertical distance through the free atmosphere between the lowest opening from any pipe or faucet supplying water to a tank or plumbing fixture and the flood-level rim of the receptacle. See AIR GAP, DRAINAGE SYSTEM.

**air gap, drainage system** (*air gap, drainage sys-tem*) the unobstructed vertical distance through the free atmosphere between the outlet of waste pipe and the flood rim of the receptacle into which it is discharged

**air gap, water supply system** (*air gap, wa-ter sup-ply system*) **1.** the unobstructed vertical distance through the free atmosphere between the lowest opening from any pipe or faucet supply water to a tank or plumbing fixture and the flood-level rim of the receptacle **2.** the unobstructed vertical distance through the free atmosphere between the lowest opening of any pipe or faucet supply water to a tank, plumbing fixture, or other device, and the flood level rim of the receptor

**air hammer** (*air ham-mer*) a portable tool in which a chisel, rivet set, or other tool is driven percussively by compressed air. Also called pneumatic hammer.

**air inlet** (*air in-let*) an opening, or series of openings, through the body of a device from the free atmosphere to the liquid passage.

**air lock** (*air lock*) a stoppage of flow, as in a pumping device, caused by air being in a part where liquid ought to circulate. See VAPOR LOCK.

**air plug** (*air plug*) a removable plug screwed in a water-tight manhole or scuttle cover.

**air pump** (*air pump*) a pump for exchanging air from a closed space or for compressing air or forcing it through other apparatus.

**air shutter** (*air shut-ter*) an adjustable device for varying the size of the primary air inlets thus controlling the volume of air to be mixed with gas for combustion.

**air valve** (*air valve*) **1.** any valve controlling the passage of air as used in connection with blast furnaces, gas producers, etc. **2.** a small valve of the cock type to draw off or drain gas or liquid. See PET COCK.

**alclad pipe** (*al-clad pipe*) a composite pipe with an aluminum alloy core, having on one or both surfaces a metallurgically bonded aluminum or aluminum alloy layer that is anodic to the core alloy to which it is bonded, thus electrolytically protecting the core alloy against corrosion.

**alga** (*al-ga*) pl. algae. Any of a group of chiefly aquatic, non vascular plants such as seaweed, pond scums, stonewarts, with chlorophyll often marked by a brown or red pigment. These plant bodies carry on photosynthesis and are independently able to make their own food.

**algaecide** (*al-gae-cide*) See ALGICIDE.

**algicide or algaecide** (*al-gi-cide or al-gae-cide*) any substance which kills algae; such as copper sulfate.

**alignment (*a-lign-ment*)** the act of forming a straight line, either horizontal, vertical, or at a given angle.

**alinement (*a-line-ment*)** See ALIGNMENT.

**alkali (*al-ka-li*)** any base or hydroxide that is soluble in water, neutralizes acids and forms salts with them, and turns red litmus blue. Sometimes differentiated as mild — sodium, potassium, ammonium, etc., and caustic corresponding hydroxides. See ALKALINE; pH; ION.

**alkaline (*al-ka-line*)** 1. containing more alkali than normal. 2. having a pH factor of more than seven. 3. having a relatively low concentration of hydrogen ions. See pH; ACID; ION; ALKALI.

**alkyd (*al-kyd*)** any of numerous thermoplastic or thermosetting synthetic resins made by heating polyhydroxy alcohols with polybasic acids or their anhydrides.

**allen screw (*al-len screw*)** cap screw and set screw with a hexagonal socket in the head. Such screws are adjusted by means of a hexagonal key.

**allen wrench (*al-len wrench*)** an L shaped hexagonal bar of hardened steel made with special ends that fit into the types of nuts having heads made to receive them. Set screws, machine screws, and some small sizes of bolts are made with this special head which can be turned direct mating parts. See TOLERANCE.

**alloy (*al-loy*)** a substance composed of two or more metals or a metal and non-metal intimately united usually fused together and dissolving in each other when molten.

**all thread nipple (*all thread nip-ple*)** a short section of pipe on which the external thread is continuous from one end to the other. Made by threading a length of piping and sectioning the resulting product. Compare with close nipple.

**alternative engineered design (*al-ter-na-tive en-gi-neer-ed de-sign*)** a plumbing system that performs in accordance with the intent of the plumbing code

and provides an equivalent level of performance for the protection of public health, safety and welfare. System design is not specifically regulated by the plumbing code.

**alternator (*al-ter-na-tor*)** a generator, a machine that generates an alternating voltage when its rotating portion is driven by a motor, engine or other means. It is thus a means for converting mechanical power into electric power. The frequency of the generated alternating voltage is exactly proportional to the speed at which the alternator is driven. An alternator generates one cycle of alternating current each time one of its coils passes a pair of magnetic poles in the field structure.

**alum (*al-um*)** See ALUMINUM SULFATE.

**alum, black (*al-um, black*)** alum containing a small percentage of activated carbon. Used in water works.

**aluminum (*alu-mi-num*)** a bluish silver-white metallic element, very malleable, ductile, and sonorous and noted for its lightness, good electrical and thermal conductivity, high reflectivity, and resistance to oxidation. Widely used in alloys.

**aluminum pipe (*alu-mi-num pipe*)** seam welded internally coated (alclad) plain end aluminum pipe for use in plumbing sanitary drain, waste and vent (DWV) and storm systems.

**aluminum sulfate (*alu-mi-num sul-fate*)** a colorless salt usually made by treating bauxite with sulfuric acid. Used in making paper, water purification, and tanning.

**ambient temperature (*am-bi-ent tem-per-a-ture*)** the actual air or liquid temperature that occurs in the area encompassing where a test or an event is scheduled to take place.

**American Standard Pipe Threads (*a-me-ri-can stan-dard pipe threads*)** formerly known as Briggs Pipe Threads Standard. It is the thread most commonly used on metal or plastic pipe and fittings for steam, gas, and water.

**American Standard Straight Pipe Threads** (*a-me-ri-can stan-dard straight pipe threads*) See NATIONAL PIPE THREAD STRAIGHT.

**American Standard Tapered Pipe Threads** (*a-me-ri-can stan-dard tapered pipe threads*) See TAPERED PIPE THREAD; NATIONAL PIPE THREAD TAPERED.

**ammeter** (*am-me-ter*) an instrument for measuring the rate of flow of an electric current in amperes by an indicator activated by the movement of a coil in a magnetic field or by the longitudinal expansion of a wire carrying the current.

**ammonia soap** (*am-mo-ni-a soap*) a finely powdered rosin mixed with a strong ammonia solution. Suitable for flux for soldering copper.

**ammonification** (*am-mo-ni-fi-ca-tion*) bacterial decomposition of nitrogenous matter producing ammonia.

**ammonium chloride** (*am-mo-ni-um chlo-ride*)  $\text{NH}_4\text{Cl}$ . Colorless crystals or a white soluble powder used in medicine, as a reagent in fertilizers and as a flux in soldering, etc.

**amp meter** (*amp me-ter*) slang; See AMMETER.

**amperemeter or amperometer** (*am-pere-me-ter or am-per-om-e-ter*) See AMMETER.

**analog gauge resolution** (*an-a-log gauge res-o-lu-tion*) analog gauge readings can be taken to one-half of the smallest gauge division (example: an analog gauge with increments of 0.2 psi can resolve readings of 0.1 psi)

**anchor bolt** (*an-chor bolt*) a bolt for securing a machine, structure, or part to masonry or other material. See ANCHOR ROD.

**anchor rod** (*an-chor rod*) a threaded piece of metal used with nuts and hangers to secure pipes, unit heaters or many other objects in plumbing. See ANCHOR BOLT.

**anchors** (*an-chors*) **1.** anything regarded as a reliable support. **2.** devices for supporting and securing pipe, fixtures, and equipment, to walls, ceilings, floors, or any other structural members. Also called supports. See HANGER; SUPPORTS.

**angle check valve** (*an-gle check valve*) a valve with intake and exit ports at right angles permitting flow in one direction but retarding a return flow.

**angle gate valve** (*an-gle gate valve*) a valve with intake and exit ports at right angles, and the valve in a pipeline consists essentially of a flat or wedged shaped gate that can be lowered into a seat to seal off the line or raised into an external recess so that the full area of the line is open.

**angle globe valve** (*an-gle globe valve*) a valve with intake and exit ports at right angles and enclosed in a globular chamber.

**angle of thread** (*an-gle of thread*) the angle included between the sides of the thread measured in an axial plane.

**angle shower valve** (*an-gle show-er valve*) faucet type valve with the inlet and outlet ports at a 90° angle.

**angle stops** (*an-gle stops*) a 90° valve; its inlet and outlet ports at 90° and the operating stem at 180° to the inlet port. See ANGLE VALVE.

**angle valve** (*an-gle valve*) a valve with intake and exit ports at right angles. See ANGLE STOPS.

**annular** (*an-nu-lar*) **1.** ring shaped. **2.** In plumbing, the annular space is the ring shaped open space between the inside wall of the hub and the outside wall of the spigot on a fitting to be caulked.

**annulate** (*an-nu-late*) having rings, ringlike structures, or ringlike characteristics.

**annulation** (*an-nu-la-tion*) the formation of rings or a ringlike structure.

**annulet** (*an-nu-let*) **1.** a little ring. **2.** in architecture; a small molding or ridge. **3.** the space in the hub of cast iron pipe to be filled with sealant.

**annulus** (*an-nu-lus*) a ringlike part, structure, or marking.

**anode** (*an-ode*) **1.** the electrode at which electrons have a device to enter the external circuit – opposed to cathode. **2.** in a water heater, a rod of magnesium metal anodic to the other metal in the tank, therefore protective against corrosion.

**antifriction alloy** (*an-ti-fric-tion al-loy*) any of various alloys of copper, tin, lead, antimony or zinc, used especially in bearings.

**antimonial lead** (*an-ti-mon-i-al lead*) See HARD LEAD.

**antimony** (*an-ti-mo-ny*) a silvery, brittle solid, having crystalline structure. It expands when it solidifies. Used in type metal with lead and tin.

**anti-scald valve** (*an-ti-scald valve*) **1.** a pressure balancing valve (type P) which senses incoming hot and cold water pressure and compensates for fluctuations in either to stabilize outlet temperature. **2.** a thermostatic valve (type T) which senses outlet temperature and compensates for fluctuations in incoming hot and cold water temperatures to stabilize outlet temperature. **3.** a combination thermostatic/pressure balancing valve (type T/P) which senses outlet temperature and incoming hot and cold water pressure and compensates for fluctuations in incoming hot and cold water temperatures or pressure to stabilize outlet temperature.

**antisiphon** (*an-ti-si-phon*) a device or mechanism to cause the absence of siphoning. See SIPHON BREAKER.

**antisiphon hole** (*an-ti-si-phon hole*) a small hole placed in the wall of a dip tube to prevent back syphonage beyond the level in the tank at which the anti-siphon hole is found. See DIP TUBE.

**antisiphon trap** (*an-ti-si-phon trap*) **1.** a type of water seal trap in which the outlet leg is increased in diameter to contain a sufficient volume of liquid to prevent a

siphoning action which would break the seal. **2.** a trap designed to prevent the emptying of a sanitary trap because of difference of pressure.

**antisiphon vacuum breaker - non-pressure type** (*an-ti-si-phon vac-u-um break-er - non-pres-sure type*) a device or means to prevent backsiphonage. Not to be used under continuous pressure. Also called: backsiphonage preventer.

**antisiphon vacuum breaker - pressure type** (*an-ti-si-phon vac-u-um break-er - pres-sure type*) a device or means to prevent backsiphonage. Designed to be used under continuous pressure. Also called: backsiphonage preventer. See VACUUM BREAKER-PRESSURE TYPE.

**antisweat covering** (*an-ti-sweat cover-ing*) a cellular covering over pipe to insulate against the ambient temperature. Made of fiberglass or felt with tar paper inner lining.

**A.P.** *Abbr.* for Access Panel.

**appearance** (*ap-pear-ance*) a thing seen. In plumbing – the eye appeal of the product, connections, pipes, etc.

**appliance** (*ap-ply-ance*) **1.** a device or machine, especially for household use, not permanently connected to the potable water supply, indirectly drained through a receptor. **2.** a plumbing appliance is an adjunct of the plumbing system, usually mechanical, and similar to a plumbing fixture except that it is designed for a specific purpose and not generally indispensable in the operation of a plumbing system.

**appliance flue** (*ap-ply-ance flue*) See FLUE.

**appliances, automatically controlled** (*ap-ply-ances, au-to-mat-i-cal-ly controlled*) any of a number of appliances, such as water heaters, dishwashers, clothes washers, which are activated and deactivated by automatic controls such as pressure switches, timers, and thermostats.



**apprentice** (*ap-pren-tice*) one who is learning a trade by practical experience under skilled workers.

**apprentice plumber** (*ap-pren-tice plumb-er*) one who works under the supervision and guidance of a skilled and qualified journey or master plumber for a prescribed course of training.

**approved** (*ap-proved*) in plumbing, accepted or acceptable under an application specification stated or cited in a code, or accepted as suitable for the proposed use under procedures and powers of the administrative authority.

**approved testing laboratory or agency** (*ap-proved test-ing lab-or-a-to-ry or agen-cy*) refers to an accredited laboratory or agency having capabilities for both the laboratory and field evaluation of backflow prevention assemblies or devices.

**approved water supply** (*ap-proved wa-ter sup-ply*) any public potable water supply which has been investigated and approved by the State Department of Public Health or the local health agency having jurisdiction. The system must be operated under a valid health permit. In determining what constitutes an approved water supply, the State Department of Public Health reserves final judgement as to its safety and potability.

**approximately** (*ap-prox-i-mately*) nearly; frequently used when speaking of the capabilities of machines, their measurements, and near shipping weights. Nearly exact, to come near in position.

**appurtenance** (*ap-pur-te-nance*) an accessory or auxiliary part of a plumbing appliance, device or assembly.

**apron sink** (*a-pron sink*) a sink type fixture, whose front and sides extend from 5" to 8" from the top forming an apron around the fixture.

**aqua** (*a-quā*) water.

**aqua pura** (*a-quā pu-ra*) pure water.

**aqua regia** (*a-quā re-gia*) a very corrosive fuming yellow liquid made by mixing hydrochloric and nitric acid, usually in proportion of one volume of nitric to three or four volumes of hydrochloric acid, that dissolves gold and platinum. Called royal water because it dissolves gold. Converts lead into a chloride. Also called: nitrohydrochloric acid.

**A.R.** *Abbr.* for Acid Resistant.

**arbor press** (*ar-bor press*) a device for pressing an arbor or shaft into the bore or hole of an article to be turned on a lathe, and for removing same when work is finished.

**Archimedes' Screw** (*ar-chi-me-des' screw*) a spiral screw which turns within a tube or pipe in order to move material. When set on an inclined angle can be used to raise water. A very ancient method.

**arc weld** (*arc weld*) to join by means of a form of fusion welding in which the heat for fusion is supplied by an electric arc formed between metal or carbon electrode and the part being welded or between two separate electrodes or between the two separate pieces being welded.

**arc welding** (*arc weld-ing*) arc welding is considered the best of all surface fusion methods for general purposes because it creates the highest temperatures. The arc is formed by an electric current which travels down through the welder's tool, then jumps across the intervening space, the metal joint, or it may travel between the joint and the metal filler rod. The piece to be welded is usually made the positive terminal. Direct current is used. The welding rod is the negative. The work is touched with the rod and withdrawn causing an arc.

**area** (*ar-ea*) a measure of the size of any particular portion of a surface.

**area drain** (*ar-ea drain*) **1.** a drain placed in the floor of a basement areaway, a depressed or basement entry way, a loading platform, or a cemented driveway which cannot otherwise be drained. Such a drain is usually made of 4", or larger, cast-iron pipe leading to a running trap with clean out and into the house drain. **2.** A receptacle designed to collect surface liquid or storm water from an open area.  
*Abbr.* A.D.

**arsenic** (*ar-se-nic*) acids which react with lead, yielding arsenate or arsenide of lead.

**arterial vent** (*ar-ter-i-al vent*) a vent in DWV systems of more than one story, intended to provide circulation and backpressure relief in multi-story systems. See RELIEF VENT.

**asb.** *Abbr.* for Asbestos.

**asbestos** (*as-bes-tos*) a silicate of calcium and magnesium, usually occurring in fibers, that does not burn or conduct heat. Used as an insulator and in the manufacturing of cement asbestos pipe.  
*Abbr.* Asb.

**asbestos cement** (*as-bes-tos ce-ment*) a hardened mixture of asbestos fibers, portland cement and water used in relatively thin slabs for shingles, wallboard and siding. Also used for sewer pipe and electrical conduit.

**asbestos packing** (*as-bes-tos pack-ing*) **1.** a formulation of short strands of asbestos and any variety of chemicals. Used as a seal or packing on valve stems. **2.** a thin layer or ring of elastic material (as paper, rubber, asbestos, copper) inserted between the surfaces of a flange joint to make it impervious to leaking. See PACKING.

**ASME valves** (*A-S-M-E Valves*) valves having ASME approval.

**asphalt, also asphaltum** (*as-phalt, also as-phalt-um*) a brown to black bituminous substance found naturally or obtained as a by-product of coal-tar refining. Used for coating pipes exposed to dampness. Also used for paving.

**asphyxia or suffocation** (*as-phyx-i-a or suf-fo-ca-tion*) local or systemic deficiency of oxygen and excess of carbon dioxide in living tissues, usually as a result of interruption of respiration.

**asphyxiate** (*as-phyx-i-ate*) to kill or make unconscious through want of adequate oxygen, presence of noxious agents, or other obstruction to normal breathing.

**asphyxiation** (*as-phyx-i-a-tion*) act of causing asphyxia. See ASPHIA.

**aspiration** (*as-pi-ra-tion*) **1.** drawing out by suction. **2.** the removal of fluids and/or gases from a cavity by means of a aspirator.

**aspirator** (*as-pi-ra-tor*) **1.** a device supplied with fluid under positive pressure which passes through an integral orifice or "restriction" causing a partial vacuum. **2.** any apparatus for producing a movement of fluid by suction.

**assembly, hose spray** (*as-sem-bly, hose spray*) See SPRAY UNIT

**assembly, mainline valve** (*as-sem-bly, main-line valve*) See MAINLINE VALVE ASSEMBLY.

**atmosphere** (*at-mo-sphere*) **1.** the air that surrounds the earth. **2.** the mass of gases that surrounds, or may surround, any heavenly body.

**atmospheric air** (*at-mo-spher-ic air*) air of the surrounding atmosphere and at its existing pressure.

**atmospheric pressure** (*at-mo-spher-ic pres-sure*) **1.** a unit of pressure equal to 14.7 pounds per square inch. **2.** the pressure exerted in every direction at any given point by the weight of the atmosphere; the pressure exerted by the air on the earth's surface at sea level is about one (1) atmosphere.

**atmospheric type vacuum breaker-AVB** (*at-mo-spher-ic type vac-u-um break-er avb*) a term applied to backflow preventers or anti-siphon devices which may incorporate moving or movable parts, designed to operate only on the discharge side of a control valve, for the purpose of preventing backflow or backsiphonage in a water distribution system when the backflow source is subject to atmospheric pressure only.

**attic tank** (*at-tic tank*) **1.** a plumbing fixture, an open to atmosphere tank filled over the top by a float operated valve from a pressurized water system. The tank supplies water to all uses in the building by gravity. **2.** a tank installed in attic or above highest plumbing fixture. See HOUSE TANK; ROOF TANK.

**auger** (*au-ger*) **1.** a tool for boring holes in wood or earth consisting of a shank with a cross-wise handle for turning and having spiral channels that end in two spurs for marking the outline of the hole, a central tapered feed screw and a pair of cutting lips. **2.** a tool similar to a drill.

**auger bits** (*au-ger bits*) a tool for drilling or boring wood or metal. It is usually a removable part of a brace or drill, one end consisting of a square tong to fit the chuck of a brace.

**autoclave** (*au-to-clave*) a container for sterilizing or cooking by superheated steam under pressure.

**autogenous welding** (*au-tog-e-nous weld-ing*) a type of welding in which metals are united by fusing, without compression or hammering, and without the use of flux. The term also applies to gas welding in which both flux and welding rod are used.

**automatic center punch** (*au-to-mat-ic cen-ter punch*) a center punch so constructed that, when pressure is applied, a spring-controlled hammer contained within the handle is released with sufficient force to cause the point to leave its mark on metal.

**automatic flow controller** (*au-to-mat-ic flow con-trol-ler*) **1.** a component or accessory which limits the maximum flow through the line in which it is installed and incorporates a pressure compensating restriction of such a nature that increasing pressure drops across the restriction causing the controller to increase its resistance to the flow of water and a decreasing line pressure up stream of the restriction to the flow of water, maintaining a substantially constant flow of water over its designed pressure range. **2.** a component or accessory which incorporates a flow restricting orifice or fixed geometrical construction such that flow through the restrictor varies approximately direct proportion with the square root of the pressure drop across the restriction.

**automatic gas shutoff device** (*au-to-mat-ic gas shut-off de-vice*) a valve, or system, constructed so that upon the attainment of a water temperature in excess of some predetermined limit, the device acts in such a way as to cause the gas to the main burner (s) of the appliance to be shut off. It may also shut off the gas to the pilot burner.

**automatic pilot** (*au-to-mat-ic pi-lot*) See SAFETY SHUTOFF DEVICE.

**automatic siphon** (*au-to-mat-ic si-phon*) **1.** usually associated with urinal flushing tanks in which a constant supply of water is involved. **2.** a tube or conduit in the form of an inverted "U" through which liquid flows over the wall of a tank or reservoir to a lower elevation by atmospheric pressure. Sometimes used for discharge from a septic tank.

**automatic storage type water heater** (*au-to-mat-ic stor-age type wa-ter heat-er*) **1.** a gas or electric heated tank with designed controls to store water at various temperatures. **2.** a water heater that heats and stores water at a thermostatically controlled temperature for delivery on demand.

**automatic valve** (*au-to-mat-ic valve*) an automatic device consisting essentially of a gas valve that intermittently opens and closes the main gas supply during normal operation of the appliance, and which may be actuated either by the application of gas pressure upon a flexible diaphragm, by electrical energy or by thermostatic or mechanical means.

**automatic water siphon** (*au-to-ma-tic wa-ter si-phon*) an inverted “V” shaped tube inside an open tube in which water collects, and upon the elevation of liquid to a height above the inverted tube the siphon action takes place, i.e.: an elevated flushing tank for a urinal.

**autopsy table** (*au-top-sy ta-ble*) a fixture or table used for the postmortem examination of a body. See EMBALMING TABLE.

**auxiliary energy subsystem** (*aux-il-ia-ry en-er-gy sub-sys-tem*) in solar energy, the equipment utilizing energy sources such as gas, oil or electricity to supplement the output provided by a solar energy system.

**auxiliary heat** (*aux-il-ia-ry heat*) in solar equipped systems, the extra heat that is provided by a conventional heat source for periods of cloudiness or intense cold, when the solar collector cannot provide enough heat.

**auxiliary water supply** (*aux-il-ia-ry wa-ter sup-ply*) any waste supply on or available to the premises other than the water supplier’s approved public potable water supply. These auxiliary sources of water may include water from another supplier’s public potable water supply or any natural source, such as a well, spring, river, stream, harbor, etc., or used waters or industrial fluids. They may be polluted or contaminated, or they may be objectionable and constitute an unacceptable water source over which the water supplier does not have control.

**average** (*av-er-age*) the computed or estimated median figure between two or more values (such as height, weight, or pressure)

**avg.** *Abbr.* for Average.

**avoirdupois** (*av-oir-du-pois*) a system of weights based on the 16-ounce pound (or 7,000 grains).

**A.W.** *Abbr.* for Acid Waste.

**awl** (*awl*) a hole making or surface marking tool. Designed for direct action by punching with compression force. The blade may be differently shaped and pointed for different uses.

**awl shaft** (*awl shaft*) an awl handle.

# Bb

**Babbitt metal or Babbitt's metal** (*bab-bitt met-al* or *bab-bitt's met-al*) an alloy of tin, copper and antimony or lead, copper, and antimony, discovered by Isaac Babbitt in 1839. High grade metals use tin for a base and low grade metals use lead.

**back vent, or back venting** (*back vent, or back vent-ing*) **1.** sometimes synonymous with vent or venting. A pipe or system of pipes of a plumbing system for the purpose of supplying or removing air to relieve pressures above or below atmospheric. **2.** that part of a vent line which connects directly with an individual trap beneath or behind a fixture and extend to a branch or main soil or waste pipe at any point higher than the fixture trap it serves. Sometimes called an individual vent. See INDIRECT VENT; INDIVIDUAL VENT.

**backfill** (*back-fill*) term used to describe the material that is used to refill a trench or excavation after water or sewer services are installed.

**backflow** (*back-flow*) **1.** a term which denotes the reversal of flow from that normally intended. **2.** the flow of water or other liquids, mixtures, or substances into the distributing pipes of a potable supply of water from any source or sources other than its intended source.

**backflow preventer** (*back-flow pre-vent-er*) **1.** any approved assembly used to prevent backflow into a potable water system; the type of assembly or device used shall be based on the degree of hazard; existing or potential. **2.** a device, or means, to prevent backflow.

**backflow preventer, carbonated water type** (*back-flow pre-vent-er, car-bon-a-ted wa-ter type*) an assembly composed of two independently acting check valves, internally force loaded to a normally closed position and separated by an intermediate chamber (or zone) in which there is a means of venting to atmosphere, internally force loaded to a normally open position. The part shall vent liquids, gases, or both, under backflow conditions.

**backflow preventer, double check valve type assembly** (*back-flow per-vent-er, dou-ble check valve type as-sem-bly*) See DOUBLE CHECK VALVE ASSEMBLY- DCVA.

**backflow preventer, dual check valve type assembly** (*back-flow pre-vent-er, dual check valve type as-sem-bly*) See DUAL CHECK VALVE ASSEMBLY.

**backflow preventer, intermediate vent type** (*back-flow pre-vent-er, in-ter-me-di-ate vent type*) an assembly composed of two independently acting check valves, internally force loaded to a normally closed position and separated by an intermediate chamber (or zone) in which there is a means for venting to atmosphere, internally force loaded to a normally open position. Shall be designed to operate under continuous conditions.

**backflow preventer, laboratory faucet type** (*back-flow pre-vent-er, lab-o-ra-to-ry fau-cet type*) an assembly composed of two independently acting check valves, internally force loaded to a normally closed position and separated by an intermediate chamber (or zone) in which there is a means of venting to atmosphere, internally force loaded to a normally open position.

**backflow preventer, reduced pressure principle type** (*back-flow pre-vent-er, re-duced pres-sure prin-ci-ple type*) See REDUCED PRESSURE PRINCIPLE BACKFLOW TYPE-RP.

**backflow preventer, water supply** (*back-flow pre-vent-er, wa-ter sup-ply*) device or means to prevent backflow. *Abbr.* B.F.P.

**backflow preventer, reduced pressure zone type** (*back-flow pre-vent-er, re-duced pres-sure zone type*) an assembly of differential valves and check valves including an automatically opened spillage port to the atmosphere. Gauges must be installed where pressure reduction is mandatory. *Abbr.* BFP

**backflow prevention assembly** (*back-flow pre-ven-tion as-sem-bly*) any assembly used to prevent backflow into a potable water system. The type of assembly, or device, used shall be based on the degree of hazard; existing or potential.

**backflow prevention assembly tester** (*back-flow pre-ven-tion as-sem-bly test-er*) a person who is certified to make competent inspections, tests, and reports on backflow prevention assemblies. To become, and remain, certified, this person shall successfully complete the certification and continuing education requirements through a certification program for backflow prevention which is recognized by the regulatory agency having jurisdiction. Also, this person shall be conversant with applicable laws, rules and regulations, have demonstrated competency in plumbing; or have other qualifications which, in the opinion of the regulatory agency having jurisdiction, are equivalent.

**backflow prevention device** (*back-flow pre-ven-tion de-vice*) a mechanical backflow preventer without the shut-off valves. An atmospheric vacuum breaker is a device. It does not require shut-off valves on either side of the backflow prevention mechanism. Also, any backflow prevention assembly without the

shut-off valves is called a device. Several Associations, including ASSE, approve backflow prevention devices.

**backflow prevention method** (*back-flow pre-ven-tion me-thod*) a mechanism for preventing backflow. It includes mechanical backflow prevention assemblies (PVB, DCVA, RP) and devices (AVB) as well as air gaps.

**backhoe** (*back-hoe*) an excavating machine in which the bucket is rigidly attached to a hinged stick on the boom and is drawn toward the machine in operation.

**backhouse** (*back-house*) a small building, usually to the rear of a building for human habitation, built over a hole in the ground. The ground was the bin for human waste (archaic). See LATRINE.

**back-outlet ell** (*back-out-let ell*) an ell with the outlet in the same place as run and on the outside of the large radii curve. Also referred to as heel outlet elbow. See BRANCH ELL.

**backpressure** (*back-pres-sure*) **1.** a reverse pressure greater than that in the intended normal direction and/or pressure of flow or thrust **2.** an escape of liquid by virtue of the physics of a simple siphon. **3.** pressure in plumbing pipes that is less than atmospheric pressure. **4.** the flowing back of used, contaminated or polluted water from a plumbing fixture or vessel or other source into a negative pressure in such a pipe. **5.** a pressure in the supplied system which, for some cause, becomes greater than the supply pressure (pressure above atmospheric.)

**backsiphonage** (*back-si-phon-age*) **1.** the backflow of possible contaminated water into the potable water supply system or the potable water distribution systems as a result of the pressure in the potable water system becoming unintentionally less than the atmospheric pressure in the plumbing fixtures, pools, tanks or vats that may be connected to the potable water distribution system **2.** the siphoning back of used, contaminated or polluted water or

other substances from a plumbing fixture, vessel, or other source, into the water supply pipe due to negative pressure in the supply pipe.

**backsiphonage backflow** (*back-siph-on-age back-flow*) the direction of flow at the inlet and outlet of the device is horizontal.

**backsiphonage preventer** (*back-si-phon-age pre-vent-er*) See ANTISIPHON VACUUM BREAKER NON-PRESSURE TYPE; PRESSURE TYPE.

**backwater valve** (*back wa-ter valve*) a device installed in a drain or pit or in the pipe to prevent drainage from backing into a low level. Usually used where combination sewers exist. See TIDE VALVE.

**bacteria** (*bac-te-ri-a*) plural of bacterium. See BACTERIUM.

**bacteria, aerobic** (*bac-te-ri-a, ae-ro-bic*) bacteria living, active, or occurring only in the presence of oxygen.

**bacteria, anaerobic** (*bac-te-ri-a, an-aer-o-bic*) bacteria living, or growing, in the absence of free oxygen. Anaerobic bacterial receives their oxygen by decomposing compounds containing oxygen.

**bacteria, coli-aerogenes** (*bac-te-ri-a, co-li-aer-og-e-nes*) See BACTERIA, COLIFORM GROUP.

**bacteria, coliform group** (*bac-te-ri-a, co-li-form group*) a group of bacteria, predominantly inhabitants of the intestines of humans but also found on vegetation, including all aerobic and facultative anerobic gram-negative, non-spore-forming bacilli that ferment lactose with gas formation.

**bacteria count** (*bac-te-ri-a count*) *Abbr.* MPN. See MOST PROBABLE NUMBER - BACTERIA COUNT; MEMBRANE FILTER COLIFORM COUNT.

**bacteria, facultive anaerobic** (*bac-te-ri-a, fac-ul-tive an-aer-o-bic*) bacteria having the quality of being able to live or thrive under more than one set of conditions with or without oxygen.

**bacteria, parasitic** (*bac-te-ri-a, par-a-sit-ic*) bacteria having the quality of living in or on another organism for existence or support without making a useful or adequate return.

**bacteria, saprophytic** (*bac-te-ri-a, sap-ro-phyt-ic*) bacteria having the quality of obtaining food by absorbing dissolved organic decay from the product of organic breakdown and decay.

**bacterium** (*bac-te-ri-um*) any of a class of microscopic plants having round, rod-like, spiral, or filamentous single celled or non-celled bodies often aggregated into colonies or mobile by means of flagella, living in soil, water, organic matter, or bodies of plants and animals, and being autotrophic, saprophytic, or parasitic, in nutrition and important to humans because of their chemical effects and as pathogens.

**baffle** (*baf-fle*) an object used to retard or direct the flow of air, air-gas mixtures, flue gases or liquids.

**bag trap** (*bag trap*) a device to seal against entry of sewer airs having its shape resemble an inflated bag.

**bain-marie** (*bain-ma-rie*) pl. bains-marie.

1. a double boiler. 2. in plumbing, a steam table. 3. a secondary water reservoir into which other pots are inserted to hold or maintain temperature.

**balanced backflow valve** (*bal-anced back-flow valve*) a type of valve fitted with a counterbalanced gate.

**balancing fitting** (*bal-anc-ing fit-ting*) 1. a valve or cock with a movable partition which increases or decreases the amount of flow by means of adjustment. 2. a fitting with a built-in baffle.

**bald** (*bald*) See BALLED.

**baldy** (*bal-dy*) a slang term for a pipe nipple which is threaded on only one end, the other end is bare. Sometimes a water closet nipple is called a baldy. See BALLED.

**ball bearing** (*ball bear-ing*) **1.** a bearing in which the journal turns upon loose hardened steel balls that roll in a race and thus convert sliding friction into rolling friction. **2.** a bearing in which the disk of a watt-hour meter is mounted on a vertical shaft that rotates with minimized friction because of rolling action on a single steel ball between cupped jewels.

**ball cock** (*ball cock*) a faucet valve opened or closed by the fall or rise of a ball floating on the surface of water, whose elevation is controlled wholly or in part by the faucet valve. See BALL VALVE; WATER CLOSET FLUSHING VALVE.

**ballcock, anti-siphon** (*ball-cock, an-ti-siphon*) a ballcock designed to prevent the back flow of water into the water supply system by lack of or loss of water pressure in the supply system.

**ballcock seat** (*ball-cock seat*) an orifice inside a valve thru which the liquid is controlled; throttled, interrupted; allowed to flow or flow is stopped.

**balled** (*ball-ed*) slang; in pipe work refers to no threads, or bell and spigot connection.

**ball float** (*ball float*) a floating device in the shape of a sphere, used to operate a ball valve.

**ball headed** (*ball head-ed*) See BALLED.

**ball joint** (*ball joint*) a connection in which a ball, hollow or solid, is held in a cuplike shell that allows movement in any direction in the joint other than along the axis of the pipes that are joined.

**ball reamer** (*ball ream-er*) a hemispherical rose reamer used in finishing the recess for a ball joint. See REAMER.

**ball valve** (*ball valve*) **1.** a valve in which a ball fits into a spherical seat and regulates the aperture by its rise and fall due to fluid pressure, to a spring, or to its own weight. **2.** a type of motor operated valve. See BALL COCK.

**band clamp** (*band clamp*) used to hold the weight of a riser pipe. Made of two pieces of wrought iron or steel shaped to fit a pipe with ends protruding to accommodate bolts to secure same.

**band hanger** (*band hang-er*) See BAND CLAMP.

**B. & S.** *Abbr.* for Bell and Spigot.

**baptismal fountain** (*bap-tis-mal fountain*) a vessel for holding liquid, usually water, for religious rites; not connected directly to a drainage system.

**baptistry** (*bap-tist-ry*) a separate building, a part of a church, or a tank, used for baptismal services.

**barber's boiler** (*bar-ber's boil-er*) a water heater used in barber shops.

**barometer** (*ba-rom-e-ter*) an instrument for measuring pressure of the atmosphere. Usually expressed in "inches of mercury".

**barometric loop** (*baro-met-ric loop*) consists of a continuous section of supply piping that abruptly rises to a height of approximately 35 ft. (10.7 m) and then returns back down to the originating level. It is a loop in the piping system that effectively protects against backsiphonage. It may not be used to protect against back pressure. Its operation, in the protection against backsiphonage, is based upon the principle that a water column, at sea level pressure, will not rise above 33.9 ft.

**bar sink** (*bar sink*) *Abbr.* B.S. See SINK.

**bar strainer** (*bar strain-er*) a filtering or straining device having a single rod or several bars or wires which interrupt large objects and prevent their entry into a sewer or drain.

**base** (*base*) the lowest portion or the lowest point of a vertical stack.



**baseboard** (*base-board*) a board situated at or forming the base of something. Specific: a protecting or finish molding of board or other material covering the joint of a wall and the adjoining floor. For heating, a “baseboard radiator” is part of a heating system and is installed at the base board or the lowest part of the wall.

**base elbow** (*base el-bow*) a cast-iron pipe bend having a flange or pad cast on it as a seat for a supporting column or bracket.

**basement** (*base-ment*) a story whose floor line is below grade at any entrance or exit and whose ceiling is not more than five feet above grade at any such entrance or exit, or whose floor is three or more feet below normal terrain.

**base metals** (*base me-tals*) **1.** metals that oxidize when exposed to air. **2.** any metal whose hydroxide is soluble in water forming a solution of a base. **3.** the chief constituent of an alloy. **4.** the metal to which a coating of plating is applied.

**basic steel** (*ba-sic steel*) steel produced by the “basic Bessemer” or the basic open hearth process, i.e.: the means by which sulphur, phosphorus, silicon, manganese, and carbon can be removed from the molten charge.

**basin** (*ba-sin*) **1.** an open, usually circular vessel or dish with sloping or curving sides and wider than its depth, used typically for holding water for washing. **2.** a tank or reservoir used for the treatment of liquids. See LAVATORY.

**basin chain** (*ba-sin chain*) a beaded or link chain, one end attached to the basin and having a rubber stopper on the other end. Used on a lavatory.

**basin connections** (*ba-sin con-nec-tions*) thin-wall flexible tubing as connectors of the fixture water fittings (faucets) to the water supply.

**basin drain plug** (*ba-sin drain plug*) a synthetic, circular shaped plug, used to retain the water in a lavatory, usually connected to a chain.

**basin, earthenware** (*ba-sin, earth-en-ware*) See BASIN; CHINA; LAVATORY.

**basin fittings** (*ba-sin fit-tings*) trim to basin, i.e.: trap, waste, overflow, faucet, adaptors (iron pipe to flexible connections, copper to flexible connection)

**basin gaskets** (*ba-sin gas-kets*) gaskets used in trimming a basin to prevent liquid leakage between the basin and faucets or waste connection.

**basin plug wrench** (*ba-sin plug wrench*) used for preventing the turning of the bowl plug of a wash basin when the locknut underneath is being set-up.

**basin stoppers** (*ba-sin stop-pers*) cork-like units inserted into the fixture spud from the top to hold liquid in the basin.

**basin wrench** (*ba-sin wrench*) a long-shanked wrench with ratchet-like jaws, used to reach into tight spots. See WRENCH.

**bath connections** (*bath con-nec-tions*)

**1.** cast brass 90° fittings used to connect bath faucet to supply. **2.** flexible tubing used to connect bath faucet to supply. See LAVATORY CONNECTORS.

**bath faucet** (*bath fau-cet*) faucet especially designed for installation in bathtub water supply.

**bathroom accessories** (*bath-room ac-ces-so-ries*) toilet seat, towel bars, soap dish, robe hook, tooth brush holder, paper holder, grab bars, shower curtain, shower curtain rod, shower door, ash trays, etc.

**bathroom groups** (*bath-room groups*) shall normally consist of a water closet, a lavatory, a bathtub (with or without shower head) or a shower stall.

**bathroom sink** (*bath-room sink*) a fixture. See LAVATORY.

**bathseat** (*bath-seat*) a bench used in a tub for use in washing.

**bath, sitz** (*bath, sitz*) See BATHTUB, SITZ.

**bath trap** (*bath trap*) **1.** a “p” type trap used in the waste line from a bath tub. **2.** an “area” design of a particular version of a “p” type trap having a lesser depth seal.

**bath tub** (*bath-tub*) a fixture, shaped to fit a body to bathe in, usually one forming a permanent fixture in a bathroom. Types: (a) Built-In; a tub permanently attached to a wall or walls and the floor. (b) Corner; a tub designed to be installed with one end and one side attached to the walls. (c) Free Standing, Leg; a tub not attached to a wall, installed on legs, not attached to the floor. (d) Island; a tub installed with one end attached to a wall or partition. (e) Bench; a tub with a built-in seat, usually in one corner or across the back. (f) Leg; same as Free Standing. (g) Recessed; same as Built-In. (h) Semi-Sunken (Sunken) ; a tub installed with the tub bottom lower than the finished floor of the room. (i) Right Hand; a tub with the drain at the right end as you face the length of the tub. (j) Left Hand; a tub with the drain at the left end as you face the length of the tub. *Abbr.* B.T. or BT.

**bath tub, hydrotherapy arm** (*bath-tub, hy-dro-ther-a-py, arm*) a bathtub for the treatment of disease or disability by the external application of water to the arm.

**bath tub, hydrotherapy, body** (*bath-tub, hy-dro-ther-a-py, bod-y*) a bathtub for the treatment of disease or disability by the external application of water to the body.

**bath tub, hydrotherapy, leg** (*bath-tub, hy-dro-ther-a-py, leg*) a bathtub for the treatment of disease or disability by the external application of water to the leg.

**bath tub, sitz** (*bath-tub, sitz*) **1.** a tub in which one bathes in a sitting posture. **2.** a bath used especially in postoperative cases in which the hips and thighs of the patient are immersed in hot water for the therapeutic effect of the moist heat in the perineal and anal regions.

**battery charger** (*bat-ter-y charg-er*) a device for charging storage batteries. Also called charger.

**battery of fixtures** (*bat-ter-y of fix-tures*) any group of two or more adjacent fixtures which discharge into a common horizontal waste or soil branch.

**battery waste and vent system** (*bat-ter-y waste and vent sys-tem*) See COMBINATION WASTE AND VENT SYSTEM.

**B. B. E.** *Abbr.* for Ball Both Ends.

**bbls.** *Abbr* for Barrels.

**B. Coli** (*b co-li*) See BACTERIA, COLIFORM GROUP.

**B. Coli groups** (*b co-li groups*) See BACTERIA, COLIFORM GROUP.

**bead chain** (*bead chain*) a chain formed of small hollow metal spheres connected by short dumbbell-shaped metal links that is used especially in electric pull sockets and switches. Used in plumbing to hold stoppers or plugs to keep liquid in bathtubs or wash basins.

**beam clamp** (*beam clamp*) a holding device used where beams are the supports. Used with hangers, etc., to secure pipe and appliances.

**bedpan** (*bed-pan*) a shallow vessel so constructed that it can be used by a person in bed for urination or defecation.

**bedpan steamer** (*bed-pan steam-er*) a fixture used for scalding bedpans or urinals by direct application of steam.

**bedpan washer** (*bed-pan wash-er*) a fixture designed to wash bedpans and to flush the contents into the soil drainage system. It may also provide for steaming the utensils with steam or hot water.

**bedpan washer and sterilizer** (*bed-pan wash-er and ster-il-iz-er*) in addition to washing the bedpan, this device frees it from living micro-organisms usually by the use of physical or chemical agents. Also called bedpan washer and sanitizer.

**bedpan washer hose** (*bed-pan wash-er hose*) a device supplied with hot and cold water and located adjacent to a water closet or clinic sink, to be used for cleaning bedpans.

**bee-hive strainer, urinal** (*bee-hive strainer, uri-nal*) a perforated or slotted cage type strainer, spiral shaped, attached to drain of a urinal, used to allow liquids to flow but retaining solids. See PINEAPPLE STRAINER, URINAL; URINAL.

**bell** (*bell*) that portion of a pipe or a pipe fitting which, for a short distance, is sufficiently enlarged to receive the plain or spigot end of another length of pipe or pipe fitting of the same diameter for the purpose of making a joint. See HUB.

**bell and spigot joint** (*bell and spi-got joint*) each length of cast-iron pipe is made with an enlarged or bell end, and a plain or spigot end. The spigot end of one length fits into the bell end of the next length. The joint is made tight by caulking. Also called spigot joint. *Abbr.* B. & S.

**bell floor drain** (*bell floor drain*) See BELL TRAP.

**bell floor drain frame** (*bell floor drain frame*) the outer pieces of a bell floor drain.

**bell metal** (*bell me-tal*) a bronze that consists usually of three or four parts of copper to one of tin and is used for making bells.

**bell trap** (*bell trap*) **1.** a stench-trap consisting of an inverted bell with water-seal. **2.** a bell-shaped trap below the inlet of a floor drain.

**bell trap for cesspool** (*bell trap for cess-pool*) See BELL TRAP.

**belt** (*belt*) a continuous band of tough flexible material (as leather, rubber, fabric, wire) for transmitting motion and power from one pulley to another, or for conveying materials.

**bench mark** (*bench mark*) **1.** a mark on a fixed and enduring object indicating a particular elevation and used as a reference in topographical surveys and tidal observations. **2.** a point of reference from which measurements of any sort may be made. *Abbr.* B.M.

**bending iron** (*bend-ing iron*) a round, tapered, and arched tool for forming lead pipes, fittings, and/or sheet lead. See BENDING PIN.

**bending pin** (*bend-ing pin*) a tool used for throwing up an edge on lead pipe in preparing it for "wiping". Used for straightening or expanding flexible pipe. See BENDING IRON.

**bending spring** (*bend-ing spring*) steel lead working tool used in bending lead pipe. See SAND PLUG.

**bent coupling** (*bent cou-pling*) same as boiler coupling except at a 90° angle. Sometimes referring to the corporation ferrule coupling. See BOILER BUSHING; CORPORATION FERRULE.

**Bessemer Process** (*bes-se-mer pro-cess*) a process of making steel from cast iron by burning out carbon and other impurities through the agency of a blast of air which is forced through the molten metal. The process is either acid or basic according to the nature of the refractory lining of the converter, or vessel in which the blowing is conducted.

**Bessemer steel** (*bes-se-mer steel*) steel made by the Bessemer Process.

**B.F.P.** *Abbr.* for Back Flow Preventer.

**bibb** (*bibb*) See FAUCET.

**bibb washer** (*bibb wash-er*) **1.** a faucet washer. **2.** a disc with a hole in it used to stop the liquid when the faucet is closed.

**bidet** (*bi-det*) a fixture about the height of the seat of a chair that often has fixtures for running water and is used especially for bathing the external genitals and the posterior parts of the body.

**big inch** (*big inch*) a term used to describe pipe and pipe lines that are 24" in diameter and larger.

**biochemical** (*bi-o-chem-i-cal*) dealing with the chemical compounds and processes occurring in living organisms (plant and animal)

**biochemical action** (*bi-o-chem-i-cal ac-tion*) chemical changes resulting from the metabolism of living organisms.

**biochemical oxygen demand** (*bi-o-chem-i-cal ox-y-gen de-mand*) the oxygen used in meeting the metabolic needs of aerobic micro-organisms in water rich in organic matter (as water polluted with sewage) Also called biological oxygen demand. *Abbr.* B.O.D.

**biological tank** (*bi-o-log-i-cal tank*) See SEPTIC TANK.

**biota** (*bi-o-ta*) the animal and plant life of a region; flora and fauna collectively.

**bismuth** (*bis-muth*) a brittle grayish-white metal with a pink or red tint. Pure bismuth is harder than lead and melts at 520 °F. Also used with lead, tin, or iron to make alloys used for fusible bulbs and safety plugs for automatic sprinkler systems and boiler plugs. Bismuth is used chiefly in the formation of alloys characterized by low fusibility or by expanding upon solidification.

**bit** (*bit*) **1.** part of an instrument for boring. **2.** a drill worked by a brace. See BRACE.

**bit brace** (*bit brace*) See BRACE.

**bitransit** (*bi-tran-sit*) a standing overflow.

**bi-transit waste-bath tub** (*bi-tran-sit waste-bath tub*) free standing waste, i.e.: bathtub waste and overflow.

**bitumen** (*bi-tu-men*) any of a number of mineral substances that will burn, such as asphalt, petroleum and naptha.

**bituminous fiber pipe** (*bi-tu-min-ous fi-ber pipe*) non-metallic pipe made by combining an interwoven structure of threads of cellulose material with a bituminous material such as asphalt. Usually spelled fibre. Used for sewers and drains, sleeves and conduits between 1949 and 1971. See BITUMEN.

**bi-vinyl** (*bi-vi-nyl*) See BUTADIENE.

**black alum** (*black a-lum*) See ALUM, BLACK.

**black cast iron fitting** (*black cast iron fit-ting*) uncoated or black painted cast iron fitting.

**black lead** (*black lead*) a commercial form of graphite. Used for coating patterns and the faces of cast-iron chilling molds.

**black pipe** (*black pipe*) uncoated, or black painted, conduit. Sometimes steel pipe which has no coating, is called black pipe because of the color of the oxide scale which forms on steel when it is worked through tools in the process of being manufactured.

**blade for hack saw** (*blade for hack saw*) a serrated edged cutting tool inserted in a frame shaped as an inverted "U". See HACKSAW.

**blank flange** (*blank flange*) a flange without bolt holes. See BLIND FLANGE.

**blau gas** (*blau gas*) an oil gas consisting chiefly of a mixture of lower saturated and unsaturated hydrocarbons supplied in liquid form under pressure and used especially for heating and lighting and as a motor fuel. Distinguished from blue gas. See BLUE GAS.

**bldg.** *Abbr.* for Building.

**bleach** (*bleach*) See CHLORINATED LIME.

**bleed** (*bleed*) **1.** to shed or exude a liquid as in a minute leak. **2.** to leak; especially to leak an iron-stained liquid, as the seams of a boiler.

**blind flange** (*blind flange*) a flange without an opening for the passage of water, liquid, or gas. It closes the end of a pipe. See BLANK FLANGE.

**blind man's rule** (*blind man's rule*) a slang description of a rule or measure on which the marks and numbers are pronounced and large.

**blind vent** (*blind vent*) a fixture vent terminating in a wall or in such a manner that only the appearance of a vent is provided.

**blister steel** (*blis-ter steel*) crude steel formed from wrought iron by cementation; so called from its blistered surface.

**blk.** *Abbr.* for Black.

**block and tackle** (*block and tack-le*) a machine used to aid in moving, hoisting and hauling weights; made of ropes and pulleys. The pulleys are called blocks and the rope is the tackle.

**block tin** (*block tin*) **1.** commercial tin casting blocks containing small quantities of various impurities (such as copper, lead, iron or arsenic) **2.** solid tin, as distinguished from tin plate.

**blow-off** (*blow-off*) **1.** a blowing off of water, steam, etc., or an apparatus for same. **2.** a controlled outlet from a pipeline used to discharge water, steam, vapor, sludge or waste.

**blow-off cock** (*blow-off cock*) See BLOW-OFF VALVE.

**blow-off valve or drain** (*blow-off valve or drain*) a valve or drain connection on a steam or hot water boiler so arranged that the water and steam may be drawn off with any accumulated oil, grease and dirt. Also called blow-off drain.

**blow out closet** (*blow out clo-set*) a toilet which empties with the aid of a large volume of water under pressure directed to the outlet of the bowl which causes the contents of the bowl to be literally forced, or blown, to the drainage system.

**blue gas** (*blue gas*) a gas that burns with a blue or so-called nonluminous flame only, specifically uncarbureted water gas used for industrial heating. Distinguished from blau gas. See BLAU GAS.

**blue water gas** (*blue wa-ter gas*) a mixture of approximately equal proportions of CO and H made by passing steam over incandescent coke in a special generator. See WATER GAS, CARBURETED; CARBURETED WATER GAS.

**blunt cold chisel** (*blunt cold chis-el*) a dull chisel made of tool steel of a strength, shape and temper suitable for chipping or cutting cold metal.

**board** (*board*) See ADMINISTRATIVE AUTHORITY.

**bobbin** (*bob-bin*) wooden lead working tool used to draft lead waste pipe in the same manner as drift plug; also employed in bending lead pipe without bending spring or sand. See BENDING SPRING; DRIFT PLUG; DUMMY; SAND PLUG.

**B.O.D.** *Abbr.* for Biochemical Oxygen Demand.

**body wastes** (*bo-dy wastes*) discharges from the abdominal cavities. See ABDOMINAL CAVITY DISCHARGES; SOIL.

**boiler** (*boil-er*) **1.** a vessel used for heating water. **2.** the part of a steam generator in which water is converted into steam and which consists of metal shells, headers, and tubes that form the containers for the steam and other liquids are heated or where hot water is stored.

**boiler accessories** (*boil-er ac-ces-so-ries*) any of several attachments or mechanical devices that aid in the operation of a boiler, i.e.: gauges, valves, fittings, pet cocks, water switches, relief valve and drain valves.

**boiler band** (*boil-er band*) See BOILER HANGER.

**boiler basin** (*boil-er ba-sin*) See BOILER BLOW-OFF TANK.

**boiler blow-off** (*boil-er blow-off*) an outlet on a boiler to permit emptying of discharge of sediment; a drain. See BLOW-OFF VALVE.

**boiler blow-off tank** (*boil-er blow-off tank*) a vessel designed to receive the discharge from a boiler blow-off outlet and to cool the discharge to a temperature of 130 °F or less which permits its safe discharge to the drainage system.

**boiler bushing** (*boil-er bush-ing*) a fitting containing an outer thread and two pipe connections inside and outside the tank. See BENT COUPLING; RANGE BOILER COUPLING.

**boiler, cement lined** (*boil-er, ce-ment lined*) a vessel or container lined with cement (coated internally)

**boiler cleaner** (*boil-er clean-er*) See BOILER CLEANING COMPOUND.

**boiler cleaning compound** (*boil-er cleaning com-pound*) chemicals compounded to remove deposits in boilers.

**boiler cleaning liquid** (*boil-er clean-ing liq-uid*) See BOILER COMPOUND.

**boiler compound** (*boil-er com-pound*) any chemical added to feed water for boilers, as for preventing corrosion, foaming or the formation of scale.

**boiler control, automatic** (*boil-er con-trol, au-to-mat-ic*) a device to automatically control the temperature within boiler.

**boiler coupling** (*boil-er coup-ling*) a specially designed straight through coupling, having no union connection used in connecting piping in a boiler system. See BOILER BUSHING.

**boiler cover** (*boil-er cov-er*) usually referring to the covering (insulation) of a boiler, made of various types of insulating material.

**boiler covering** (*boil-er cov-er-ing*) See BOILER COVER.

**boiler cut-off valve** (*boil-er cut-off valve*) a valve installed in the water inlet line to a boiler. See BOILER FEEDER VALVE.

**boiler drain** (*boil-er drain*) a valve connected at or near the bottom of a boiler for the purpose of draining and/or flushing. See WATER HEATER DRAIN VALVE.

**boiler drain cock** (*boil-er drain cock*) See BOILER DRAIN.

**boiler elbow** (*boil-er el-bow*) a specially designed 90° fitting with a union connection used in connecting piping to a range boiler. See BOILER FITTING.

**boiler feeder valve** (*boil-er feed-er valve*) an automatically controlled valve which maintains a desired amount of water in the boiler. See BOILER CUT-OFF VALVE.

**boiler fitting** (*boil-er fit-ting*) a specially designed fitting, either straight through, or with a 90° turn having a union connection. Used in connecting piping to a range boiler. See BOILER ELBOW.

**boiler gauge** (*boil-er gauge*) a temperature or pressure registering device installed in boilers. See BOILER GAUGE COLUMN; HOT WATER BOILER THERMOMETER.

**boiler gauge column** (*boil-er gauge col-umn*) a glass tube used to indicate the level of water in a boiler. See BOILER GAUGE.

**boiler hanger** (*boil-er hang-er*) a metal strap or rod device to support a boiler by hanging them from some other support. Also called boiler band.

**boiler jacket** (*boil-er jack-et*) See BOILER COVER.

**boiler jacket asbestos** (*boil-er jack-et as-bes-tos*) a boiler cover made of asbestos fibers for insulating purposes.

**boiler mixing valve** (*boil-er mix-ing valve*) a multi-port valve used to mix waters of separate temperatures to a desired temperature, usually an automatic control.

**boiler, monel metal** (*boil-er, mo-nel metal*) a boiler made of metal known as monel, similar to German Silver or some type stainless steel.

**boiler pressure gauge** (*boil-er pres-sure gauge*) a device which registers boiler pressure.

**boiler stand (*boil-er stand*)** **1.** a device on which to set a storage tank, raising it above the floor to allow for pipe fittings to be inserted in bottom of tank. **2.** support frame for a boiler constructed of cast iron or steel.

**boiler temperature gauge (*boil-er tem-per-a-ture gauge*)** See BOILER GAUGE.

**boiler trim (*boil-er trim*)** hot water boiler or steam boiler accessories.

**boiler tube (*boil-er tube*)** a tube inserted in the top of a tank to direct the cold water to the bottom, thus preventing the cooling of the stored hot water.

**boiling point (*boil-ing point*)** the temperature at which a liquid boils. Specific: the temperature at which the vapor pressure of a liquid is equal to the external pressure, the boiling point thus decreasing with a decrease in pressure (as 100 °C for water at a pressure of 760 mm of mercury and 51 °C at 100 mm) *Abbr.* B.P.

**bolt (*bolt*)** **1.** a bar or other usually cylindrically shaped length of metal, wood, or other strong material that moves through the guides (as iron staples) attached to a door or other movable frame, the end being received into an adjoining fixed socket (as one attached to the jamb or lintel). **2.** a rod or heavy pin (as one made of steel) designed to fasten two or more objects (as metal plates) together or to hold one or more objects in place. **3.** often having a head at one end and screw thread cut upon the other end and being usually secured by a nut or by riveting.

**bolt cutter (*bolt cut-ter*)** large pincer for cutting bolts and reinforcing rod.

**bolt for faucet (*bolt for fau-cet*)** a threaded rod with a head on one end to hold on the handle or to hold the washer in place.

**bolt stud (*bolt stud*)** See STUD BOLT.

**bolt threader (*bolt thread-er*)** stock and die for threading common sizes of bolts or rods.

**bonnet (*bon-net*)** **1.** a cover used to guide and enclose the stem of a valve. **2.** that portion of a gate valve into which the disc rises when the valve is opened.

**borax (*bo-rax*)** a hydrate sodium borate. Used as a flux, cleansing agent, preservative, fire retardant and water softener.

**borosilicate glass (*bo-ro-sil-i-cate glass*)** See ACID WASTE.

**bossing stick (*boss-ing stick*)** a wooden tool for shaping lead for tank lining.

**bottle trap (*bot-tle trap*)** a bottle shaped partitioned chamber so designed to provide a liquid seal between the inlet and outlet to prevent the passage of sewer gas without materially affecting the flow of sewage or liquid wastes.

**bottle washer (*bot-tle wash-er*)** a machine that washes bottles.

**bottled gas (*bot-tled gas*)** gas under pressure in portable cylinders, usually propane.

**box end wrench (*box end wrench*)** a combination open end and box wrench.

**box union (*box un-ion*)** a fitting, device, or coupling for linking the ends of pipes (the nut portion of which is square) that can be opened, or separated, without dismantling the pipes. See UNION.

**B.P.S. *Abbr.*** for Bedpan Sterilizer.

**B.P.W. *Abbr.*** for Bedpan Washer.

**brace (*brace*)** a hand held device into which is fastened a “bit” or “drill” used to bore holes. See BIT.

**brace and bit (*brace and bit*)** See BRACE.

**branch (*branch*)** a pipe in a plumbing system from which no other branch pipes discharge. Any part of the piping system other than a main, riser, or stack. The branch pipe discharges into a main or submain.

**branch ell (*branch ell*)** an elbow having a back inlet in line with one of the outlets of the “run”. Also called a heel outlet elbow.

**branch interval** (*branch in-ter-val*) a length of soil or waste stack corresponding, in general, to the height of one story, but in no case less than eight feet, within which the horizontal branches from one floor or story of a building are connected to a stack.

**branch joint** (*branch joint*) a "T" or "wye" connection made in lead pipe fittings involving the wiping of a solder joint.

**branch line** (*branch line*) a water supply line connecting one or more fixtures with a water supply main, riser or other branch.

**branch pipe** (*branch pipe*) a general term used to designate a pipe, either cast or wrought, that is equipped with one or more branches.

**branch vent** (*branch vent*) **1.** a vent connecting one or more individual vents into a vent stack or stack vent. **2.** a vent pipe in which two or more venting fixtures are connected.

**brass** (*brass*) an alloy, essentially of copper, with a base metal of zinc. Often other metals are added to make the alloy stronger, harder, or to improve machinability. Other elements added for a specific purpose are lead, nickel, tin, aluminum and manganese.

**brass faucet** (*brass fau-cet*) a valve (faucet) made of brass metal.

**brass flare fitting** (*brass flare fit-ting*) a fitting with threads internal or external to which a mating nut compresses the pipe or tube whose end is flared or made funnel shaped. Compression is of the flared portion of the tube or pipe.

**brass pipe vise** (*brass pipe vise*) See BRASS PIPE WRENCH.

**brass pipe wrench** (*brass pipe wrench*) a wrench arranged for brass tubing; the curve preventing the crushing of the tubing.

**braz** (*braz*) **1.** to solder with an alloy that is relatively infusible compared with common solder. **2.** a high temperature solder.

**brazed joint** (*braz joint*) a joint obtained by joining of metal parts with alloys which melt at temperatures higher than 840 °F (449 °C) but lower than the melting temperature of the parts to be joined.

**brazing** (*braz-ing*) **1.** joining metals by the use of a brass filler. **2.** to unite by intensely heating the parts to be joined and applying any one of a number of high temperature melting solders which range in melting point from alloys rich in silver to pure copper. See HARD SOLDER.

**brick chisel** (*brick chis-el*) an 18" or longer cold chisel for cutting brick masonry.

**brim stone or brimstone** (*brim stone or brim-stone*) See SULFUR.

**brine** (*brine*) water saturated or strongly impregnated with common salt.

**brine tank** (*brine tank*) a tank or vessel for containing water saturated or strongly impregnated with common salt. *Abbr.* Br.T.

**britannia metal** (*bri-tan-ni-a met-al*) a silver-white alloy largely of tin, antimony, and copper; similar to pewter. See PEWTER; WHITE METAL.

**British Standard Taper Pipe Thread** (*brit-ish stan-dard ta-per pipe thread*) thread form used in Britain. Includes external threads which can be assembled to either straight or tapered internal threads. Straight external threads cannot be used for a leakproof or joint threads. In this thread form, the sides of the thread form an angle of 55° with each other and the depth of the thread is equal to 0.640327 x the pitch of the thread. The taper is the same as American Standard Taper,  $\frac{3}{4}$ " per foot.

**British thermal unit** (*brit-ish ther-mal u-nit*) the quantity of heat required to raise the temperature of one pound of water one degree fahrenheit at or near 39.2 °F (1 BTU/hr = 0.293 watts) *Abbr.* B.T.U.

**broad curve nose** (*broad curve nose*) a caulking tool.



**bronze** (*bronze*) an alloy of copper and tin. For special purposes other metals such as phosphorus, lead, zinc, silicon, or aluminum are added. Most bronze alloys resist corrosion.

**brushes, fitting** (*brush-es, fit-ting*) See FITTING BRUSHES.

**Br.T.** *Abbr.* for Brine Tank.

**B.S.** *Abbr.* for Bar Sink.

**bsmt.** *Abbr.* for Basement.

**B.T.** *Abbr.* for Bath Tub.

**B.T.U.** *Abbr.* for British Thermal Unit.

**bubbler** (*bub-bler*) the mouthpiece of a drinking fountain. See DRINKING FOUNTAIN.

**bucket trap** (*buck-et trap*) a contrivance to let air and condensed water out of steam pipes and radiators with little escape of steam.

**buffalo box** (*buf-fa-lo box*) See CURB BOX.

**buffer** (*buf-fer*) a substance, or mixture of substances, whose pH is relatively constant when in solution is capable of neutralizing both acids and bases and thus acts to maintain the original hydrogen ion concentration of the solution.

**building** (*build-ing*) a structure having walls and a roof designed and used for the housing, shelter, enclosure, or support of persons, animals, or property. *Abbr.* Bldg.

**building classification** (*build-ing clas-si-fi-ca-tion*) **1.** designation of building according to occupancy or use. **2.** in a plumbing code for the purpose of administration, buildings are sometimes classified according to occupancy.

**building drain** (*build-ing drain*) that part of the lowest horizontal piping of a plumbing drainage system which receives the discharge from soil, waste, and/or other stacks inside the building and terminates at least three feet outside the inner face of the foundation wall. See HOUSE DRAIN.

**building drainage system gravity** (*build-ing drain-age sys-tem gra-vity*) a drainage system which drains by gravity into the building sewer.

**building drain combined** (*build-ing drain com-bined*) a building drain which conveys both sewage and storm water or other drainage.

**building drain, sanitary** (*build-ing drain, san-i-tary*) a building drain which conveys the discharge of plumbing fixtures.

**building drain, storm** (*build-ing drain, storm*) **1.** a building drain which conveys storm water or other drainage. **2.** a building drain used for conveying rain water, surface water, ground water, subsurface water, condensate, cooling water, or other similar discharge to a storm sewer or a combined building sewer, extending to a point not less than three feet outside of the building wall.

**building sewer** (*build-ing sew-er*) that part of the horizontal piping of a plumbing drainage system that extends from the end of the building drain to the public sewer or other building drain. The building sewer is the pipe which begins at least three feet outside the inner face of the building wall and extends to a public sewer, septic tank, or other place of sewage disposal.

**building sewer, combined** (*build-ing sew-er, com-bined*) a building sewer which conveys both sewage and storm water or other drainage. Note: In many places, combined sewers are prohibited.

**building sewer, storm** (*build-ing sew-er, storm*) **1.** a building sewer which conveys rain water, surface water, condensate, cooling water, storm water or other drainage but no sewage. **2.** the extension from the building storm drain to the public storm sewer, combined sewer, or other point of disposal.

**building storm sewer** (*build-ing storm sew-er*) See BUILDING SEWER, STORM.

**building subdrain** (*build-ing sub-drain*) that portion of a building drainage system which cannot drain by gravity into the building sewer.

**building trap** (*build-ing trap*) a device, fitting, or assembly of fittings installed in the building drain to prevent circulation of air between the drainage system of the building and the building sewer. See HOUSE TRAP.

**bull headed tee** (*bull head-ed tee*) a tee where the branch is larger than the run.

**bull point** (*bull point*) a heavy steel bar, pointed and used to make holes in rock, or stone, by driving with a hammer. Also called bull prick.

**bull prick** (*bull prick*) See BULL POINT.

**burner** (*burn-er*) a device for the final conveyance of the fuel, or a mixture of fuel and air, to the combustion zone. The four types of burners are: (a) injection burner. (b) yellow flame burner. (c) power burner. (d) pressure burner.

**burner head, gas** (*burn-er head, gas*) the portion of the burner beyond the outlet end of the mixer tube which contains the ports.

**burner valve, gas** (*burn-er valve, gas*) a manually, or mechanically, operated valve which permits control of the flow of gas.

**burr** (*burr*) roughness, or extra metal, protruding from the walls of a pipe; often as a result of improper finishing after the cutting of a pipe.

**burst pressure** (*burst pres-sure*) **1.** the capacity of an object (such as pipe or tubing) to maintain its continuity when subjected to pressure. **2.** the pressure, expressed in pounds per square inch, that would burst a pipe, or tube, under controlled conditions. **3.** a non-operational pressure level in excess of the proof pressure established to provide an additional margin of safety in the event of unscheduled pressure in excess of operation level.

**bushing** (*bush-ing*) a lining, or sleeve, of metal, or other material, inserted into a hole to limit its size, resist wear, or act as a guide.

**bush metal** (*bush met-al*) an alloy of copper and tin similar in composition to gun metal and used for bushings.

**butadiene** (*bu-ta-di-ene*) a flammable gaseous diolefin  $\text{CH}_2 = \text{CHCH} = \text{CH}_2$ , very reactive and polymerizing readily. Made by several processes as by catalytic dehydrogenation of normal butane or normal butylenes at high temperatures. Used chiefly in making synthetic rubbers. Also called bu-vinyl. See ACRYLONITRILE-BUTADIENE-STYRENE.

**butt chisel** (*butt chis-el*) a short woodworking chisel suitable for fitting hinges or strike plates.

**butt joint** (*butt joint*) a joint made by fusing together two pipe ends, or a pipe end and a fitting opening, usually with heat. In plastic, a butt joint can be made with solvent welding.

**buttress thread** (*but-tress thread*) a screw thread in which the driving face is made perpendicular to the axis of the screw (as in a square thread) while the back face makes an angle with the axis (as in a V thread) in order to combine efficiency in the transmission of power with strength.

**butt weld** (*butt weld*) a butt joint made by welding.

**butt welded pipe** (*butt weld-ed pipe*) a pipe made by welding the butted edges of a strip of steel. Most standard sizes of steel water pipes are made by this method.

**bu-vinyl** (*bu-vi-nyl*) See BUTADIENE.

**bypass** (*by-pass*) any method which will permit water, or other fluid, to pass around a valve, fixture, appliance, connection, or pipe. Sometimes incorrectly applied to a connection between a drain pipe and a vent pipe which allows sewer air to enter the building.

**bypass relief valve (*by-pass re-lief valve*)**

a check valve which opens to permit a reverse flow of water from the building system back into the supply main when the system pressure is increased to greater than the supply pressure by the expansion of water as it is heated in the system.

**bypass tee (*by-pass tee*)**

a tee fitting of splinted or direction of flow variety intended to cause the direction of flow. Originally (1670AD) used as a juncture of the heater outlet to principal water piping. About 1905 a similar fitting made its appearance in the steam, water and vacuum vapor space heating industries.

**bypass vent (*by-pass vent*)**

a vent pipe (usually vertical) with its ends connected below the lowest fixture connection of a stack and above the highest fixture connection or the vertical vent pipe connected below the lowest fixture and terminating above the roof. In either case, a separate distinct pipe in addition to all other vent pipes.

**bypass vent stack (*by-pass vent stack*)**

a vent stack parallel to a soil or waste stack with frequent connections at branch intervals between the two stacks.

## Cc

**C.** *Abbr.* for Centigrade; also for Hundred.

**C. A.** *Abbr.* for Compressed Air.

**cabinet top** (*cab-i-net top*) the upper surface of cabinet structures – a work bench or table.

**cadmium** (*cad-mi-um*) a white metallic element that looks much like tin. Its alloys help reduce friction and offer great resistance to fatigue. It is softer than zinc and resists corrosion better, and often replaces zinc in galvanizing iron and steel.

**cage valve** (*cage valve*) a valve (faucet) inside a skeleton frame and used as a protection to the working members of the valve.

**cake sludge** (*cake sludge*) the material resulting from air drying or dewatering sludge.

**calcined gypsum** (*cal-cined gyp-sum*) See PLASTER OF PARIS.

**caliber** (*cal-i-ber*) internal diameter or bore.

**calibration** (*cal-i-bra-tion*) ascertaining the amount of variation from absolute accuracy in a scientific instrument.

**caliper** (*cal-i-per*) a measuring instrument having two legs or jaws that can be adjusted to determine thickness, diameter caliber and distance between surfaces.

**calorie** (*cal-o-rie*) **1.** the amount of heat required to raise the temperature of one gram of water one degree centigrade at a pressure of one atmosphere, also called gram calorie. **2.** the amount of heat required to raise the temperature of one

kilogram of water one degree celsius at one atmosphere pressure; 1000 gram calories is equal to 3.968 BTU. Also called kilogram calorie, large calorie.

**can** (*can*) a slang expression. See WATER CLOSET.

**candle** (*can-dle*) a cylindrical piece of tallow or wax with a wick running through it that can be burned to give light. Used by plumbers when working lead.

**candle wick** (*can-dle wick*) center wick of wax candle or lantern using oil

**candle wicking** (*can-dle wick-ing*) a fine thread of cotton used on pipe threads and under packing nuts to make them water tight.

**Candy's fluid** (*can-dy's flu-id*) permanganate of potash. Once used for deodorizing cesspools and sewage.

**canvas jacket or covering** (*can-vas jacket or cov-er-ing*) a jacket or cover made of cloth used to cover insulation usually associated with heated devices in plumbing.

**cap.** *Abbr.* for Capacity.

**cap** (*cap*) a fitting into which the end of a pipe is screwed, soldered, or caulked for the purpose of closing the end of the pipe.

**capacity** (*ca-pa-ci-ty*) **1.** the maximum amount that can be obtained. **2.** the maximum ability to hold or contain (e.g. filled to capacity) **3.** rate of water flow under specified pressure conditions expressed in gallons per minute (GPM) or liters per second (L/s).

**cap screw** (*cap screw*) See TAP BOLT.

**cape chisel** (*cape chis-el*) a cold chisel that has a long taper on the top and bottom of the cutting end and a narrow edge. It is forged with a thin V shaped blade for cutting in slots, grooves, keyways and deep corners.

**capillary** (*cap-il-lar-y*) the action by which the surface of a liquid where it is in contact with a solid is elevated or depressed depending upon the relative attraction of the molecules of the liquid for each other and for those of the solid.

**carafe** (*ca-rafe*) variants: carafe, craft, croft. A bottle usually made of glass with a narrow neck and spherical body and used to hold water or beverages.

**carafe filler** (*ca-rafe fil-ler*) a water supply control device (faucet) designed to fill distinct (carafe) devices.

**carbide tip bit** (*car-bide tip bit*) See BIT.

**carbon** (*car-bon*) a very common non-metallic chemical element occurring native (as in diamonds, and graphite) and forming as constituent in coal, petroleum, asphalt and all organic compounds. Obtained artificially in varying degrees of purity; especially as carbon black, lampblack, activated carbon, charcoal and cake. Used in these, and other forms, chiefly as a pigment, absorbent, fuel, electrode material, structural material and reducing agent.

**carbon, activated** (*car-bon, ac-ti-va-ted*) See ACTIVATED CARBON.

**carbonated water** (*car-bon-a-ted wa-ter*) See SODA WATER.

**carbonated water type backflow preventer** (*car-bon-a-ted wa-ter type back-flow pre-vent-er*) See BACKFLOW PREVENTER CARBONATED WATER TYPE.

**carbon dioxide** (*car-bon di-ox-ide*) a colorless gas, heavier than water, that does not support combustion. Called dry ice in the frozen state.

**carbonic acid refrigeration system** (*car-bon-ic a-cid re-frig-er-a-tion sys-tem*) cooling system using a weak dibasic acid  $H_2CO_3$  in solution.

**carbureted water gas** (*car-bur-et-ed wa-ter gas*) See WATER GAS.

**card-weight pipe** (*card-weight pipe*) a term applied to standard or full-weight pipe, which is the Briggs Standard thickness of pipe.

**carrier** (*car-ri-er*) a device used to mount an off-the-floor plumbing fixture such as lavatory, water closet, urinal or sink.

**carrier fitting** (*car-ri-er fit-ting*) the drainage fitting used with, or integral with, a carrier. Also known as closet fittings, urinal fittings, etc.

**cast copper fitting** (*cast cop-per fit-ting*) a pipe size or tube size pipe fitting made from any of a number of commercial grades of copper by pouring the molten metal into a mold. Compare with wrought copper fittings which are formed by pressure from tubing.

**cast iron** (*cast i-ron*) a commercial alloy of iron, carbon, and silicon cast in a mold, being hard, brittle, non-malleable and incapable of being hammer welded but more easily fusible than steel. *Abbr:* C.I. See PIG IRON.

**cast iron, charcoal hearth** (*cast i-ron, char-coal hearth*) cast iron from which silicon and, generally, phosphorous have been removed in a charcoal hearth, but still containing so much carbon.

**cast iron closet bend** (*cast i-ron clos-et bend*) a 90° fitting used in "soil" work to connect a water closet to a soil stack or branch soil pipe.

**cast iron fittings** (*cast i-ron fit-tings*) fittings of many shapes and sizes made of cast iron. Fittings used in connection with cast iron pipe consist of Y's, tees sanitary tees, double Y's and bends and elbows of 22½° to 90°.

**cast iron flanged fittings** (*cast i-ron flanged fit-tings*) fittings made with discs at the ports. The discs are either supports or may have holes so that bolting can join several such units.

**cast iron flux** (*cast i-ron flux*) a wetting agent used in brazing, soldering, or welding cast iron by either gas or electric or combination methods.

**cast iron pipe** (*cast i-ron pipe*) pipes of various sizes and lengths made of cast iron. See DOUBLE HUB SOIL PIPE; CAST IRON SOIL PIPE.

**cast iron pressure pipe and fittings** (*cast iron pres-sure pipe and fit-tings*) See CAST IRON SOIL PIPE FITTINGS.

**cast iron soil pipe** (*cast i-ron soil pipe*) cast iron soil pipe is manufactured in lengths of five feet. The lengths are cast in two forms, single and double hub of standard and extra heavy specification, and standard specification hubless type.

Single-hub pipe is equipped with one hub and one spigot end. It is used as a rule, in the installation of plumbing in its full length. Double-hub pipe is constructed with a hub on each end so it may be cut into two pieces when a short piece of pipe is needed.

Cast iron pipe and fittings are dipped in a bath of coal tar pitch which has been heated to a temperature of 300 °F. This practice makes the pipe more acid-resistant and more favorable for drainage installations.

Cast iron pipe is sometimes used to replace vitrified clay sewer pipe. It may be laid in unstable soil without danger of sagging. See SOIL PIPE.

**cast iron soil pipe fittings** (*cast iron soil pipe fit-tings*) soil pipe fittings made of cast iron. For use with cast iron soil pipe. Manufactured in three classes; **a.** service class, **b.** extra heavy class, and **c.** hubless class. When furnished in either the service or extra heavy class, the fittings will be of the hub and spigot varieties. In the hubless class, the fittings will be of the plane end varieties. See CAST IRON FITTINGS.

**cast iron soldering** (*cast iron sold-er-ing*)

**1.** the art of soldering cast iron. **2.** a process consisting of decarbonizing the surface of the cast iron to be soldered, the molten hard solder being at the same time brought into contact with the red hot metallic surfaces.

**cast steel** (*cast steel*) steel which has been in a state of fusion; either in the making or otherwise.

**catch basin** (*catch ba-sin*) a water tight receptacle built to arrest sediment of surface subsoil or other waste drainage, and to retain oily or greasy wastes from entering the house sewer or drain. *Abbr.* C.B. See RECEPTOR; INTERCEPTOR.

**cathodic protection** (*cath-od-ic pro-tection*) **1.** the control of the electrolytic corrosion of an underground or underwater metallic structure by the application of an electric current in such a way that the structure is made to act as the cathode instead of anode of an electrolytic cell. **2.** the use of materials and liquids to cause electricity to flow to avoid corrosion.

**caulked joint** (*caulked joint*) to connect soil pipe by use of packed oakum and molten lead, sealed by caulking with tools designed for that purpose.

**caulker** (*caulk-er*) one who caulks.

**caulk fitting** (*caulk fit-ting*) a fitting which is connected to another, or a piece of pipe, by means of caulking; usually with lead and oakum.

**caulking** (*caulk-ing*) **1.** stopping up by pounding, tapping, or pushing into and making watertight the seams as by filling with a water-proofing compound or material to prevent leakage from materials such as with oakum, lead, or other. **2.** to keep from slipping. **3.** to make tight by pouring. **4.** to force by pounding.

**caulking coupling** (*caulk-ing coup-ling*) a male and female assembly where the annulus is packed to make a joint. Some couplings join similar material, some join, dissimilar material.

**caulking ferrule, brass** (*caulk-ing fer-rule, brass*) See CAULKING COUPLING (except made of brass metal)

**caulking iron** (*caulk-ing iron*) **1.** a tool used in conjunction with a hammer or mallet to compress material by impaction. **2.** tools impacted against a substance to compress or force or compact. There are many sizes, shapes, and weights of caulking irons. See SHORT-NOSED CAULKING IRON.

**caulking recess** (*caulk-ing re-cess*) a counterbore or recess in the back of a flange into which lead can be caulked for water pipes and similar connections.

**C.B.** *Abbr.* for Catch Basin.

**ceiling** (*ceil-ing*) the interior upper surface of a room.

**ceiling flange** (*ceil-ing flange*) a flange, or escutcheon, covering an opening in the ceiling caused by an pipe penetration. See SPLIT-HANGER, PIPE; SLIP-ON FLANGE.

**ceiling iron** (*ceil-ing iron*) used in caulking joints very close to a ceiling, the blow of the hammer being delivered on the offset near the handle. See INVERT IRON.

**cellulose** (*cell-u-lose*) the chief substance composing the cell walls or woody parts of plants. Used in making fibre piping for sewers and conduits. See FIBRE PIPE.

**Celsius** (*cel-si-us*) a term which is used when referring to temperature in the Centigrade scale. Anders Celsius, Swedish astronomer, invented the Centigrade scale.

**cem.** *Abbr.* for Cement.

**cement** (*ce-ment*) **1.** any substance that hardens to form an adhesive. **2.** to cover or coat with cement. *Abbr.* Cem.

**cement joint** (*ce-ment joint*) the union of two fittings by insertion of material. Sometimes this joint is accomplished mechanically; sometimes chemically.

**center line** (*cen-ter line*) a line dividing an area into equal portions.

**center to end** (*cen-ter to end*) A means of clarifying in plumbing design, the basis for a measurement. *Abbr.* C. to E.

**Centigrade** (*cen-ti-grade*) relating, conforming to, or having a thermometric scale on which the interval between the two standard points, the freezing and the boiling point of water, is divided into one hundred, zero degrees representing the freezing and one hundred degrees the boiling point. *Abbr.* C. See CELSIUS.

**centrifugal pump** (*cen-tri-fu-gal pump*) a pumping machine in which pressure is created as the liquid or gas is moved outward from center by the rotary motion of the impeller.

**centrifuge** (*cen-tri-fuge*) a machine using centrifugal force for separating substances of different densities, removing moisture, or stimulating gravitational effects.

**certified backflow assembly tester** (*cer-ti-fied back-flow as-sem-bly tes-ter*) an individual who has shown competence to test and maintain backflow assemblies to the satisfaction of the administrative authority having jurisdiction.

**certified plumber** (*cer-ti-fied plumb-er*) See MASTER PLUMBER.

**ceruse** (*ce-ruse*) white lead as a pigment.

**cess pit** (*cess pit*) an open pit for the disposal of sewage or refuse. From cesspool plus pit. Compare with septic tank in the sense that a septic tank or system is equipped with outlets.

**cesspool** (*cess-pool*) a pit for the reception or detention of sewage. Sometimes called a dry well, especially when of relatively small diameter and large depth. Distinguished from a septic tank by the fact that water, or sewage, does not enter and leave the cesspool at the same time and rate. See DRY WELL; SEPTIC TANK.

**cesspool cover** (*cess-pool cov-er*) a lid or covering over a cesspool.

**cesspool strainer** (*cess-pool strain-er*) a tool or a ladle like unit with holes to allow separation of liquid from solids.

**C.F.M.** *Abbr.* for Cubic Feet per Minute.

**C.F.S.** *Abbr.* for Cubic Feet per Second.

**chain saw** (*chain saw*) a cutting tool that has the teeth fit on an endless chain that is powered by a gasoline engine, or electric motor, or compressed air.

**chain tongs or chain pipe tongs** (*chain tongs or chain pipe tongs*) **1.** tongs for turning large pipe. Consists of a lever with notched head whose teeth engage the pipe and an adjustable short chain which encircles the pipe and whose ends are secured to the head. **2.** a lever handle with jaws with teeth and a chain. **3.** a form of wrench utilizing a chain. See PIPE WRENCH; PIPE TONGS.

**chain vise** (*chain vise*) a vise in which round work (as a pipe) is held in a V-shaped support by a chain clamped tightly around the work.

**chain wrench** (*chain wrench*) a pipe wrench which may be used in close quarters provided with a chain for ratchet like action.

**chair carrier** (*chair car-rier*) supporting fittings for water closets, urinals, lavatories.

**chalk line** (*chalk line*) a heavy string or twine which is impregnated with chalk so that a straight, accurate mark can be made on a surface usually by stretching the string between two marks and then plucking or striking it to cause a chalk line, or mark.

**charcoal** (*char-coal*) a dark colored or black porous form of carbon made from a vegetable, or animal, substance (as from wood by charring in a kiln or retort from which air is excluded) and used for fuel in various mechanical, artistic, and chemical processes.

**charcoal plates** (*char-coal plates*) when iron was used instead of steel the highest quality tin plate was called charcoal plate. Charcoal plates now have a heavier coating and higher finish. Grades of charcoal plates are identified by a letter A to AAAAA with the latter having the heaviest and brightest coating.

**chase** (*chase*) **1.** a lengthwise groove for the reception of a part to make a joint. **2.** to cut threads. See PIPE CHASE.

**chaser** (*cha-ser*) a threading tool, either many toothed or having a single cutting edge, especially shaped for cutting or finishing external or internal screw threads or specified pitch and standard. Usually on work revolving in a lathe.

**chasing threads** (*chas-ing threads*) cutting threads with a chaser, which usually is a flat tool containing several teeth of the desired pitch.

**chatter** (*chat-ter*) a sustained vibration magnified by the supply piping.

**check damper** (*check damp-er*) a valve, or moveable plate, in the flue or other part of a stove, furnace, or fireplace for regulating the draft or in a duct for regulating the flow of air or other gas.

**check valve** (*check vavve*) a valve that permits flow in one direction but that closes automatically to retard the flow of fluid in a reverse direction. *Abbr.* ck.v.

**check valves, independently acting** (*check valves, in-de-pen-dent-ly act-ing*) See INDEPENDENTLY ACTING CHECK VALVES.

**check valve-straight way** (*check valve - straight a-way*) a valve automatic in its ability to stop, or hinder, reverse flow (opposite to intended) in a fluid, or gas, carrying conduit and having its inlet and outlet in a straight line in either a vertical or horizontal plane.

**checking member** (*check-ing mem-ber*) part of the backflow assembly in the valve.

**chemical lead** (*chem-i-cal lead*) See HARD LEAD.

**chemical precipitation** (*chem-i-cal pre-cip-i-ta-tion*) **1.** precipitation induced by addition of chemicals. **2.** the process of softening water by the addition of lime or lime and soda ash as precipitants.

**chemical waste** (*chem-i-cal waste*) See SPECIAL WASTE.



**chimney flue** (*chim-ney flue*) See FLUE.

**china** (*chi-na*) a vitrified ceramic-ware originally brought from the Far East, composed chiefly of clay, feldspar and flint, and differing from porcelain only in being made in two firings; one for the body and one for the glaze.

**china basin** (*chi-na ba-sin*) a fixture receptacle. In plumbing, a receptacle supplied with water and waste connections and made of glazed fired clay. See LAVATORY.

**china cap** (*chi-na cap*) a unit, usually ceramic, cemented in place to cover bolt and/ or screwheads of a plumbing fixture.

**china closet connections** (*chi-na clos-et con-nections*) See CLOSET BOLT.

**chipping knife** (*chip-ping knife*) **1.** a knife used for chipping or cutting lead. **2.** a lead worker's tool. Also used for chipping off uneven thin edges of wiped joints. See HACKING KNIFE.

**chisel** (*chis-el*) tool with rectangular cutting edge used for cutting, dressing and carving hard substances such as stone, wood and metal (those for metal are called cold chisels); held by the handle and often driven by a mallet. Also used to cut cast iron pipe. Common types of chisels: (a) blunt cold chisel, (b) brick chisel, (c) butt chisel, (d) cape chisel, (e) cold chisel, (f) diamond point chisel, (g) firmer chisel, (h) flat brick chisel, (i) floor chisel, (j) framing chisel, (k) gate chisel, (l) gauge chisel, (m) half round cap chisel, (n) hammer head chisel, (o) joint chisel, (p) mill chisel, (q) packet chisel, (r) paring chisel, (s) picking out chisel, (t) wood chisel.

**chisel packet** (*chi-sel pack-et*) a pouch containing several small chisels.

**chloralum** (*chl-or-al-um*) a disinfectant and antiseptic preparation consisting of an aqueous solution of chloride of aluminum.

**chlorinate** (*chlo-rin-ate*) **1.** to treat, or cause to combine with chlorine or chlorine compounds. **2.** to apply chlorine (to water or sewage) for purposes of sterilization, oxidation of organic matter or retardation of putrification.

**chlorinated lime** (*chlo-rin-at-ed lime*) bleaching powder, or chloride of lime. It is made by passing chlorine gas over slacked or hydrated lime. It is used as a bleaching agent, disinfectant and deodorant.

**chlorination** (*chlo-rin-a-tion*) act or process of chlorinating.

**chlorine** (*chlo-rine* or *chlor-ine*) a halogen element isolated as a heavy greenish yellow irritating gas of pungent odor used especially as a bleach, oxidating agent and disinfectant in water purification. Usually made by electrolysis of aqueous solutions of sodium chloride.

**chloromines** (*chlo-ro-mines*) compounds or organic amines or inorganic ammonia with chlorine.

**C.I. Abbr.** for Cast Iron.

**cir. Abbr.** for Circumference.

**circ. Abbr.** for Circular.

**circuit vent** (*cir-cuit vent*) a branch vent that serves two or more traps, or fixtures with integral traps, that are battery wasted. Said vent extends from the top of the horizontal soil and/or waste branch in front of the last fixture waste to a vent stack adjacent to the upstream end of the horizontal branch. See LOOP VENT; UTILITY VENT.

**circular saw** (*cir-cu-lar saw*) has a round disk or plate with teeth around the edge. Different sizes and shapes of the teeth enable the saw to cut rough or fine work on many different materials.

**circulating line** (*cir-cu-lat-ing line*) a run of pipe to cause fluid to flow in a closed circuit.

**circulator** (*cir-cu-la-tor*) a pump to force the circulation of liquid in a system.

**circumference** (*cir-cum-fer-ence*) the boundary line of a circle, perimeter. The length of such a boundary.

**cistern** (*cis-tern*) a reservoir used to store rain water.

**city water** (*ci-ty wa-ter*) water in a municipal piping system. See WATER.

**ck. v.** *Abbr.* for Check Valve.

**C.L.** *Abbr.* for Center Line.

**cl.** *Abbr.* for Chlorine.

**clamp coupling** (*clamp coup-ling*) pipe fitting consisting of a tube of pliable material and a strap clamp for the sealing of the pipe or fitting ends to be coupled.

**clamp coupling assembly** (*clamp coupling as-sem-bly*) any of several types of coupling where the seal is effected by strap and screw type clamps located at the ends of the couplings.

**clarifier** (*clar-i-fier*) See INTERCEPTOR.

**clay puddle** (*clay pud-dle*) an earthy mixture (as of clay, sand, and gravel) worked while wet into a compact mass that becomes impervious to water when dry.

**cleanout** (*clean-out*) a plug or cover joined to an opening in a pipe, which can be removed for the purpose of cleaning or examining the interior of the pipe.

**clear water waste** (*clear wa-ter waste*) **1.** cooling water and condensate waste from refrigeration, air conditioning equipment, and cooled condensate from steam heating systems. **2.** cooled boiler blowdown water. **3.** waste water drainage from any area where water is used without an appreciable addition of oil, gasoline, chemicals, etc.

**clevis hanger** (*clev-is hang-er*) a pipe hanger or support consisting of a suspension bracket in the form of a "U" with two ends perforated to receive a bolt.

**clg.** *Abbr.* for Ceiling.

**clinic sink** (*clin-ic sink*) See BEDPAN WASHER.

**close nipple** (*close nip-ple*) a piece of pipe with external pipe threads on each end. The shortest piece of pipe in a given size that is possible to have an externally disposed pipe thread on each end.

**close return bend** (*close re-turn bend*) a short cast or malleable U-shaped pipe fitting with arms joined together. Also called pattern return bend. See RETURN BEND.

**closet** (*clos-et*) **1.** a small room or cupboard for clothes, household supplies, linens, etc. **2.** a water closet, toilet.

**closet bend** (*clos-et bend*) **1.** an L-shaped soil fitting used directly underneath the water closet. **2.** a specially designed fitting which connects the closet collar and the stack fitting.

**closet bolt** (*clos-et bolt*) a T-headed bolt used for fastening the water closet to the drainage system.

**closet bowl** (*clos-et bowl*) a fixture for receiving abdominal discharges. See WATER CLOSET.

**closet bumper** (*clos-et bump-er*) See WATER CLOSET; SEAT BUMPERS.

**closet chain** (*clos-et chain*) archaic, a flexible wire or metal cord like device extending from the high closet flushing tank downward for the operator to reach.

**closet collar** (*clos-et col-lar*) a flanged fitting connected to the drainage system, to which a water closet is fastened. See FLOOR FLANGE.

**closet ell** (*clos-et ell*) the connecting pipe between the flushing tank or valve and the closet bowl.

**closet fitting** (*clos-et fit-ting*) See CLOSET BEND; CARRIER FITTING.

**closet gasket** (*clos-et gas-ke-t*) a seal between the closet bowl and the drainage system.

**closet horn** (*clos-et horn*) the projection of the discharge spud or hollow base of the water closet.

**closet offset** (*clos-et off-set*) an offset fitting for attaching the water closet when the inlet and outlet are parallel but not in a straight alignment.

**closet plunger, rubber** (*clos-et plung-er, rub-ber*) **1.** a rubber force cup. **2.** a bell-shaped unit on a handle used to cause pressure to dislodge stoppage in a water closet. Also called “plumber’s friend”.

**closet reverse action bowl** (*clos-et re-verse ac-tion bowl*) a type of water closet bowl where the water way leads toward the front of the fixture.

**closet screw** (*clos-et screw*) a wood-type screw usually with a detachable head, used for fastening a water closet to the floor.

**closet seat** (*clos-et seat*) a rim device to support a person using a water closet.

**closet seat bumper** (*clos-et seat bump-er*) See RUBBER BUMPER, TOILET SEAT.

**closet seat hinge** (*clos-et seat hinge*) hinge for a closet seat to allow swinging motion of the seat above the water closet bowl.

**closet siphon jet bowl** (*clos-et si-phon jet bowl*) a form of water closet in which a jet way allows water to influence flushing by siphon action.

**closet spud** (*clos-et spud*) an internal expanding device used to make connections to the flush water part of the water closet bowl.

**closet spud reducer** (*clos-et spud re-duc-er*) a fitting to reduce the initial bore of the spud.

**closet tank, vitreous china** (*clos-et tank, vit-re-ous china*) a reservoir intended to hold liquid for flushing a water closet and made of china (earthenware).

**closet tank, wood** (*clos-et tank, wood*) a reservoir intended to hold liquid for flushing a water closet and made of wood.

**closing member** (*clos-ing mem-ber*) that part of the valve member which shuts off flow in the valve.

**clothes washer** (*clothes wash-er*) an appliance used to wash clothes.

**C.O.** *Abbr.* for Clean Out.

**CO<sub>2</sub>** *Abbr.* for Carbon Dioxide.

**coach screw** (*coach screw*) See LAG SCREW.

**coagulation** (*co-ag-u-la-tion*) the agglomeration of finely divided suspended matter by the addition to the liquid of an appropriate chemical coagulant, by biological processes or by other means.

**cock** (*cock*) a valve. In the 15th century, a cock was a spout with a means of controlling the rate of flow of liquid passing through its. See FAUCET.

**cock hole cover** (*cock hole cov-er*) **1.** a removable door or panel in a cover area over a valve handle. Slang expression. **2.** cover for an opening which was to be used for a valve, faucet or spray. **3.** a cover for the hole in a sink which would have been used for the spray.

**code** (*code*) an authoritative book of rules and regulations. Those regulations, subsequent amendments thereto, or any emergency rule or regulation which the Administrative Authority Having Jurisdiction may lawfully adopt.

**code official** (*code of-fi-cial*) See ADMINISTRATIVE AUTHORITY.

**cohesion** (*co-he-sion*) the force of attraction between molecules of any substance which tends to hold them together.

**coke plates or coke tin** (*coke plates or coke tin*) plates made from coke iron.

**col.** *Abbr.* for Column.

**cold chisel** (*cold chis-el*) a chisel made of steel of a strength, shape and temper suitable for chipping or cutting cold metal. Name is usually applied to plain, flat cold chisel.

**cold-rolled steel** (*cold-rolled steel*) may be either a open-hearth or Bessemer Process. The carbon content runs from 0.12 to 0.20%. This steel is marketed with a bright, smooth surface and is made quite accurate to size so that for many purposes no machining is necessary. It may be casehardened but will not temper.

**cold rolling** (*cold roll-ing*) cold rolling of steel produces a high tensile strength but with a sacrifice of ductility and toughness. Cold-rolled steel has a much smoother finish than hot-rolled steel.

**cold water** (*cold wa-ter*) for test purposes, water at a temperature of forty to seventy degrees Fahrenheit (40 °F to 70 °F) [four to twenty-one degrees Celsius (4 °C to 21 °C)].

**coli-aerogenes group** (*co-li-aer-og-e-nes group*) See BACTERIA; COLIFORM GROUP.

**collar** (*col-lar*) **1.** a tapered sleeve around other parts in an assembly. **2.** flange used on a pipe where it passes through an opening in a wall, or floor, to cover such an opening.

**collector efficiency** (*col-lec-tor ef-fi-cien-cy*) the ratio of energy collected on any collector to the radiation incident on the collector.

**collet** (*col-let*) a clamping ring or holding device. In the shops the term is freely applied to sockets for tapered shank drills, reducing sleeves and bushings of various types.

**colloids** (*col-loids*) finely divided solids which will not settle but may be removed by coagulation or biochemical action.

**column** (*col-umn*) **1.** a supporting pillar. **2.** a vertical shaft designed to bear axial loads in compression. *Abbr.* col.

**combination bath fitting** (*com-bin-a-tion bath fit-ting*) **1.** a valve or faucet which intermixes hot and cold water for the bathtub. **2.** diverter valve, when a shower attachment is included.

**combination fixture** (*com-bin-a-tion fix-ture*) **1.** a fixture combining one sink and laundry tray or a two or three compartment sink or laundry tray in one unit. **2.** a fixture combining two or more wells or receptors of unequal depth.

**combination lavatory fitting** (*com-bin-a-tion lav-a-to-ry fit-ting*) a valve or faucet to mix hot and cold water delivered to the lavatory.

**combination sewer** (*com-bin-a-tion sewer*) a conduit which carries storm water, rain, melted snow, etc., and sewerage. Also called sanitary water or combined sewer.

**combination sink and tray** (*com-bin-a-tion sink and tray*) See COMBINATION FIXTURE.

**combination sink and tray, laundry tub** (*com-bin-a-tion sink and tray, laun-dry tub*) a fixture with two compartments of unequal depth.

**combination thermostatic pressure/balancing valve** (*com-bi-na-tion ther-mo-stat-ic pres-sure/bal-anc-ing valve*) See ANTI-SCALD VALVE.

**combination waste and vent system** (*com-bin-a-tion waste and vent sys-tem*) a specially designed system of waste piping embodying the horizontal wet venting of one, or more, plumbing fixtures or floor drains by means of a common waste and vent pipe adequately sized to provide free movement of air above the flow line of the drain.

**combination water closet, one piece** (*com-bin-a-tion wa-ter clos-et, one piece*) a fixture design in which the water closet bowl and flushing tank are made of one piece.

**combined hopper and trap** (*com-bined hop-per and trap*) **1.** a receptacle with integral trap or attached trap. **2.** a funnel type receptacle. **3.** a waste receptacle.

**combustion** (*com-bus-tion*) the act or process of burning.

**combustion chamber** (*com-bus-tion cham-ber*) the portion of an appliance within which combustion occurs.

**combustion products** (*com-bus-tion pro-ducts*) constituents resulting from the combustion of a solid, liquid, or gas fuel with the oxygen of the air, including the inerts, but excluding excess air.

**commercial dishwashing machine** (*com-mer-ci-al dish-wash-ing mach-ine*) a machine, or appliance, designed, constructed and intended for other than household use which washes, rinses and sanitizes dishes.

**commercial standards** (*com-mer-cial stan-dards*) standards developed by consensus of the particular industry group.

**comminution** (*com-mi-nu-tion*) the process of screening sewage and cutting the sewage into particles fine enough to pass through the screen openings.

**commode** (*com-mode*) area word for fixture. Derived from cabinet which housed portable receptacle used for holding and/or receiving abdominal cavity discharges. Later "commode" became a piece of parlor furniture. See WATER CLOSET.

**common** (*com-mon*) that part of a plumbing system which is designed and installed to serve more than on appliance, fixture, building or system.

**common vent** (*com-mon vent*) a vent connecting at the junction of two fixture drains and serving both fixture and drain. See UNIT VENT; DUAL VENT.

**companion flange** (*com-pan-ion flange*) a pipe flange threaded internally to receive a pipe length and drilled so it may be bolted to another like flange. Sometimes a similar arrangement is used for coupling two parts of a shaft.

**compass** (*com-pass*) a mathematical tool. It consists of two pointed legs that are joined at the top so the legs can be moved closer together or farther apart. A pencil or penpoint may be attached to one leg to draw circles or arcs.

**compass saw** (*com-pass saw*) has a narrow, tapered blade, usually less than 1" wide at the tip and 12" to 14" length. Used to make both curved and straight cuts but must be used perpendicular to the surface for curved work.

**component** (*com-po-nent*) any fitting or appurtenance, other than the pipe, recommended for use in the assembly of a plumbing system.

**composition joint** (*com-po-si-tion joint*) in plumbing, a general reference to joining bell and spigot pipe with packing materials such as rope and rosin, cement and hemp.

**compound (pipe joint)** (*com-pound [pipe joint]*) a cement having an oil base applied to a threaded pipe connection to prevent leakage.

**compound drain** (*com-pound drain*) a drain that receives the discharge from more than one fixture.

**compound leverage pipe wrench** (*com-pound lev-er-age pipe wrench*) a wrench which enables user to double leverage. The hook jaw turns pipe, or fitting, one way and the offset chain trunnion exerts pressure the opposite way.

**compressed air** (*com-pressed air*) 1. air under greater than atmospheric pressure. 2. air reduced in volume by pressure so that its expansive force can be used to perform work. *Abbr.* C.A.

**compression faucet** (*com-pres-sion fau-cet*) a faucet or valve in which the flow of water is terminated by means of a disk that is forced down onto its seat. See COMPRESSION VALVE.

**compression fitting** (*com-pres-sion fit-ting*) a fitting designed to join pipe or tube by means of pressure or friction. See FITTING, COMPRESSION.

**compression joint** (*com-pres-sion joint*) a joint made to connect the plain or spigot end of a pipe or pipe fitting of the same diameter by the insertion of an elastomeric gasket into the bell or hub end of the pipe or pipe fitting and pushing or drawing the plain or spigot end of another pipe or pipe fitting into the gasket until it is fully

seated. The seal in the joint is obtained by displacement of the gasket body making a compression seal between the interior wall of the bell and the exterior wall of the spigot end.

**compression type stop** (*com-pres-sion type stop*) a valve using a disc fitted to a seat to control the flow of liquids. See COMPRESSION VALVE

**compression valve** (*com-pres-sion valve*) **1.** a valve using a disc fitted to a seat to control the flow of liquids. **2.** a type of motor operated valve. See COMPRESSION FAUCET.

**conc.** *Abbr.* for Concrete.

**concave** (*con-cave*) **1.** a hollow within a mass, or in a surface. **2.** hollowed or rounded inward. **3.** the inner face of a bowl. Compare with convex.

**concealed fouling surface** (*con-ceal-ed foul-ing sur-face*) any surface of a plumbing fixture which is not readily visible and is not scoured or cleansed with each fixture operation.

**concrete** (*con-crete*) a construction material consisting of conglomerate gravel, pebbles, stone in a mortar or cement matrix.

**concrete insert** (*con-crete in-sert*) a device inserted into concrete to affix other items.

**concussion** (*con-cus-sion*) in a piping system, usually referred to as water hammer.

**condensate** (*con-den-sate*) the liquid which separates from a gas (including blue gases) due to a reduction in temperature.

**condition of service** (*con-di-tion of service*) refers to an agreement between the water supplier and the consumer which specified the obligation and responsibilities of each in order for water service to be provided.

**condensate water** (*con-den-sate wa-ter*) water which has served its purpose of extracting heat as it flowed through a condenser. See WATER.

**conductivity** (*con-duc-tiv-i-ty*) a measure of the ability of a material to permit conduction heat to flow through it.

**conductor** (*con-duc-tor*) a pipe inside the building which conveys storm water from the roof to a storm, or combined building, drain or sewer. See CONDUIT; DOWNSPOUT; LEADER.

**conductors** (*con-duc-tors*) pipes located in or outside buildings, conveying storm or rain water from the roofs of buildings or areas to the storm or yard sewer, basin, or rain water cistern. See DOWNSPOUT.

**conduit** (*con-duit*) **1.** a natural, or artificial, channel through which water or other fluid passes or is conveyed. **2.** pipe, tube, or tile for receiving and protecting electric wires or cables. See DOWNSPOUT; CONDUCTOR; LEADER; PIPE.

**cone washer** (*cone wash-er*) a washer having the general shape of a section of a cone. Developed to permit use with beveled seat valves and to fit a variety of sizes of openings where the washer is used as a seat or seal in a valve.

**configuration, vertical reduced pressure** (*con-fig-ur-a-tion ver-ti-cal re-duc-ed pres-sure*) See VERTICAL CONFIGURATION, REDUCED PRESSURE.

**confined spaces** (*con-fined spaces*) area large enough and so configured that an employee can bodily enter and perform assigned work and has limited or restricted means for entry or exit and is not designed for continuous employee occupancy.

**confluent vent** (*con-flu-ent vent*) a vent pipe that serves two or more fixture vents.

**conformance** (*con-for-mance*) **1.** when used in, or with reference to, a plumbing code, it means the act of conforming to (as a regulation or code). **2.** to be obedient. **3.** to comply to a requirement or need.

**conn.** *Abbr.* for Connection.

**connected drain and overflow** (*con-nect-ed drain and o-ver-flow*) a prearranged interconnection of the drain and safety spillage conduit.

**connection, dishwasher discharge** (*dish-wash-er dis-charge con-nec-tion*) See DISHWASHER DISCHARGE CONNECTION.

**connection, indirect** (*in-dir-ect con-nec-tion*) See INDIRECT WASTE PIPE.

**connections** (*con-nec-tions*) the joints, pipe, fittings, valves, etc. See CONNECTORS.

**connectors** (*con-nec-tors*) any fittings or devices used for joining together pipes, fittings, valves, fixtures, etc. See CONNECTIONS; DIELECTRIC UNIONS; UNION.

**construction documents** (*con-struc-tion doc-u-ments*) all the written, graphic and pictorial documents prepared, or assembled, for describing the design, location and physical characteristics of the elements of the project necessary for obtaining a building permit. The construction drawing shall be drawn to an appropriate scale.

**consumer** (*con-sum-er*) person of a facility receiving service from a potable water system.

**consumer's industrial piping system** (*con-sum-er's in-dus-tri-al pip-ing sys-tem*) refers to any system used by the consumer for transmission of or to confine or store any fluid, solid or gaseous substance other than an approved water supply. Such a system would include all pipes, conduits, tanks, receptacles, fixtures, equipment and appurtenances used to produce, convey or store substances which are, or may be, polluted or contaminated.

**consumer's potable water system** (*con-sum-er's po-ta-ble wa-ter sys-tem*) a portion of the privately owned potable water system lying between the point of delivery and the point of use. This system will include all pipes, conduits,

tanks, receptacles, fixtures, equipment and appurtenances used to produce, convey, store or dispense potable water.

**consumer's water system** (*con-sum-er's wa-ter sys-tem*) any water system located on the consumer's premises, whether supplied by a public potable water system or an auxiliary water supply. The system, or systems may be either potable water or industrial piping.

**consumption** (*con-sump-tion*) a measure of volume of water used per flushing cycle.

**containment** (*con-tain-ment*) a method of backflow prevention which requires a backflow prevention assembly or device at the water service entrance. Sometimes called premise isolation.

**containment policy** (*con-tain-ment pol-i-cy*) to confine potential contamination caused by a cross-connection by installing a backflow prevention assembly at the point of service within a facility. (Sometimes called premise isolation.)

**contaminant** (*con-tam-i-nant*) **1.** any material (solid, liquid or gas) which, if introduced into a potable water supply, would cause it to be unfit for human or animal consumption. **2.** an impairment of the quality of the water which creates an actual health hazard to the public through poisoning, or through the spread of disease, by sewage, industrial fluids, or waste.

**contamination** (*con-tam-i-na-tion*) an impairment of the quality of the water which creates an actual health hazard to the public health through poisoning or through the spread of disease by sewage, industrial fluids or waste.

**continuous hot water recirculating system** (*con-tin-u-ous hot wa-ter re-cir-cu-la-ting sys-tem*) a portion of the water distribution system that allows for continual circulation and movement of the hot water supply within the piping between fixture outlets and the hot water heating source; usually by means of a pump or gravity loop.

**continuous pressure** (*con-tin-u-ous pres-sure*) a condition where upstream pressure is applied continuously (more than twelve hours) to a device or assembly. Continuous pressure can cause mechanical parts within a backflow preventer to become stuck, or frozen, in place, causing the backflow preventer to malfunction.

**continuous vent** (*con-tin-u-ous vent*)

1. a vertical vent that is the continuation of the vertical drain to which the vent connects. 2. a continuation of a vertical, or approx. vertical, waste pipe above the connection at which liquid wastes enter the waste pipe. The extension may, or may, not continue in a vertical direction.

**continuous waste** (*con-tin-u-ous waste*)

a waste from two, or more, fixtures connected to a single trap.

**cont. or contr.** *Abbr.* for Contractor.

**contractor** (*con-trac-tor*) See PLUMBING CONTRACTOR.

**control** (*con-trol*) device designed to regulate the gas, water, or electricity to a gas, water, or electric appliance. This may be manual, semi-automatic, or automatic. See LIMIT CONTROL.

**control stop** (*con-trol stop*) valve which is used to control the flow of water into the pressurized flushing device.

**control valve** (*con-trol valve*) 1. a discharge valve. 2. a valve that is operated each time water is supplied to, or shut-off from, a receptacle or plumbing fixture. The control valve is not to be confused with the ordinary stop valve, sometimes installed in the water supply branch to the control valve.

**convection** (*con-vec-tion*) heat transfer by fluid motion between regions of unequal density that result from non-uniform heating.

**convex** (*con-vex*) 1. arched up, bulging out. 2. the outer face of a bowl. Compare with concave.

**cooling tower** (*cool-ing tow-er*) a hydromechanical device used to recirculate water to release heat or energy so water may be used to cool.

**copolymer** (*co-pol-y-mer*) a product of copolymerization.

**copolymerize** (*co-po-ly-mer-ize*) to polymerize together.

**copper** (*cop-per*) a tough, reddish brown, metallic chemical element that resists rust, and is easily shaped into thin sheets or fine wire. Used extensively in piping systems. Also used in alloys such as brass and bronze.

**copperas** (*cop-per-as*) a green sulfate of iron, used as a disinfectant and in purifying water.

**copper bit** (*cop-per bit*) 1. a bar of copper used for soldering. 2. usually called a soldering iron. See SOLDERING IRON; COPPER.

**copper boiler** (*cop-per boil-er*) a boiler made of copper.

**copper bolt** (*cop-per bolt*) See COPPER BIT.

**copper drainage** (*cop-per drain-age*) a system of drain or waste pipe made of copper metal.

**copper drainage fitting** (*cop-per drain-age fit-ting*) fitting for assembling a drain or waste system made of copper metal. See DRAINAGE FITTING.

**copper float** (*cop-per float*) a device intended to be buoyant in a liquid and made of copper. Used to control a float valve.

**copper lead** (*cop-per lead*) See HARD LEAD.

**copper-lined tank** (*cop-per-lined tank*) a tank lined with sheet copper. See OAK TANK SHELL.

**copper pipe I. P. S.** (*cop-per pipe i. p. s.*) copper pipe having the dimensions and sizes of iron pipes.



**copper-plated nipple** (*cop-per-plat-ed nip-ple*) any short piece of pipe copper plated. See NIPPLE.

**copper range boiler** (*cop-per range boil-er*) a boiler made of copper. See RANGE BOILER.

**copper sheet** (*cop-per sheet*) rectangular thin pieces of copper metal; copper drawn into sheets of various thicknesses or gauges.

**coppered steel hanger** (*cop-per-ed steel hang-er*) copper-plated steel devices used to support pipes.

**copper stop** (*cop-per stop*) **1.** a valve made to receive copper tube. **2.** a sweat joint connection for inlet and outlet ports.

**copper-to-male or female thread adaptor fitting** (*cop-per-to-male or fe-male thread a-dap-tor fit-ting*) See COPPER TO THREAD ADAPTER FITTING.

**copper to thread adapter fitting** (*cop-per to thread a-dap-tor fit-ting*) a fitting, with one threaded (male or female) end, and the opposite 180° female socket for inserting copper tube.

**copper tube fitting, drainage** (*cop-per tube fit-ting, drain-age*) a thin walled copper fitting for use in a drainage system.

**copper tube fitting, flared** (*cop-per tube fit-ting, flar-ed*) See FITTING; FLARED.

**copper tube fitting, sweat** (*cop-per tube fit-ting, sweat*) copper fitting with female bore to receive tube. Affixed by heating and fitting annulus with a lower melting material.

**copper tubing** (*cop-per tub-ing*) pipe tubing made of copper.

**core** (*core*) the inner port or part (i.e.: the core of a core cock ground key) the core is machined or ground to fit the body of the cock.

**core grease** (*core grease*) a nonwater-soluble lubricant in paste form. Used in lubricating the core of valves, cocks, etc.

**corporation cock** (*cor-po-ra-tion cock*) a valve installed in a water main to which a building supply (service) pipe is connected.

**corporation ferrule** (*cor-po-ra-tion fer-rule*) a tee connection to a water main, either threaded into the sidewall of the main or joined by mating tapers. The water supply connection made into the water main or community supply pipe. See TAP; BENT COUPLING; BOILER BUSHING.

**corporation valve** (*cor-por-a-tion valve*) See CORPORATION COCK.

**corrode** (*cor-ode*) to undergo corrosion.

**corrosion** (*cor-ro-sion*) the gradual deterioration or destruction of a substance or material by chemical action. Frequently induced by electron-chemical process. See CORROSION CONTROL.

**corrosion control** (*cor-ro-sion con-trol*) **1.** in water correction, the prevention of the discharge of the metallic ions of a conduit from going into solution by increasing the pH-value of the water, removing the free oxygen from the water, and controlling the carbonate balance. **2.** the sequestration of metallic ions and the formation of protective films on metal surfaces by chemical treatment. See CORROSION.

**corrosive wastes** (*cor-ro-sive wastes*) acid and other unwanted wastes that are capable of causing corrosion in a piping system.

**cotter pin** (*cot-ter pin*) usually a form of split pin which is inserted into a hole near the end of a bolt to prevent a nut from working loose.

**cotton wicking** (*cot-ton wick-ing*) packing made of cotton strands of various thicknesses.

**countersink** (*coun-ter-sink*) consists of a conical rose bit, or fluted reamer, generally used for enlarging bolt holes to a conical recess for the reception of the tapered head of the bolt, and the bolt head is flush with the exterior surface.

**countertop** (*coun-ter-top*) See CABINET TOP.

**coupling** (*coup-ling*) a pipe fitting with female threads only. Used for connecting two pipes in a straight line.

**cover plate** (*co-ver plate*) a sheet of glass or transparent plastic that covers the solar absorber in a flat plate solar collector.

**cowl** (*cowl*) a hood on the top of a vent pipe or similar device.

**craft union** (*craft un-ion*) a labor union whose membership is limited to workmen following the same craft.

**crane** (*crane*) a siphon or bent pipe for drawing liquids out of a large vessel; a ship or cask. See FAUCET.

**crapper** (*crap-per*) after Thomas Crapper, British, who was generally considered to be the mid-nineteenth century developer of the flush toilet cistern. See WATER CLOSET.

**crescent wrench** (*cres-cent wrench*) See ADJUSTABLE OPEN END WRENCH.

**critical installation level** (**critical level**) (C-L or C/L) [*crit-i-cal in-stal-la-tion lev-el* (*crit-i-cal lev-el*) (c-l or c/l) ] a designated operational limitation prescribing a safe height for the installed vacuum breaker above the flood level rim of the fixture or receptacle served. In absence of physical mark on the device, indicating a height measurement reference point, the extreme bottom of the device shall be considered this height reference point.

**critical level marking** (*crit-i-cal level mar-king*) a point on a backflow prevention device or vacuum breaker that is usually stamped on the device by the manufacturer to specify the minimum elevation above the flood level rim of the fixture served. A plumbing code term.

**crockery** (*rock-er-y*) a product made with clay as the prime ingredient. Molded or shaped, baked or fired for firmness.

**crooked thread** (*crook-ed thread*) a thread on a pipe or nipple which is out of alignment. Sometimes this is done purposely to connect pipes which are out of alignment. Also called drunken thread.

**cross** (*cross*) a fitting used for connecting four pipes at right angles.

**cross connection** (*cross con-nec-tion*) **1.** a physical connection or arrangement between two otherwise separate (piping) systems, one of which contains potable water and the other water of questionable or unknown safety: such as steam, gas, or chemicals. There may be a flow from one system to the other, the direction of flow depending on the pressure differential between the two systems. **2.** Unintentional connection between two different systems, e.g. connections between hot and cold water piping.

**crossover fitting** (*cross-o-ver fit-ting*) **1.** a connection between two pipes in the same water supply system or between two water supply systems containing potable water. **2.** a fitting used to allow two different pipes to cross at a right angle in the same plane.

**cross connection control** (*cross con-nec-tion con-trol*) the use of assemblies, devices, methods and procedures to prevent contamination or pollution of a potable water supply through cross connection.

**cross connection, non-potable** (*cross con-nec-tion, non po-table*) any connection to a potable water supply system through which potable water is supplied to a service outlet through which contaminants can enter the potable water supply lines by back pressure or backsiphonage backflow.

**crossover** (*cross-over*) **1.** a connection between two pipes in the same water supply system or between two water supply systems containing potable water. **2.** a fitting used to allow two different pipes to cross at a right angle in the same plane.

**crossover fitting** (*cross-o-ver fit-ting*)

a fitting to allow pipes installed at the same elevation or parallel to cross. See RETURN OFFSET.

**cross valve** (*cross valve*) a valve fitted on a transverse pipe so as to open communication at will between two parallel lines of piping. Much used in oil and water pumping arrangements.

**crow-bar** (*crow-bar*) a tough iron bar, used as a lever, for prying and lifting. So-called from its pointed end, supposed to resemble a crow's beak.

**crown of trap** (*crown of trap*) that part of the trap in which the direction of flow is changed from upward to downward.

**crown saw** (*crown saw*) a saw for cutting round holes having its teeth at the edge of a hollow cylinder. Also called cylinder saw or hole saw.

**crown vent** (*crown vent*) a vent pipe connected at the topmost point in the crown of a trap.

**crown weir** (*crown weir*) the highest part of the inside portion of the bottom surface at the crown of a trap.

**crucible** (*cru-ci-ble*) a pot of refractory material used for melting or calcinating. A substance such as metal and ore which requires a high degree of heat.

**crucible steel** (*cru-ci-ble steel*) a high grade steel made by melting wrought iron in a crucible and adding charcoal, pig iron and some other substance rich in carbon. Used for cutlery, tools, dies, etc.

**crumb cup strainer** (*crumb cup strain-er*)  
See DUOSTRAINER.

**cryolite** (*cry-o-lite*) a mineral consisting of sodium-aluminum fluoride. Used for soldering copper and alloys when mixed with phosphoric acid. Also used for soldering aluminum bronze when mixed with barium chloride.

**C.S.** *Abbr.* for Commercial Standards.

**CSST** (*c-s-s-t*) Flexible Corrugated Stainless Steel Tubing with an exterior PVC covering that is used in natural gas and propane piping systems.

**C. to E.** *Abbr.* for Center to End.

**C. to F.** *Abbr.* for Center to Face.

**cubic feet per second** (*cu-bic feet per second*) speed measure of a unit of volume equal to a cube one foot long on each side every second. A flow rate of one cubic foot per second at a given point. *Abbr.* C.F.S.

**cubic foot of gas** (*cu-bic foot of gas*) the amount of gas which would occupy one cubic foot when a temperature of 60 °F is saturated with water vapor and under a pressure equivalent to that of thirty inches of mercury.

**Cu. Ft.** *Abbr.* for Cubic Foot/Feet.

**Cu. In.** *Abbr.* for Cubic Inch.

**cup joint** (*cup joint*) a pipe joint in which one end of the pipe is opened enough to receive the tapered end of the pipe to be joined. Used in joining lead pipe.

**cup sink** (*cup sink*) a small round cup shaped acid resistant receptacle six to eight inches in diameter across top. Generally used in chemical laboratories.

**cuprichloramine** (*cu-pri-chlor-a-mine*) a chemical mixture of copper sulfate, ammonia and chlorine. Used as an algicide.

**cup washer, leather, rubber** (*cup wash-er, lea-ther, rub-ber*) **1.** a gasket or washer in the form of a disc with a hole in its center and raised outer peripheral edge. **2.** shaped like a cup, may be of rubber or other material.

**curb box** (*curb box*) a device usually consisting of a long piece of pipe or tube-like casing placed over a curb cock through which a key is inserted to permit the operation of the curb cock. Also called buffalo box.

**curb box key** (*curb box key*) a long handled wrench to reach the stop cock in the ground at the base of a deep box.

**curb cock** (*curb cock*) a valve placed in a water service pipe usually at a point near the street curb. Also called tee head.

**curb valve** (*curb valve*) See CURB COCK.

**curtain and rod** (*cur-tain and rod*) reference to a shower curtain and its hanging or support assembly. A tubular rod with flanges on ends used to hang shower curtains with the aid of curtain pins.

**curved yarning iron** (*curv-ed yarn-ing iron*) a blunt caulking iron with an offset or curved blade.

**cuspidor** (*cus-pi-dor*) a receptacle for spitting; a spittoon. Also cuspidore. See FOUNTAIN.

**cut grooving** (*cut groov-ing*) the process of machining away material, providing a groove into a pipe to allow for a mechanical coupling to be installed. This process was invented by Victaulic Corp. in 1925. Cut Grooving is designed for standard weight or heavier wall thickness pipe.

**cutting oil** (*cut-ting oil*) **1.** oil used to lubricate pipe and bolt cutting equipment during the preparation of a thread so as to produce smooth threads. **2.** An oil or oily preparation used as a cutting fluid especially a water-soluble oil (such as a mineral oil containing a fatty oil)

**Cu. Yr.** *Abbr.* for Cubic Yard.

**C. V. or ck. v.** *Abbr.* for Check Valve.

**C. W.** *Abbr.* for City Water or Cold Water.

**cycle, regular** (*cycle, re-gu-lar*) See REGULAR CYCLE.

**cylinder lining** (*cyl-in-der lin-ing*) an internal sleeve inside an outer shell, i.e.: a sleeve in a pitcher pump in which the piston travels.

**cylinder saw** (*cyl-in-der saw*) See CROWN SAW.

# Dd

**D.** *Abbr.* for Diameter.

**damper regulator chain** (*damp-er reg-u-la-tor chain*) a chain used to connect a damper regulator and damper. Used on coal fired boilers and furnaces.

**dandy clean out** (*dan-dy clean out*) a straight piece of soil pipe having a threaded opening on the run with a brass removable plug.

**Dayton joint** (*day-ton joint*) See NORMANDY JOINT.

**dead end** (*dead end*) **1.** that part, or branch, of a drainage piping system which is without a free circulation of air. **2.** the extended portion of a pipe that is closed at the end opposite its connection to another pipe, pump, fixture, or other device. **3.** a branch leading from a soil, waste, vent pipe, building drain, or building sewer, and terminating at a developed length of two feet or more by means of a plug, cap, or other closed fitting, except piping serving as cleanout extensions to accessible areas.

**de-aerator** (*de-aer-a-tor*) a drain, waste, and vent fitting designed to relieve pressures within the stack(s).

**decalescence** (*de-ca-les-cense*) a decrease in temperature that occurs while heating metal through a range in which a change in a structure occurs.

**Dec. Lgth.** *Abbr.* for Decrease Length.

**deck** (*deck*) See FLOOD LEVEL RIM.

**deck mounted** (*deck mount-ed*) a pipe applied atmospheric vacuum breaker that allows a maximum water rise of ½ inch (12.7 mm) in its discharge piping when the inlet of the device is subjected to a vacuum of less than, or equal to, 25 inches (84.5 kPa) of mercury.

**deep seal trap** (*deep seal trap*) a term applied to a trap having a water seal of four inches or more.

**deferrization** (*de-fer-ri-zation*) in water treatment, the removal of soluble compounds of iron from water.

**Deg.** *Abbr.* for degree.

**degree** (*de-gree*) a unit of a temperature scale.

**degree of hazard** (*de-gree of haz-ard*) derived from the evaluation of conditions within a water system which can be classified as either a “health hazard” or “non-health hazard.”

**demand** (*de-mand*) the flow necessary to satisfy system requirements.

**demineralization** (*de-min-er-al-ization*) the removal from water of those dissolved mineral constituents which cause it to be unsatisfactory for domestic or industrial use.

**denitrification** (*de-ni-tri-fi-ca-tion*) **1.** act, or process, of denitrifying. **2.** a process by which nitrates and nitrites are reduced. It is commonly brought about in soil and sewage by denitrifying bacteria resulting in the escape of nitrogen into the air.

**dental cuspidor** (*den-tal cus-pi-dor*) a water flushed device to receive fluids from the mouth. Used in dental offices.

**dental lavatory** (*den-tal lav-a-tory*)

a water and waste connected fixture primarily for dental hygiene practices.

**dental unit** (*den-tal unit*)

a plumbing fixture which includes a cuspidor used for the examination and treatment of a person's teeth.

**detergent** (*de-ter-gent*)

any of numerous synthetic water soluble, or liquid organic, preparations that are chemically different from soaps but resemble them in the ability to emulsify oils and hold direct in suspension.

**detergent brush** (*de-ter-gent brush*)

a hose and brush assembly with a detergent supply for cleaning utensils and other services for attachment to a faucet with a built-in diverter.

**detritus** (*de-tri-tus*)

the sand, grit, and other coarse material removed by differential sedimentation in a relatively short period of detention.

**developed length** (*de-vel-op-ed length*)

1. a length of a pipeline measured along the centerline of the pipes or fittings. 2. the linear measurement of a part, such as a pipe or bar that includes the length of the useful threads or extensions necessary to yield the length that is needed for a particular function. 3. the length of a nipple, or piece of pipe, needed to connect two fittings for a specified distance.

**developing tank** (*de-vel-op-ing tank*)

a fixture, a tank used to develop film, x-rays, etc.

**D. F.** *Abbr.* for Drinking Fountain.

**D. H.** *Abbr.* for Double Hub.

**diag.** *Abbr.* for Diagram.

**diam.** *Abbr.* for Diameter.

**diameter** (*di-am-e-ter*)

1. the length of a straight line through the center of an object; thickness. 2. a chord passing through the center of a figure.

**diamond drill bits** (*di-a-mond drill bits*)

a bit on a diamond drill which is a type of rotary drill and has a cutting edge faced with poor quality diamonds and is used for boring into solid rock.

**diamond point or lozenge chisel** (*di-a-mond point or loz-enge chi-sel*)

has a point that is ground at an angle across diagonal corners. Useful in square and angled corners, grooves and other close places where material must be removed.

**diaphragm packing** (*di-a-phragm pack-ing*)

a thin membrane separation between two cavities or a cavity and space held in position by other substance as in a groove.

**diatomaceous earth** (*di-a-to-ma-ce-ous earth*)

See DIATOMITE.

**diatomite** (*di-a-tom-ite*)

a light friable siliceous material derived chiefly from diatom remains and used especially as a filter.

**die** (*die*)

1. a tool for cutting external threads. 2. an internal screw used for cutting an outside thread.

**die chaser** (*die cha-ser*)

a threaded section of a screw-cutting die.

**die head** (*die head*)

the device which carries the threading dies in a screw-cutting machine.

**die stock** (*die stock*)

a device to hold dies used for cutting threads on pipes or on rods; may be adjustable for varying sizes or may be solid for one size thread.

**dielectric fittings** (*di-e-lec-tric fit-tings*)

1. a unit, or units, which interrupt the continuity of electrical connection. 2. to separate; to cause non-continuity electrically. See CONNECTORS.

**dielectric unions** (*di-e-lec-tric un-ions*)

1. a union used to join dissimilar pipe materials to prevent the flow of galvanic current 2. a union used to isolate sections of pipe from stray currents which would cause accelerated corrosion of the pipe system.

**dif.** *Abbr.* for Difference.

**differential pressure** (*dif-fer-en-tial pres-sure*) See PRESSURE, DIFFERENTIAL.

**diffuser** (*dif-fus-er*) any of a variety of devices, usually tubular with holes, or openings, provided in the wall or end, used in water tanks to disperse incoming fluid in a desired pattern. Used in water heaters to prevent, or control, turbulence of inbound cold water in the heated water.

**digester** (*di-ges-ter*) **1.** a covered tank in which digestion of sewage sludge is carried out. **2.** In plumbing, a tank for storage of the sedimentation of sewage to permit aerobic decomposition.

**digestion mesophytic** (*di-ges-tion mes-o-phyt-ic*) digestion by biological action at or below 113 °F.

**digestion thermophilic** (*di-ges-tion ther-mo-phil-ic*) digestion carried on at a temperature generally between 113 °F (44.8 °C) and 145 °F (62.5 °C).

**dilution** (*di-lu-tion*) the process of disposing of sewerage by allowing it to mix with a large volume of water.

**dip of trap** the lowest portion of the inside top surface of the channel through the trap.

**dip tube** (*dip tube*) **1.** a pipe, or tube, inside a reservoir to convey the incoming water to, or near, the bottom of the container, as in a water storage tank. **2.** A water inlet pipe inside a water storage tank of the heated or non-heated type. See DOWN COMER PIPE.

**direct cross connection** (*di-rect cross con-nec-tion*) **1.** a continuous, enclosed interconnection or cross connection so that the flow of fluid from one system to the other can occur. **2.** any arrangement of pipes, fixtures or devices connecting a potable water supply directly to a non-potable source.

**direction of flow** (*dir-ec-tion of flow*) **1.** the path a liquid follows through an assembly, as mandated by the manufacturer's design specifications. **2.** the intended, or designed, flow path in a piping system of a gas, fluid or solid or a combination of a gas, fluid and/or solid.

**disch.** *Abbr.* for Discharge.

**discharge** (*dis-charge*) **1.** to send, or pour, fourth. **2.** to emit. **3.** to release as from confinement.

**discharge capacity** (*dis-charge ca-pac-i-ty*) the carrying capacity in gallons per minute (GPM) or liters per second (L/s) of the air gap device, without spillage of water from the air gap to the atmosphere.

**discharge fitting** (*dis-charge fit-ting*) any component installed downstream of the shut-off assembly.

**discharge valve or control valve** (*dis-charge valve or con-trol valve*) a valve for reducing, or increasing, the flow in a pipe, as opposed to a stop valve.

**disc seat** (*disc seat*) a valve in which the seat is shaped to allow a disc shaped stem, or closure, member to fit closely.

**dishes** (*dish-es*) multi-use eating and drinking utensils adaptable to machine washing which are used in the preparation, serving and consumption of food.

**dishwasher** (*dish-wash-er*) an appliance or machine for washing dishes.

**dishwasher discharge connection** (*dish-wash-er dis-charge con-nec-tion*) an opening which permits the discharge from a domestic kitchen dishwasher to be drained into a disposer hopper.

**dishwasher, commercial** (*dish-wash-er, co-mmer-cial*) See COMMERCIAL DISHWASHING MACHINE.

**dishwasher, household** (*dish-wash-er, house-hold*) See HOUSEHOLD DISHWASHER.

**dishwasher, commercial or domestic** (*dish-wash-er, com-mer-cial or do-mes-tic*) an appliance which, with the aid of water, automatically washes, rinses and dries (where drying process is included) dishware, glassware and cutlery and most cooking utensils by chemical, mechanical or electrical means and discharges to the plumbing drainage system.

**dishwasher discharge connection** (*dish-wash-er dis-charge con-nec-tion*) an opening which permits the discharge from a domestic kitchen dishwasher to be drained into a disposer hopper.

**disinfection** (*dis-in-fec-tion*) a process of destroying disease germs or other harmful microorganisms (ordinarily not bacteria spores) by means of an agent that is free from infection; usually a chemical agent.

**displacement** (*dis-place-ment*) the volume or weight of a fluid such as water displaced by a floating body.

**displacement pump** (*dis-place-ment pump*) a pump, such as an air lift, that raises or transfers a fluid by direct displacement with no transformation of energy due to the fluids motion into pressure.

**disposal unit** (*dis-pos-al u-nit*) **1.** in plumbing, a device or system intended to reduce particle size and shape of material to facilitate entrance into the drainage system. **2.** a portion of a sewage treatment operation. *Abbr.* D.U.

**distillation** (*dis-til-la-tion*) a process of raising the temperature of water, or other liquids, to a boiling temperature, and condensing the resultant vapor to liquid form by cooling. It is used to remove certain substances from a liquid, or to obtain a pure liquid from one which contains impurities.

**distilled water** (*dis-tilled wa-ter*) water that has been purified by removal of the suspended solids and organisms through gasifying the liquid and then recovering the liquid through cooling. *Abbr.* Dis. W.

**distribution box** (*dis-trib-u-tion box*) a container-like device installed between a septic tank and the means used to dispose of its effluent so that all branches of the sub-surface disposal field receive approximately the same amount of material.

**distribution field** (*dis-trib-u-tion field*) that portion of a septic field in a septic system which diverts the outfall liquid from the tank.

**distribution system** (*dis-trib-u-tion system*) refers to all pipes, fittings and fixtures used to convey liquid or gas from one point to another.

**Dis. W.** *Abbr.* for Distilled Water.

**diverter** (*di-ver-ter*) a device in a faucet in which water flow can be automatically directed from the faucet spout to a spray or other attachment.

**divider** (*di-vid-er*) drafting instruments used to divide lines into equal parts. It also transfers dimensions from a ruler to a map or drawing. Measures and plots small distances between two points more accurately than a ruler.

**Di. W.** *Abbr.* for Deionized Water.

**dn.** *Abbr.* for Down.

**dog-earing** (*dog-ear-ing*) the procedure of folding up the sides and ends of a metal pan and turning ,or folding, the metal at the corners to form an angle without cutting the metal.

**dom.** *Abbr.* for Domestic.

**domestic dishwasher** (*do-mes-tic dish-wash-er*) a mechanical device connected to a water supply and a waste system designed to wash table settings, dishes and utensils used in residential occupancy.

**domestic water applications** (*do-mes-tic wa-ter ap-pli-ca-tions*) the normal areas where hot water is utilized in potable systems such as sinks, lavatories, showers and tubs, washing machines, dishwashers, etc.



**dome, gas** (*dome, gas*) See GAS DOME.

**domestic sewage** (*do-mes-tic sew-age*) the waterborne wastes derived from ordinary living processes. Also called sanitary sewage.

**dope** (*dope*) See PIPE THREAD DOPE.

**dormant** (*dor-mant*) having biological activity suspended, as being in a state of suspended animation.

**dosing tank** (*dos-ing tank*) a water tight tank in a septic system placed between the septic tank and the distribution box and equipped with a pump or automatic siphon designed to discharge sewage intermittently to a disposal field. This is done so that rest periods may be provided between discharges.

**double action pump** (*dou-ble ac-tion pump*) a pumping machine in which suction, or pressure, is created by movement of a piston, plug or plunger in each direction of motion. Compare to single action pump.

**double-bend fitting** (*dou-ble-bend fit-ting*) a pipe fitting shaped like the letter "S".

**double caulking iron** (*dou-ble caulking iron*) a combination tool for caulking a joint with two separate ends. One is used at the outer periphery of the sealant material and a reverse tool is used on the inner periphery of the sealant material.

**double check detector backflow prevention assembly** (*dou-ble check de-tec-tor back-flow pre-ven-tion as-sembly*) a specially designed assembly composed of a line-size approved double check valve assembly with a specific bypass water meter and a meter-sized approved double check valve assembly. The meter shall register accurately for only very low rates of flow and shall show a registration for all rates of flow. This assembly shall only be used to protect against a non-health hazard, such as a pollutant.

**double check valve assembly-DCVA** (*dou-ble check valve as-sem-bly-d-c-v-a*) an assembly composed of two independently acting approved check valves, including closing shut-off valves at each end of the assembly and fitted with properly located test cocks. Shall only be used to protect against a non-hazard pollutant.

**double extra heavy pipe** (*dou-ble ex-tra heav-y pipe*) the term used to denote that a given pipe has a wall thickness which is approximately twice the weight, or thickness, of extra-heavy pipe. See EXTRA HEAVY.

**double extra strong pipe** (*dou-ble ex-tra strong pipe*) same as double extra heavy pipe.

**double hanger** (*dou-ble hang-er*) a device used to support more than one pipe or appliance; sometimes called twin or multiple hanger.

**double hub soil pipe** (*dou-ble hub soil pipe*) soil pipe made with a hub on both ends of the length of pipe. Generally referring to cast iron soil pipe. See CAST IRON SOIL PIPE; HUB.

**double offset** (*dou-ble off-set*) two changes in direction installed in succession or series in continuous pipe.

**double waste and vent** (*dou-ble waste and vent*) See UNIT VENT.

**down comer pipe** (*down com-er pipe*) a pipe in which the flow is substantially downward. About 1700 A.D. since abandoned. See DIP TUBE.

**downspout** (*down-spout*) 1. the vertical portion of a rain-water pipe. 2. a pipe leading downward to carry off rain water from a roof. *Abbr.* D.S. See CONDUCTOR; CONDUIT; LEADER.

**dr.** *Abbr.* for Drain or Drainage.

**draft controls** (*draft con-trols*) used primarily on coal-fired domestic hot water, steam, and hot water heating boilers. The temperature or pressure regulates the draft.

**draft diverter** (*draft di-vert-er*) a device to diminish velocity and resultant extinguishing of gas flames.

**draft hood** (*draft hood*) a device placed in, and made a part of, the vent connector from an appliance or in the appliance itself, which is designed to: (a) assure the ready escape of the products of combustion in the event of backdraft; (b) prevent a back draft from entering the appliance; and c. neutralize the effect of stack action of the chimney or gas vent upon the operation of the appliance.

**drain** (*drain*) any pipe which carries waste water, or waterborne wastes, in a building drainage system. *Abbr.* Dr.

**drain clean rod** (*drain clean rod*) a non-flexible device, or spring, of the flat, or coil, type used to dislodge pipe obstruction.

**drain cleaner** (*drain clean-er*) any of a number of chemical preparations used for cleaning drains.

**drain cleaning machine, electric** (*drain clean-ing ma-chine, e-lec-tric*) an electrically powered device to bore or burr to remove obstructions in drain or waste lines.

**drain cock** (*drain cock*) See DRAIN VALVE; WATER HEATER DRAIN VALVE.

**drain field** (*drain field*) the area of a system of piping arranged in troughs for the purpose of disposing of unwanted liquid waste.

**drain outlet** (*drain out-let*) See TERMINAL OUTLET.

**drainage, cast iron soil pipe fittings** (*drain-age, cast i-ron soil pipe fit-tings*) See FITTING, DRAINAGE.

**drainage fitting** (*drain-age fit-ting*) See FITTING, DRAINAGE.

**drainage fixture unit** (*drain-age fix-ture unit*) *Abbr.* DFU. See FIXTURE UNIT, DRAINAGE.

**drainage system** (*drain-age sys-tem*) includes all the piping within public or private premises, which conveys sewage, rain water, or other liquid wastes to a legal point of disposal. It does not include the mains of public sewer systems or private or public sewage treatment or disposal plants.

**drainage system air break** (*drain-age sys-tem air break*) a piping arrangement in which a drain from a fixture, appliance, or device discharges indirectly into another fixture, receptacle, or interceptor at a point below the flood rim of the receptacle installed so as to prevent backflow or siphonage.

**drainage system air gap** (*drain-age sys-tem air gap*) See AIR GAP, DRAINAGE SYSTEM.

**drainage system below sewer** (*drain-age sys-tem be-low sew-er*) See BUILDING SUBDRAIN.

**drainage system, building gravity** (*drain-age sys-tem, build-ing grav-i-ty*) See BUILDING DRAINAGE SYSTEM GRAVITY.

**drainage system, storm** (*drain-age sys-tem, storm*) system which is used for conveying rain water, surface water, condensate, cooling water, or similar liquid wastes, exclusive of sewage or industrial waste, to the storm sewer or other legal place of disposal.

**drainpipe** (*drain-pipe*) a large pipe used to carry off water, sewage, etc.

**drainpipe solvent** (*drain-pipe sol-vent*) a chemical used in the alleviation of sluggish drains.

**draintile** (*drain-tile*) 1. piping arranged to either gather or dispel liquids. 2. a pipe arranged in the subsoil to receive and disperse underground water. Does not include any other drainage or waste liquids.

**drain valve** (*drain valve*) a valve, usually installed at or near the lowest part of a storage vessel, through which a controlled flow of liquid, usually water, may be drawn. Also called drain cock, boiler drain, draw-off. See WATER HEATER DRAIN VALVE.

**draw cock** (*drain cock*) See PET COCK.

**drawing knife** (*draw-ing knife*) knife used for cutting thin sheet lead (up to ten pounds) A straight handled knife with a hook on the end for a blade. A pocket knife or knife similar to a linoleum cutting knife may be substituted. See HACKING KNIFE.

**draw-off** (*draw-off*) See BOILER DRAIN.

**draw oil cock** (*draw oil cock*) See INTERCEPTOR.

**dresser** (*dres-ser*) a tool used in shaping metal, usually of lead, lead alloy, soft copper or similar material. See FLAT DRESSER; ROUND DRESSER.

**drier or dryer** (*dri-er or dry-er*) a power driven machine for drying fabrics by evaporation.

**drift** (*drift*) to reform or form into shape.

**drift plug** (*drift plug*) a wooden, lead-working tool used to drift, or force, through lead pipe to take out any dents, or uneven places in the lead pipe previous to working. Usually made of dogwood, boxwood or lignum vitae. See BOBBIN.

**drill** (*drill*) **1.** to make a rounded hole, or cavity, in a solid by removing bits with a rotating drill. To make, or excavate, a hole in a solid material with a drill. **2.** to drive a hole in, puncture, or perforate as if with a drill; pierce, penetrate, or drive deep into the interior of. **3.** to pen or sink (a well) in the earth by striking a spot repeatedly with a sharp pointed instrument, or key, using a rotary drill. **4.** an instrument with an edged, or pointed, end used for making holes in hard substances: specifically, a tool that cuts with its end by revolving or by succession of blows.

**drill press** (*drill press*) consists of a heavy metal base with a cylindrical steel column rising from the back to support the drill press "head". The head contains the motor, the step pulleys that regulate speed, and the spindle that carries the drill chuck to its lower end.

**drill stand** (*drill stand*) See DRILL PRESS.

**drilled strainer** (*drilled strain-er*) the cover of a drain opening which has been perforated by holes drilled or punched in a pattern.

**drinking fountain** (*drink-ing foun-tain*) a fixture with a nozzle delivering a stream or jet of water used for drinking water especially one with an upward jet enabling one to drink directly without use of a cup. Types: (a) fountain-cuspidor combination; (b) semi-recessed; (c) wall-hung; (d) pedestal. See BUBBLER; FOUNTAIN.

**drip pan** (*drip pan*) on a water heater, a receptacle located below the burner(s) for the purpose of collecting water condensation from the flue gases.

**drive cap** (*drive cap*) a cavity device placed over a pipe to protect the pipe end being driven, (i.e.: well pipe being driven).

**drive pipe or well point** (*drive pipe or well point*) a pipe with a sharp edge for driving short distances into the solid ground as to reach a water-bearing stratum or to insert into concrete piles.

**drive pipe hook** (*drive pipe hook*) a wire, or thin metal device, in a U shape which has sharp prongs, or spike-like ends, which are driven into a building members to support pipes, conduits, etc.

**drive point** (*drive point*) a pointed and perforated pipe at the lower end of a vertical pipe driven or inserted into the ground, (i.e.: a well point of a driven well).

**drop ell** (*drop ell*) an ell with lugs on the sides by which it can be attached for support.

**drop head ratchet** (*drop head ratchet*) a ratchet tool (handle) in which interchangeability of thread-cutting members are used.

**drop tee** (*drop tee*) a tee with lugs on the sides by means of which it can be attached for support.

**drop tube** (*drop tube*) See DIP TUBE.

**dross** (*dross*) **1.** the solid scum that forms on the surface of a metal, as lead or antimony, when molten or melting; largely as a result of oxidation but sometimes because of the rising of dirt and impurities to the surface. **2.** waste, or foreign matter, mixed with a substance or left as a residue, after the substance has been used or processed.

**drum trap** (*drum trap*) a trap consisting substantially of a cylinder with its axis vertical. The cylinder is larger in diameter than the inlet or outlet pipe, and is usually about four inches in diameter with smaller sized inlets and outlets. *Abbr.* D.T.

**drunken thread** (*drunken thread*) See CROOKED THREAD.

**dry sewer** (*dry sew-er*) cast iron sewer pipe from the house to the curb line and installed at the time of construction under the floor in anticipation of main laterals to be added at future date.

**dry vent** (*dry vent*) a vent that does not carry water or waterborne wastes.

**dry well** (*dry well*) **1.** a well constructed similar to a water well but intended to receive and dispose of sewage by dispersion into and absorption by surrounding underground material. **2.** a hole excavated in porous ground and usually covered and filled with loose gravel or rubble or walled (with brick or stone) to receive drainage water and allow it to percolate away. See CESSPOOL.

**dryer** (*dry-er*) a power driven machine for drying fabrics by evaporation.

**D.S.** *Abbr.* for Downspout.

**D.T.** *Abbr.* for Drum Trap.

**D.U.** *Abbr.* for Disposal Unit.

**dual check valve assembly** (*du-al check valve as-sem-bly*) an assembly composed of two independently acting check valves, internally forced loaded to a normally closed position, and designed and constructed to operate under intermittent or continuous pressure conditions. Shall be considered suitable for use only where there is no health hazard. ASSE 1024.

**dual check valve backflow preventer** (*du-al check valve back-flow pre-vent-er*) a device composed of two independently acting check valve members internally forced loaded to a normally closed position, designed and constructed to operate under intermittent or continuous pressure conditions; the removal of one checking valve member shall not negate the operation of the remaining check valve member; shall be considered suitable for use only where there is no health hazard.

**dual check valve backflow preventer assembly** (*du-al check valve back-flow pre-vent-er*) an assembly composed of a dual check valve backflow preventer device at each end of the assembly.

**dual vent** (*du-al vent*) a vent serving more than one inlet. See COMMON VENT; UNIT VENT.

**duct** (*duct*) usually an underground pipe, or tubular, runway for carrying an electric power line, telephone cables, or other conductors. Today's use involves above, as well as below, ground pipes, etc.

**dummy** (*dum-my*) lead working tool consisting of a one-quarter inch spring steel rod with one end bent into a small loop upon which is cast a lead weight; used in bending lead waste pipe three inches in diameter and larger by the bobbin method; employed to boss the lead. See BOBBIN.

**duostrainer** (*du-o-strain-er*) a double strainer, one above the other. A strainer within a strainer to prevent large particles from entering the fixture drain. Also called a crumb cup strainer.

**Durham fitting** (*dur-ham fit-ting*) See DRAINAGE FITTING.

**Durham System** (*dur-ham sys-tem*) a term describing a soil or waste pipe system where all piping is of threaded pipe, tubing or other rigid construction using recessed drainage fittings corresponding to the types of piping.

**duriron** (*dur-iron*) a high silicon alloy that is resistant to practically all corrosive wastes. The silicon content is approximately fourteen and one-half percent and the acid resistance is in the entire thickness of the metal.

**duriron application** (*dur-iron ap-plica-tion*) duriron is used throughout the chemical and allied industries whenever corrosives are handled. They are used extensively for handling mineral acids in manufacturing explosives; petroleum refining; metal cleaning or pickling; electroplating; textile manufacture; paper making; beverage making; metal processing; paint and pigment manufacturing; sulfuric and nitric acid production; dye and color manufacturing; fertilizer production; sewage disposal; water-treating plants; and many others. These alloys are especially suitable for services which require good resistance to a variety of chemicals. Duriron pipe and laboratory equipment is extensively used in hospitals, colleges, industrial chemical laboratories, and photo-engraving plants where a variety of different corrosive wastes are handled each day. Under these adverse conditions, many years successful service can be expected with the pipe usually remaining in service as long as the building.

**dutchman** (*dutch-man*) a lead nipple, or piece(s), not more than about one inch long, that is placed in a wiped joint to make up the desired length in joining two pipes which are too short. Slang.

**D.W.** *Abbr.* for Dishwasher.

**Dwg.** *Abbr.* for Drawing.

**D.W.V.** *Abbr.* for Drainage, Waste and Vent.

**dynamic** (*dy-nam-ic*) of, or relating, to power and having the characteristic of continuous movement.

**dynamic head** (*dy-nam-ic head*) the head of water necessary to produce velocity of flow.

**dynamic pressure** (*dy-na-mic pres-sure*) the pressure on a surface at which a flowing fluid is brought to rest, in excess of the pressure on it when the fluid is not flowing.

# Ee

**earth auger bit** (*earth au-ger bit*) a tool for drilling or boring in earth.

**earth, diatomaceous** (*earth, di-a-to-ma-ceous*) See DIATOMITE.

**earthenware basin** (*earth-en-ware ba-sin*) a lavatory made of china (clay). See LAVATORY.

**earthenware closet combination** (*earth-en-ware clos-et com-bi-na-tion*) a water closet made of china (clay). See WATER CLOSET.

**earthenware urinal** (*earth-en-ware u-ri-nal*) **1.** a fixture made of fired clay and coated with a glass-like glazed surface. **2.** a urinal made of china (clay) See URINAL.

**eave** (*eave*) **1.** the lower border of a roof that overhangs the wall. **2.** the corresponding overhang of thatch. Also referred to as a trough. Usually eaves.

**eaves trough or eave trough** (*eaves trough or eave trough*) a gutter along the eaves. SEE LAP JOINT, EAVES TROUGH.

**eccentric bushing** (*ec-cen-tric bush-ing*) See REDUCER, ECCENTRIC.

**eccentric fitting** (*ec-cen-tric fit-ting*) a fitting in which the center line of the run is offset in the fitting. See REDUCER, ECCENTRIC.

**eccentric fuller stem** (*ec-cen-tric ful-ler stem*) **1.** the operating stem of a faucet. **2.** a crank-like unit. **3.** two cylindrical units in a single plain, but offset to each other.

**E.C.O.** *Abbr.* for Energy Cut-off Valve.

**E.-E.** *Abbr.* for End to End. See E. TO E.

**E.E.W.** *Abbr.* for Emergency Eye Wash Fountain.

**effective opening** (*ef-fec-tive o-pen-ing*)

**1.** the minimum cross-sectional area at the point of water supply discharge, measured or expressed in terms of: (a) the diameter of a circle, or (b) if the opening is not circular, the diameter of a circle of equivalent cross-sectional area. **2.** for faucets and similar fittings, the effective opening shall be measured at the smallest orifice in the fitting body or in the supply piping to the fitting.

**efflorescence** (*ef-flo-res-cense*) the giving off of moisture upon exposure to the atmosphere.

**effluent** (*ef-flu-ent*) **1.** the liquid outflow from any treatment tank or device. **2.** liquid discharged as waste (as water used in an industrial process or sewage) **3.** liquid such as water or sewage, flowing from or out of a treatment basin or tank. **4.** a thing that flows out or forth specifically: (a) a stream flowing out of a body of water, (b) the outflow of a sewer, sewage tank, etc.

**E.H.C.I.** *Abbr.* for Extra-Heavy Cast Iron.

**ejectors** (*e-jec-tors*) a device operated either electrically, by other power or other mechanical means so constructed as to elevate liquids from a lower level to a point of discharge.

**el.** *Abbr.* for Elevation.

**elbow** (*el-bow*) ell, a fitting with parts that form a 90° bend. See STREET ELL.

**elbow - 45 degrees** (*el-bow - 45 de-grees*) an angular pipe fitting of 45°.

**elec.** *Abbr.* for Electric.

**electric drill** (*e-lec-tric drill*) a tool or machine for drilling or boring holes in metal, stone, or other hard substance.

**electric hacksaw** (*e-lec-tric hack-saw*) an electrically driven saw usually hand held, sometimes referred to as a sabre saw. Interchangeable blades are used allowing the operator to cut through wood or steel. SABRE SAW.

**electric hammer** (*e-lec-tric ham-mer*) an electrically driven hammer used in riveting, caulking, chipping concrete or mortar. For driving threaded inserts into concrete for the purpose of hanging or supporting pipe, etc.

**electric pipe thawer** (*e-lec-tric pipe thaw-er*) an electrically energized device which causes a flow of current sufficient to heat the pipe which in turn heats the entrained substance.

**electric sewer machine** (*e-lec-tric sewer ma-chine*) a machine, powered by electricity, used for dislodging sewer pipe obstruction. See SEWER ROD.

**electric thermostat** (*e-lec-tric ther-mo-stat*) a device which senses changes in temperature and controls electrically, by means of separate components, the flow of fuel to the burner(s) to maintain selected temperatures.

**electric type automatic valve** (*e-lec-tric type au-to-mat-ic valve*) a valve device actuated by electrical energy.

**electric water cooler** (*e-lec-tric wa-ter cool-er*) a drinking water fountain operated by electrical energy which is used to make, store, and deliver refrigerated water. *Abbr.* E.W.C.

**electro-galvanize** (*elec-tro-gal-va-nize*)  
See ELECTRO-PLATE.

**electrolysis** (*e-lec-trol-y-sis*) the happenings in electrolyte. The process of producing chemical changes by passage of an electric current through an electrolyte (as in a cell) the ions present carrying the current

by migrating to the electrodes where they may form new substances (as in the deposition of metals or the liberation of gases)

**electrolyte** (*e-lec-tro-lyte*) **1.** a non-metallic electric conductor (such as a liquid) in which current is carried by the movement of ions instead of electrons, with the liberation of matter at the electrode. **2.** a liquid, electrical conductor.

**electro-plate** (*elec-tro-plate*) to plate or cover a substance with a metallic coating by use of electrolysis. See ELECTROLYSIS.

**elevation** (*el-e-va-tion*) the height to which something is elevated above a reference point or above the ground.

**ell** (*ell*) See ELBOW.

**elutriation** (*e-lu-tri-a-tion*) a process of sludge conditioning in which certain constituents are removed by successive decontations with fresh water or plant effluent, thereby reducing the demand for conditioning chemicals.

**embalming table** (*em-balm-ing ta-ble*) a table used to embalm a body. See AUTOPSY TABLE.

**emergency eye wash fountain** (*e-mer-gen-cy eye wash foun-tain*) a specially shaped plumbing fixture provided to facilitate the immediate flushing of the human eye or eyes with potable water. *Abbr.* E.E.W.

**emergency pipe clamp** (*e-mer-gen-cy pipe clamp*) **1.** a device to encapsulate a pipe as an emergency repair. **2.** a curved piece of metal clamped around a pipe and secured by bolts.

**emery cloth** (*em-er-y cloth*) cloth covered with emery grit used to clean and polish metal surfaces.

**emissions** (*e-mis-sions*) blowback of water, or gas, into occupied spaces due to positive pressure.

**enamel** (*enam-el*) **1.** to cover or inlay with enamel. **2.** to beautify with a colorful surface. **3.** to form a glossy surface on an opaque vitreous composition applied by fusion to the surface of metal, glass or pottery. **4.** a surface that resembles enamel. **5.** a usually opaque or semi-opaque, vitreous composition applied by fusion to the surface of metal, glass or pottery for ornamentation, protection or as a basis for protection. **6.** a paint that flows out to a smooth hard coat when applied, that contains especially prepared vehicle instead of raw oil, and that usually dries with a glossy appearance. **7.** the coating of carbonized glue or shellac that forms the acid resisting portion of a metal photo-engraving plate.

**enameled grease trap** (*enam-eled grease trap*) **1.** a plumbing unit of a waste and drainage system. **2.** a vitrified coated grease trap.

**enameled ware** (*enam-eled ware*) a plumbing fixture coated with enamel.

**end to center** (*end to cen-ter*) a means of clarifying, in plumbing design, the basis for a measurement.

**end to end** (*end to end*) a means of clarifying, in plumbing design, the basis for a measurement.

**end wrench** (*end wrench*) a tool having parallel jaws which are open at one end. See WRENCH.

**energy cut-off valve** (*en-er-gy cut-off valve*) a valve designed to automatically shut off energy supply, i.e.: gas or a gas water heater. Considered a safety device. *Abbr.* E.C.O.

**eng.** *Abbr.* for Engineer.

**ensemble** (*en-sem-ble*) group, complete unit, or composed of segments to constitute a group or organic unity.

**equip.** *Abbr.* for Equipment.

**equipment mounted** See DECK MOUNTED.

**equivalent length** (*equiv-a-lent length*) the length of straight pipe of a specific diameter that would produce the same frictional resistance of a particular fitting or valve or a line comprised of pipe and fittings.

**escharichia coli** (*esch-e-rich-ia co-li*) a genus of aerobic gram-negative, rod-shaped bacteria that forms acid and gas on many carbohydrates and that include forms normally present in the human and various other vertebrate intestines which are pathogenic and indicative of fecal contamination when found in water and other forms which typically occur in soil and water.

**escutcheon** (*es-cutch-eon*) a flange used on a pipe to cover a hole or opening in a floor or well through which the pipe passes.

**essentially non-toxic transfer fluids** (*essen-tial-ly non-tox-ic trans-fer flu-ids*) fluids have a Gosselin rating of one, including: propylene glycol; mineral oil; polydimethylsiloxane; hydrochlorofluorocarbon, chlorofluorocarbon and hydrofluorocarbon refrigerants; and FDA approved boiler water additives for steam boilers.

**essentially toxic transfer fluids** (*essen-tial-ly tox-ic trans-fer fluids*) fluids having a Gosselin rating of two or more, including: soil, waste or gray water; ethylene glycol; hydrocarbon oils; ammonia refrigerant and hydrazine.

**ethyl or ethine** (*eth-yl or eth-ine*) See ACETYLENE.

**ethyl chloride** (*eth-yl chlo-ride*) **1.** a gas that liquifies under pressure, used as a local anesthetic. **2.** a refrigerant, and a solvent or agent in various chemical reactions.

**ethyl chloride refrigerating system** (*eth-yl chlo-ride re-frig-er-at-ing sys-tem*) a refrigerating or cooling system of ethyl chloride.

**E. to C.** *Abbr.* for End to Center.

**E. to E.** *Abbr.* for End to End.



**eutectic salts** (*eu-tec-tic salts*) a group of materials that melt at low temperature absorbing large quantities of heat. Used in some types of solar collectors.

**eutrophic** (*eu-troph-ic*) rich in dissolved nutrients but frequently shallow and with seasonal oxygen deficiency, said of lakes. See OLIGOTROPHIC.

**eutrophication** (*eu-troph-ic-a-tion*) the process of becoming more eutrophic either as a natural phase in the maturation of a body of water or artificially (as by fertilization).

**evaporation** (*e-vap-o-ra-tion*) the change by which any substance is converted from a liquid, or solid, state into a vapor and is carried off in that vapor.

**evapotranspiration** (*e-vap-o-trans-pi-ration*) loss of water from the soil both by evaporation and by transpiration from the plants growing thereon.

**E.W.C.** *Abbr.* for Electric Water Cooler. See WATER COOLER.

**E.W.F.** *Abbr.* for Eye Wash Fountain. Sometimes called emergency eye wash fountain.

**excavation** (*ex-ca-va-tion*) the action, or process, of forming a hole, tunnel or cavity by cutting, digging or scooping out earth, sand or other material.

**excess air** (*ex-cess air*) **1.** air which passes through the combustion chamber and the appliance flues in excess of that which is required for complete combustion. **2.** more than sufficient.

**exchange, base** (*ex-change, base*) the replacement of the sodium in a complex compound called a zeolite by calcium and magnesium cations. If brought in contact with their solutions in the zeolite process of water softening, the reaction is reversible if the concentrations are changed, following the law of mass action.

**exfoliation** (*ex-fo-li-a-tion*) corrosion that proceeds laterally from the site of initiation along planes parallel to the surface, generally at grain boundaries forming corrosion products that force metal away from the body of the material giving rise to a layered appearance.

**existing work** (*ex-ist-ing work*) referred to in the plumbing code as a plumbing system, or any part, installed prior to the effective date of the most recent code.

**expansion bolt** (*ex-pan-sion bolt*) a bolt equipped with a split casing which acts as a wedge; used for attaching to brick or concrete.

**expansion joint** (*ex-pan-sion joint*) **1.** a telescopic pipe connection. **2.** a coupling (as of steam pipes) designed to permit an endwise movement that compensates for expansion or contraction resulting from temperature changes. **3.** the hydraulic action or jack created in a plumbing system by the minus or plus pressures.

**expansion reamer** (*ex-pan-sion ream-er*) a reamer which admits a limited amount of adjustment for size. Such adjustment is usually through wedge action controlled by a screw. See ADJUSTABLE REAMER; REAMER.

**expansion shield** (*ex-pan-sion shield*) a device for anchoring attachments to masonry, or concrete, surfaces consisting of a metal insert that is driven into a drilled hole and expands tightly against the sides of the hole.

**exposed drain and supplies** (*ex-posed drain and sup-plies*) plumbing pipe and conduits not concealed as in walls, floors or partitions open to constant view.

**exposed fitting** (*ex-posed fit-ting*) a fitting where the body is mounted above, or in front, of the fixture.

**extended closet horn** (*ex-ten-ded clos-et horn*) projecting below the floor line of the water closet fixture.

**extension cord** (*ex-ten-sion cord*) flexible insulated wires with a male plug on one end and female plug on the other used to transmit electrical power from a permanent outlet to portable tools, light to portable tools, light bulbs, etc.

**extension shanks** (*ex-ten-sion shanks*) a tool to extend the length of other devices (tools).

**extension stem, radiator** (*ex-ten-sion stem, ra-di-a-tor*) extension stem in an extended rod used to operate a valve at a remote distance.

**extra boiler tapping** (*ex-tra boil-er tap-pings*) with reference to water tank (hot water storage) where more than two openings in the top and one in the bottom exist, (i.e.: extra side openings [tappings]) , etc.

**extra heavy** (*ex-tra heav-y*) is thicker or stronger than standard; has reference to greater strength. This term is used to describe pipe and fittings of any composition. When applied to pipe, indicates pipe thicker than standard pipe. See SOIL PIPE.

**extra heavy class cast iron soil pipe** (*ex-tra bea-vy class cast iron soil pipe*) a designation, by wall thickness, to classify cast iron soil pipe according to intended end-use.

**extra radiator tapping** (*ex-tra ra-di-a-tor tap-ping*) a tapping on the end section of a radiator, in addition to regulation tappings, is called an extra tapping, usually an air valve tapping.

**extra strong pipe** (*ex-tra strong pipe*) refers to pipe wall thickness. See EXTRA HEAVY.

**extrude** (*ex-trude*) to shape a malleable material, hot or cold, by forcing it to flow out of a specially designed opening, and taking the shape of the die. As in tubing or molding.

**extrusion** (*ex-tru-sion*) **1.** the process of forming malleable material through a die. **2.** an article, or the product, made by the process of extruding.

**eye bolt** (*eye bolt*) a bolt provided with a hole, or eye, at one end instead of the usual head. The eye receives a pin, stud, or hook which takes the pull of the bolt.

**eye socket** (*eye sock-et*) **1.** the center of the socket. **2.** a tool. **3.** an anchor. **4.** the eye of a bolt or hanger.

**eye wash fountain** (*eye wash foun-tain*) a plumbing fixture. *Abbr.* E.W.F. See EMERGENCY WASH FOUNTAIN.

# Ff

**F.** *Abbr.* for Fahrenheit

**face bowl** (*face bowl*) slang, See LAVATORY.

**faced bushing** (*fac-ed bush-ing*) a fitting with internal and external threads of the standard pipe type equipped with two or more projecting lugs or bosses, for torqueing, twisting or tightening in position.

**facultative organism** (*fac-ul-ta-tive or-gan-ism*) See FACULTATIVE PARASITE.

**facultative parasite** (*fac-ul-ta-tive par-a-site*) an organism, usually a fungus, that normally lives on dead organic matter but is able to grow during the whole, or part, of its development as a parasite.

**Fahrenheit** (*fabr-en-beit*) relating or conforming to a thermometric scale on which, under standard atmospheric pressure, the boiling point of water is at 212 degrees and the freezing point at 32 degrees above the zero of the scale. The zero point approximating the temperature produced by mixing equal quantities by weight of snow and common salt. *Abbr.* F.

**F.A.I.** *Abbr.* for Fresh Air Inlet.

**family** (*fam-i-ly*) defined in a plumbing code as a unit of one or more individuals living together and sharing the same facilities.

**fats sewage** (*fats sew-age*) triglyceride esters of fatty acids, erroneously used as a synonym for grease.

**faucet** (*fau-cet*) a device at the end of a water pipe in which water can be drawn from, or held within, the pipe.

**faucet, combination** (*fau-cet, com-bi-na-tion*) a faucet controlling both hot and cold water and discharging through a common spout.

**faucet nut** (*fau-cet nut*) the nut that screws onto the shaft of the faucet to hold the faucet in place.

**faucet regulator** (*fau-cet reg-u-la-tor*) a device inserted into the supply line of a faucet to regulate and control the liquid volume which can be discharged from the faucet.

**faucet screw** (*fau-cet screw*) a screw that holds the washer to the stem; a screw that holds the handle to the stem.

**faucet seat** (*fau-cet seat*) the surface around, or within, the orifice in the faucet through which water, or other liquid, flows and against which the closing member, such as stem washer, is pressed or seated to terminate the flow. See VALVE SEAT.

**faucet spout** (*fau-cet spout*) the tubular like end of a faucet when opened water flows.

**faucet, washerless** (*fau-cet, wash-er-less*) Any faucet whose controlling operation is based upon the juxtaposition of mating ceramic discs, o-rings, or resilient seals, and whose function is not patterned after the compression faucet.

**F.B.** *Abbr.* Footbath.

**F.C.O.** *Abbr.* for Floor Cleanout.

**F.D.** *Abbr.* Floor Drain.

**federal specification** (*fed-er-al spec-i-fi-ca-tion*) specification promulgated and/or published by the federal government for work in federal installations.

**ferrule** (*fer-rule*) **1.** a tube, or bushing, that is used to make a tight joint between two tubes. **2.** or to strengthen the end of a tube. See STIFFENER.

**F.F.** *Abbr.* for Finished Floor. Sometimes *Abbr.* Fin. Fl.

**F.G.** *Abbr.* for Finished Grade.

**F.H.** *Abbr.* for Fire Hydrant.

**fiber (fi-ber)** **1.** a thread or object resembling a thread as a root of grass. **2.** an elongated tapering thick walled plant cell void at maturity that imparts elasticity, flexibility and tensile strength, capable of being spun. Various fibrous materials are used as reinforcing agents in making fibre pipe.

**fiberglass (fi-ber-glass)** glass in fiber form. The fine threads of glass are used to strengthen materials, (i.e.: sheets of structural material, and pipe).

**fiberglass reinforced epoxy tubing (fi-bre-glass re-in-forced e-pox-y tub-ing)** pipe or tube in which the material is a thermosetting resin combined for added strength with glass fibers.

**fiber pipe (fi-ber pipe)** See FIBRE PIPE and BITUMINOUS FIBRE PIPE.

**fiber pipe fittings (fi-ber pipe fit-tings)** See FIBRE PIPE FITTINGS.

**fibra (fi-bra)** See FIBER.

**fibre pipe (fi-bre pipe)** sometimes spelled fiber pipe, a non-metallic pipe made by combining interwoven fibrous threads with an impregnation of bituminous compound. Used for sewers and drains. See BITUMINOUS FIBRE PIPE.

**fibre pipe fittings (fi-bre pipe fit-tings)** **1.** any pipe fittings made for use with fibre pipe. **2.** pipe fittings made of the same materials as fibre pipe.

**fibre pipe to clay sewer pipe adapter (fi-bre pipe to clay sew-er pipe a-dap-ter)** an adapter with a female tapered joint on one end and the opposite end enclosing the spigot end of a clay pipe.

**fibre pipe to soil pipe female adapter (fi-bre pipe to soil pipe fe-male a-dap-ter)** an adapter with a female taper joint on one end and the opposite end shall be enclosed by the spigot end of the soil pipe.

**fibre pipe to soil pipe male adapter (fi-bre pipe to soil pipe male a-dap-ter)** an adapter fitting with a male taper joint on one end and the opposite end fits into the hub end of soil pipes.

**fibre pipe to threaded metal pipe adapter (fi-bre pipe to thread-ed me-tal pipe a-dap-ter)** an adapter with a female taper joint on one end and the opposite end shall have a female thread enclosing a male threaded metal pipe.

**fill valve (fill valve)** a water supply valve, frequently called a ballcock, opened or closed by means of a float, or similar device, used to supply water to a tank. An anti-siphon fill valve also contains an anti-siphon device in the form of an approved air gap mechanical backflow preventer, or vacuum breaker, which is an integral part of the fill valve unit and which is positioned on the discharge side of the water supply control valve.

**filter (fil-ter)** a device, or a specific material, capable of separating, or screening out, impurities, or extraneous materials, from the water supply or distribution system.

**filtrate (fil-trate)** something that has been filtered, such as a fluid which has passed through a filter.

**filtration (fil-tra-tion)** See PERCOLATION.

**fine solder (fine sol-der)** a solder consisting of equal parts of lead and tin with a melting point of 370 °F.

**fine thread (fine thread)** **1.** a thread having more threads per inch than standard U.S. pipe thread. **2.** a tubing thread. Fittings, such as valves and traps, are sometimes made with fine threads.

**finished grade (fin-ish-ed grade)** the actual elevation, or level, of the ground when the work on it is completed.

**finishing (fin-ish-ing)** plumbing work done after the roughing-in.

**fire cock (fire cock)** a fire hydrant.

**fire cistern water** (*fire cis-tern wa-ter*) a man-made cavity in the ground for the storage of water for the purpose of preventing the spread of fire or the extinguishing of fire. See WATER.

**fire damp** (*fire cock*) a combustible mine gas that consists chiefly of methane.

**fire hose** (*fire hose*) a hose supplied with water for the explicit purpose of extinguishing fires.

**fire hydrant** (*fire hy-drant*) a valve, a series of valves and spouts, or spouts supplying water under pressure for connecting apparatus used in extinguishing fires.

**fire line** (*fire line*) **1.** a system of pipes and equipment used exclusively to supply water for fire extinguishing. **2.** to supply water to a hose cabinet or to supply water to a sprinkler head.

**fire meter** (*fire me-ter*) **1.** a meter to measure liquid. Installed as a by-pass around a weighted check valve in a fire system. **2.** principal supply pipe by which leaks are detected.

**fire plug** (*fire plug*) originally, in England, fire plugs were wooden plugs driven at intervals in wooden or cast iron water mains. When a fire occurred, a plug could be removed and the water was allowed to flow out to be used by a fire bucket brigade to put out the fire. See FIRE HYDRANT.

**fire pot** (*fire pot*) See PLUMBER'S FURNACE.

**fire pump, centrifugal** (*fire pump, cen-tri-fugal*) pumps of especially rugged design and are usually built under the specification of the National Board of Fire Underwriters or other authority. Standard sizes specified by NBFU are 500, 750, 1000, 1500, 2000 and 2500 GPM, discharge pressures are suited to the particular service. The pump should be equipped with a pressure relief valve, a hose or discharge valve, a test valve, pressure gauges and a hose manifold.

**firmer chisel** (*firm-er chis-el*) a thin flat blade usually at least six inches long and 1/8" to 2" wide used by woodworkers.

**fitting** (*fit-ting*) **1.** any device designed to control, or guide, the flow of water into a fixture. **2.** parts of a pipeline other than straight pipe, or valves, used to connect two pieces of pipe together, to change direction or to reduce or increase the size of the pipe line. See CAST IRON FITTING; CAST IRON SOIL PIPE FITTING; COPPER DRAINAGE FITTING; FITTING COMPRESSION; FITTING, DRAINAGE; FITTING, FLARED; MALLEABLE IRON FITTING; PIPE FITTING; PLASTIC FITTING; SOIL PIPE FITTING.

**fitting brushes** (*fit-ting brush-es*) wire type brushes shaped and sized to brush clean inside surfaces.

**fitting, aerator** (*fit-ting air-a-tor*) See AERATOR.

**fitting, compression** (*fit-ting, com-pres-sion*) a fitting that compresses the pipe or tube into a socket to form a joint or seal. See FITTING.

**fitting, discharge** (*fit-ting dis-charge*) See DISCHARGE FITTING.

**fitting, drainage** (*fit-ting, drain-age*) a fitting designed for a drainage system. See FITTING.

**fitting, flared** (*fit-ting, flar-ed*) a fitting which requires the pipe or tube to be expanded, or flared, to form a joint or seal. See FITTING.

**ittings, transition** (*fit-tings, trans-i-tion*) See TRANSITION FITTINGS.

**fixture** (*fix-ture*) **1.** any sanitary plumbing, or related item, of equipment which can demand water from a branch line. **2.** a receptor that receives water, or waterborne wastes, and discharges into a drainage system.

**fixture branch** (*fix-ture branch*) a pipe connecting several fixtures.

**fixture count** (*fix-ture count*) **1.** the summation of all supply fixture unit valves to determine the maximum probable demand on the water supply system or source. **2.** the summation of all drainage fixture unit valves to determine the maximum probable discharge into the drainage or sewer system.

**fixture drain** (*fix-ture drain*) the drain from the trap of a fixture to the junction of that drain with any other drain pipe.

**fixture opening** (*fix-ture o-pen-ing*) a term used to identify a plumbing fixture's water supply at the fixture location on a wall or floor. Sometimes called a water supply plaster stub opening.

**fixture supply** (*fix-ture sup-ply*) a water supply connecting a fixture to a branch water supply pipe or directly to a main water supply pipe.

**fixture unit, drainage** (*fix-ture u-nit, drain-age*) **1.** a quantity in terms of which the load producing effects on the plumbing system of different kinds of plumbing fixtures are expressed in some arbitrarily chosen scale. **2.** the rate of discharge through a plumbing fixture of 7.5 gallons per minute is termed one fixture unit. **3.** a measure of the probable discharge into the drainage system by various types of plumbing fixtures. The value for a particular fixture depends on its volume rate of drainage discharge, on the time and duration of a single drainage operation, and on the average time between successive operations. *Abbr.* DFU.

**fixture unit flow rate** (*fix-ture u-nit flow rate*) the total discharge flow in gallons per minute of a single fixture divided by 7.5 which provides the flow rate of that particular plumbing fixture as a unit of flow; fixtures are rated as multiples of this unit of flow.

**fixture unit, supply** (*fix-ture unit, sup-ply*) a measure of the probable hydraulic demand on the water supply by various types of plumbing fixtures. The value for a particular fixture depends on its volume rate of supply, on the time duration for a single operation, and on the average time between successive operations. *Abbr.* SFU.

**fixture vent** (*fix-ture vent*) a vent pipe leading from the trap of a fixture to the atmosphere or to another vent.

**flame arrester** (*flame ar-rest-er*) that which arrests, stops, halts, hinders or slows the motion, course, or progress of fire or flame.

**flange** (*flange*) a rim, or edge, on a shaft or a pipe fitting projecting at right angles to provide strength or means of attachment to another part. *Abbr.* Flg.

**flange, adjustable** (*flange, ad-just-a-ble*) a two section escutcheon used on a pipe to cover a hole opening that the pipe passes through.

**flange, cast iron** (*flange, cast iron*) **1.** a raised-edge fitting made of cast iron. **2.** a rib or rim for strength, guiding, attachment to another object, another pipe fitting; or to fasten to a wall; ceiling; or floor, etc.

**flange, closet** (*flange, clos-et*) See CLOSET COLLAR.

**flange, companion** (*flange, com-pan-ion*) a pipe flange threaded internally to receive a pipe length and drilled so it may be bolted to another like flange. Sometimes a similar arrangement is used for coupling two parts of a shaft.

**flange covering tube** (*flange cov-er-ing tube*) a chrome plated tube used to cover an unfinished pipe. Generally used on the outlet side of a "P" trap.

**flange facings** (*flange fac-ings*) the arrangements of the joining surfaces of flanges. May be smooth face to smooth face, tongued and grooved, etc.

**flange, faucet** (*flange, fau-cet*) a faucet flared out, as in a flange shape, to cover over edges of mounting hole, or holes, or to provide a support.

**flange, floor** (*flange, floor*) a fitting of metal disc form tapped in the center with a standard pipe thread and the residual surface equipped with holes for mounting, such as with bolts, screws, etc. Generally used with pipe rails to secure pipe to wall or floor.

**flange for shower rod** (*flange for show-er rod*) a fitting disc in a shape having a hole in its center for holding a shower rod.

**flange, galvanized** (*flange, gal-van-ized*) a disc fitting with, or without, a hole in its center and is coated with molten zinc.

**flange, hanger** (*flange, hang-er*) that part of a hanger that secures to a wall or floor by means of bolts or screws.

**flange, joint** (*flange, joint*) **1.** a mating of two annular rings of flat surfaces extending outward from the sides of the pipes or fittings and joined by bolts. **2.** a form of soldered connection.

**flange making on** (*flange mak-ing on*) the securing of a flange onto a pipe.

**flange, roof** (*flange, roof*) an annular fitting used around a stack terminal on the top side of a flat roof or on a pitch roof to make pipe rain tight at the roof.

**flange, spun** (*flange, spun*) **1.** a disc fitting produced by metal spinning process. **2.** a one-piece collar that fits over a pipe to cover an opening that the pipe passes through.

**flange union** (*flange un-ion*) a pair of flanges joined by bolts holding the flanges together.

**flange, valve** (*flange, valve*) a valve constructed with a flange on the inport and outport ends, as opposed to a threaded or sweat valve.

**flange welding** (*flange weld-ing*) a flange constructed to be welded onto a pipe or fitting.

**flanged fittings** (*flang-ed fit-tings*) any of a number of types of pipe fittings used to connect pipes by means of holed flanges extending outside the pipe-way.

**flank** (*flank*) a valley, or inclined, channel formed by two roofs meeting.

**flared fitting** (*flared fit-ting*) See FITTING, FLARED.

**flaring tool** (*flar-ing tool*) a tool used to spread the walls of tubing outward as a bowl or skirt to form a pressure joint against the flange of the tube fitting.

**flashing** (*flash-ing*) a term used to mean water tight as on, or in, a roof with two and five strips of sheet metal, as copper or galvanized iron, bent to fit in the intersecting interior angle between two intersecting roof surfaces to make a watertight joint. The upstanding leg of the flashing strip must be covered with counterflashing; a lap joint.

**flat back** (*flat back*) **1.** relating to a fixture such as a flat back sink, urinal, etc. **2.** a fixture with a straight, or upright, rear surface.

**flat bastard file** (*flat bas-tard file*) a flat file that is intermediate between the coarsest and the second cut.

**flat boring bit** (*flat bor-ing bit*) a tool rectangular in shape with two cutting edges and rotated to bore or drill holes.

**flat brick chisel** (*flat brick chi-sel*) a chisel tool wide and thin usually impacted with a hammer for cutting masonry, sometimes called a mason's chisel or stone cutting chisel. It differs from a marble cutting chisel in that the latter has a serrated cutting edge.

**flat dresser** (*flat dress-er*) a wooden lead working tool employed to flatten. In many cases, to boss lead sheet; shaping and smoothing lead pipe and sheet lead. Used in bending lead pipe and has other numerous useful and working purposes. See DRESSER; ROUND DRESSER.

**flat plate solar energy collector** (*flat plate so-lar en-er-gy col-lec-tor*) a solar collection device in which sunlight is converted to heat on a plane surface without the aid of reflecting surfaces to concentrate the rays.

**flat steel sewer rod** (*flat steel sew-er rod*)  
See DRAIN CLEAN ROD.

**flax packing** (*flax pack-ing*) a graphite, or asbestos, rope round or square in shape and treated with flax.

**flexible supplies** (*flex-i-ble sup-plies*) tubing connectors between the water supply and the fixture faucet, or faucets and flexible to accommodate differences in design of fixture. .

**flg.** *Abbr.* for Flange or Flanges.

**float rod** (*float rod*) a nonferrous metal, threaded rod to connect a float device to a flush valve mechanism in a water closet.

**float valve** (*float valve*) an automatic valve whose opening and closing are controlled by a float at the end of a lever.

**floc** (*floc*) small gelatinous masses formed in a liquid by the addition of coagulants through biochemical processes or by agglomeration.

**flocculate** (*floc-cu-late*) to cause to aggregate, or coalesce, into small lumps, loose clusters or into a flocculent mass or deposit.

**floculator** (*floc-cu-la-tor*) something that induces flocculation; especially on apparatus in which material (as water or sewage) flocculates certain suspended, or dissolved, constituents.

**flood control valve** (*flood con-trol valve*) a device to automatically, or semi-automatically, control the rate of flow of fluids.

**flooded** (*flood-ed*) when the liquid in a fixture, or receptacle, rises to the flood level rim.

**flood level** (*flood lev-el*) See FLOOD LEVEL RIM.

**flood level mark** (*flood lev-el mark*) a mark on the device 1/4" (6.4mm), or more, below the critical level.

**flood level rim** (*flood lev-el rim*) **1.** the edge of the receptacle from which water overflows **2.** the level from which liquid will flow to the floor when all drain and overflow openings built into the device are obstructed **3.** the lowest point in a receptacle from which water overflows.

**fl.** *Abbr.* for Floor.

**floor chisel** (*floor chis-el*) **1.** a caulking iron for decks and floors. **2.** a chisel with a broad edge and long shank for ripping out floorboards.

**floor drain** (*floor drain*) an opening in the floor used to drain water into the plumbing system. *Abbr.* F.D. See RECEPTOR.

**floor drain grate** (*floor drain grate*) a form of strainer at the floor plane over a drain.

**floor drain trap** (*floor drain trap*) a "P" shaped conduit under a floor drain. See TRAP.

**floor flange** (*floor flange*) a fitting of a metal disc form tapped in the center with a standard pipe thread and the residual surface equipped with holes for mounting with bolts, screws, etc. Generally used with pipe rails to secure pipe to wall or floor.

**floor plan** (*floor plan*) **1.** a horizontal section at a distance above the floor varying so as to cut the walls at a height which will best show constructions. May be used for other purposes. **2.** a drawing indicating the physical arrangements of all building components within a specified area.

**floor sink** (*floor sink*) a receptor used for the drainage of indirect drains.

**floor stand** (*floor stand*) a fixture support. Usually fixed on studs or bolted to the floor.



**flotation** (*flo-ta-tion*) the collection of substances immersed in a liquid by taking advantage of variable specific gravities, or by the buoyance produced by the evolution of gas by chemicals or heat.

**flow controller (automatic)** [*flow con-trol-ler (auto-mat-ic)*] a component or accessory which limits the maximum flow through the line in which it is installed and incorporates a pressure compensating restriction maintaining a substantially constant flow of water over its designed pressure range.

**flow passages** (*flow pas-sa-ges*) the openings, or passages, within the device through which water, or air, flows from the inlet to the outlet or to atmosphere.

**flowing pressure** (*flow-ing pres-sure*) See RUNNING PRESSURE.

**flowing pressure differential** (*flow-ing pres-sure dif-fer-en-tial*) the difference between initial and reduced flowing pressure.

**flow passages** (*flow pas-sages*) the openings or passages within the device through which water or air flows from the inlet to the outlet or a atmosphere.

**flow pressure** (*flow pres-sure*) the residual pressure in the water supply pipe at a faucet, pressurized flushing device, water outlet, or other endpoint device when in an open and flowing condition.

**flow rate** (*flow rate*) **1.** an empirical value of a rate of flow of a liquid or other mobile substances, expressed in an accepted unit of measure, through a pipe, fitting, valve, or device that characterizes its capacity **2.** the rate of flow of water, silt, or other mobile substance which emerges from an opening, pump, or turbine or passes along a conduit or channel, usually expressed as cubic feet per second, cubic meters per second, gallons per minute, or million gallons per day.

**flow restricter (fixed)** [*flow re-stric-ter (fixed)*] a component or accessory which incorporates a flow restricting orifice of fixed geometrical construction such that flow through the restricter does not self-adjust with fluctuation in pressure. See AUTOMATIC FLOW CONTROLLER.

**flow valve** (*flow valve*) **1.** a valve that closes when the velocity or the pressure gradient of the fluid passing through it reaches a certain value. **2.** a type of motor-operated valve.

**flue** (*flue*) **1.** the general term for the passages and conduits through which flue gases pass from the combustion chamber to the outer air. **2.** appliance flue: the flue passages within an appliance. **3.** chimney flue: a conduit for conveying the flue gases delivered into it by a vent connector to the outer air. **4.** a dilution flue: a passage designed to effect the dilution of flue gases with air before discharge from an appliance. **5.** vent connector: the conduit connecting an appliance with the chimney or gas vent.

**flue cleaner** (*flue clean-er*) a chemical of powder formation sprinkled onto the hot walls of a combustion chamber and used to dissolve unburned carbon in a heating appliance or flue.

**flue collar** (*flue col-lar*) a projection, or recess, provided to accommodate the vent connector or draft hood.

**flue gas** (*flue gas*) the mixture of gases resulting from combustion and other reactions in a furnace, passing through the smoke flue, composed largely of nitrogen, carbon dioxide, carbon monoxide, water vapor, and often sulfur dioxide. Sometimes serving as a source from which CO<sub>2</sub> and other compounds are recovered.

**flue gases** (*flue gas-es*) products of combustion and excess air.

**flue loss** (*flue loss*) the sensible heat and latent heat above room temperature of the flue gases leaving an appliance.

**flue stopper** (*flue stop-per*) a disc with a spring-like metal attached and used to cover a hole in a chimney.

**fluidics** (*flu-id-ics*) the control of liquids, solids or gases by fluid operated devices. In plumbing, flat-operated valves, or dash pots, as in flush valves.

**flush** (*flush*) to wash out by drenching with copious supplies of water.

**flush bushing** (*flush bush-ing*) a fitting having a male and female thread the entire length of the fitting. When inserted into a larger fitting, it makes up flush so threads are not exposed.

**flush ell** (*flush ell*) a flush fitting constructed in a 90° bend. Used in the installation of a wall hung closet and a floor mounted bowl. See CLOSET BEND.

**flush tank** (*flush tank*) 1. a container for a measured quantity of water, fitted with an inlet valve (ballcock) and a flush valve, either wall hung or close coupled (with closet bowl), used to flush a water closet or urinal by gravity discharge. 2. a tank holding water for flushing a water closet or a urinal. It is normally filled by a fill valve and emptied by a flush valve using gravity.

**flush pipe** (*flush pipe*) a straight tube through which flushing water is conveyed from the source of supply and the fixture (whether a tank or valve).

**flush pipe fitting** (*flush pipe fit-ting*) the pipe and fittings extending from the flush tank, flushometer or flush valve to the fixture (water closet or urinal, etc.).

**flush pipe hangers** (*flush pipe hang-ers*) See FLUSH PIPE HOLDERS.

**flush pipe holders** (*flush pipe hold-ers*) fittings designed to secure the flush pipe from a tank, urinal, toilet, or other device, or fixture.

**flush rim** (*flush rim*) a portion of a plumbing fixture through which liquid (water) is induced to flood the inner surfaces of the fixture.

**flush rim closet bowl** (*flush rim clos-et bowl*) that upper part of a toilet bowl, bedpan washer, or urinal, through which water is diverted to wet down the sides of the fixture during the flushing action.

**flush tank** (*flush tank*) a container for a measured quantity of water, fitted with an inlet valve (ballcock) and a flush valve, either wall hung or close coupled (with closet bowl), used to flush a water closet, or urinal, by gravity discharge.

**flush valve** (*flush valve*) a valve located at the bottom of a flush tank used to discharge water into a water closet, or urinal, for flushing the fixture.

**flushing cycle** (*flush-ing cy-cle*) the complete operating sequence of a water closet, urinal, or similar device or fixture in emptying the contents, cleansing the inside surfaces, and refilling the water seal.

**flushing type floor drain** (*flush-ing type floor drain*) a floor drain which is equipped with an integral water supply which enables flushing of the drain receptor and trap.

**flushing surface** (*flush-ing sur-face*) the surface, visible after installation, which may be wetted during the operation of the fixture.

**flushing system, gravity type** (*flush-ing sys-tem, grav-i-ty type*) See GRAVITY TYPE FLUSHING SYSTEM.

**flushing system, pressurized type** (*flush-ing sys-tem, pres-sur-ized type*) See PRESSURIZED PLUMBING FIXTURE FLUSHING DEVICE.

**flushometer valve** (*flush-o-me-ter valve*) a valve attached to a pressurized water supply pipe and designed that when actuated, it opens the line for direct flow into the fixture at a rate and quantity to properly operate the fixture and then gradually closes in order to avoid water hammer. The pipe to which this device is connected is of sufficient size that, when open, will allow the device to deliver water at a sufficient rate of flow for flushing purposes.

**flushometer tank** (*flush-o-meter tank*) a valve in a pressurized water supply pipe but integrated within an accumulator vessel affixed and adjacent to the fixture inlet to cause an effective enlargement of the supply line immediately before the flushometer valve.

**flux** (*flux*) **1.** a substance used to promote fusion, especially of metals or minerals. **2.** a substance (as rosin) applied to surfaces to be joined to clean and face them from oxide and promote their union.

**follower** (*fol-low-er*) part of a threading tool intended to keep the thread straight.

**food** (*food*) any raw, cooked or processed edible substance, beverage or ingredient used, or intended for use, in whole, or in part, for human or animal consumption.

**food waste** (*food waste*) the perishable food refuse resulting from the preparation, handling, serving and scrapping of food.

**food waste disposer** (*food waste dis-poser*) See FOOD WASTE GRINDER UNIT.

**food waste grinder unit** (*food waste grinder u-nit*) a device that reduces food waste to a particle size which, with the aid of water, can be discharged into the plumbing drainage system.

**food waste grinder unit, batch feed type** (*food waste grind-er u-nit, batch feed type*) a food waste type grinder which is first charged with food waste and requires the locating of a device in such a position that the disposer is energized.

**food waste grinder unit, continuous feed type** (*food waste grind-er u-nit, contin-u-ous feed type*) a type of food waste grinder which may be charged with food waste continually.

**footbath** (*foot-bath*) **1.** a bath for cleansing, warming, or disinfecting the feet (as at the entrance to an indoor swimming pool) **2.** a small portable tub. *Abbr.* F.B.

**footing** (*foot-ing*) the supporting base, foundation or groundwork of a structure as for a wall, or column.

**foot-rest cup, for radiators** (*foot-rest cup, for rad-i-a-tors*) a pedestal that fits under the leg of a radiator to raise it to a higher level.

**foot valve** (*foot valve*) **1.** a check valve at the lower end of a section pipe (as in a well). **2.** a valve operated by one's foot. **3.** a urinal or water closet foot valve.

**force cup** (*force cup*) a rubber plunger, with a wooden handle, used on plumbing fixtures to clear stoppages. See PLUMBER'S FRIEND; CLOSET PLUNGER, RUBBER.

**forced circulating control** (*forced cir-cu-la-ting con-trol*) inducing energy, to cause circulation and its (circulation) behavior (control).

**forced convection** (*forced con-vec-tion*) in the solar energy field, the transfer of heat by the flow of warm fluids driven by fans, blowers, or pumps.

**fore arm handle faucet** (*fore arm han-dle fau-cet*) **1.** a type of faucet operated by the lower part of the arm. **2.** a surgeon's sink faucet.

**fountain** (*foun-tain*) **1.** a spring of water issuing from the earth. **2.** an artificially produced jet of water; also the structure from which it arises. **3.** a reservoir containing a liquid that can be drawn off as needed. See CUSPIDOR; DRINKING FOUNTAIN.

**four way tee** (*four way tee*) See SIDE OUTLET TEE.

**F.P.** *Abbr.* for Fire Plug.

**F.P.S.** *Abbr.* for Feet Per Second.

**F.P.S. C.** *Abbr.* for Frost Proof Sill Cock. See SILL COCK.

**frame** (*frame*) **1.** the form in which something is fashioned. **2.** the constructional system that gives shape or strength. **3.** an underlying structure, or skeleton, specifically the arrangement of supporting girders, beams, columns, joists, or trusses forming the main support. **4.** a basic structural unit which other constituents of a whole are fitted, attach, or integrated. **5.** an open case, or structure, made for admitting, enclosing, or supporting something.

**frames and grates** (*frames and grates*) **1.** a frame containing parallel, or crossed, bars forming an open lattice work, permitting the passage of light, air, liquid, or sound, and commonly used to prevent unwanted ingress or egress (as of persons to or from a building) or passage (as of solids into a conduit for liquids). **2.** a frame, bed, or basket of iron bars for holding fuel while it is burning. **3.** a fireplace. **4.** an open latticed, or barred, frame for cooking over a fire. **5.** a screen, or sieve, for use with stamp mortars for grading ore.

**framing chisel** (*fram-ing chi-sel*) a long sturdy chisel designed for rough carpentry work.

**freeboard** (*free-board*) **1.** in plumbing the vertical distance between the normal maximum liquid level in a tank or reservoir and the top of the tank or reservoir. **2.** the height that is above the recorded high-water mark of a structure associated with a body of water such as a dam, seawall, or culvert and is an allowance against overtopping by waves or other transient disturbances.

**free circulation** (*free cir-cu-la-tion*) free circulation of air means a plumbing and drainage system so designed and installed as to keep the air within the system in free circulation and movement, and to prevent, with a margin of safety, unequal air pressure of such forces as might blow, siphon, or affect trap seals, or retard the discharge from plumbing fixtures or permit sewer air to escape into the building.

**french drain** (*french drain*) a drain consisting of an underground passage made by filling a trench with loose stones and covering with earth. Also called rubble drain.

**french solder** (*french sol-der*) a readily fusible silver solder composed of fine silver and brass in varying proportions.

**fresh-air inlet** (*fresh-air in-let*) a connection made to a house drain above the main trap leading to the outside air. *Abbr.* F.A.I. same as fresh air pipe.

**friction** (*fric-tion*) **1.** resistance to the relative motion of a liquid, or body, sliding, rolling or flowing over another with which it is in contact. **2.** the resultant drag, or diminishment, of velocity of a fluid at the surface with which it is in contact.

**frostproof closet** (*frost-proof clos-et*) a toilet that has no water in the bowl and has the trap and control for its water supply installed below the frost line.

**F.S.** *Abbr.* for Federal Specifications.

**F.S.P.S.** *Abbr.* for Female Standard Pipe Size.

**ft.** *Abbr.* for Foot or Feet.

**F.T.F.** *Abbr.* for Face to Face. Sometimes F-F.

**ftg.** *Abbr.* for Fitting or Footing.

**F. to C.** *Abbr.* for Face to Center.

**F. to E.** *Abbr.* for Face to End.

**F.U.** *Abbr.* for Fixture Unit.

**fuel oil** (*fu-el oil*) any oil used for fuel. It usually has a flashpoint higher than that of kerosene.

**Fuller balls and/or washer** (*ful-ler balls and/or wash-ers*) **1.** a pear-shaped resilient device and the back up or reinforcing conical-shaped unit. **2.** Parts of a particular type of faucet.

**full "s" trap** (*full s trap*) a trap (unvented). A waterway in the shape of the letter "s" when turned 90°.

**fumigator** (*fu-mi-ga-tor*) a machine patented in 1871 for applying smoke tests to drains. Also used for fumigating rat holes by blowing fumes of sulphur into them.

**fungi** (*fun-gi*) small non-chlorophyll bearing plants which lack roots, stems, or leaves, and occur (among other places) in water sewage, or sewage effluents; grows best in the absence of light. Their decomposition after death may cause disagreeable tastes and odors in water. In some sewage treatment processes, they are helpful and in others they are detrimental.

**fungus** (*fun-gus*) any of a major group (fungii) or saprophitic and parasitic lower molds, rusts, mildews, smuts, mushrooms; usually bacteria. See MOLD.

**funnel connection** (*fun-nel con-nec-tion*)

1. a fitting shaped like a funnel. Reference a means of drainage. 2. an indirect connection.

**furnace** (*fur-nace*) slang. See PLUMBER'S FURNACE.

**furnace bulb** (*fur-nace bulb*) a ball type pump.

**furnace bulb cement** (*fur-nace bulb cement*) a rubber cement to adhere rubber or rubber-like units.

**furnace fittings, galvanized** (*fur-nace fit-tings, gal-va-nized*) a fitting with an inlet and an outlet which is galvanized, coated, and installed in a water line inside the combustion space of a stove furnace, etc., to generate heated water.

**furnace pipe and fittings** (*fur-nace pipe and fittings*) used to connect a gas water heater or any other appliance requiring a flue to a chimney.

**fusible link** (*fu-si-ble link*) a joining member designed to be destroyed by predetermined heat.

**fusible metal (or alloy)** [*fu-si-ble me-tal (or al-loy)*] an alloy, usually containing bismuth, lead, tin, or cadmium which melts at a low temperature [usually below 300 °F (149 °C)] and used especially for boiler safety plugs and automatic sprinkler fuses.

**fusible plug** (*fu-si-ble plug*) a metal plug used as a liquid stopper which melts at a predetermined temperature and installed as a safety device.

**fusion** (*fu-sion*) 1. the process of liquifying, or turning a solid into a plastic, by heat. 2. uniting by melting the same or different materials together.

**fusion welding** (*fu-sion wel-ding*) the joining of plastic pipe and fittings by melting or by heat alone. The surfaces of the parts to be joined together to form a union. Compare with: solvent welding.

**F.V.** *Abbr.* for Flush Valve.

**F.V.T.** *Abbr.* for Float Valve Tank.

# Gg

**G.** *Abbr.* for Gas or Gravity.

**ga.** *Abbr.* for Gauge.

**gage** (*gage*) See GAUGE.

**gal.** *Abbr.* for Gallons.

**galena** (*ga-le-na*) a mineral pbs consisting of native lead sulfide occurring in cubic, or octahedral, crystals and massive, bluish-gray in color with metallic luster, showing highly perfect cubic cleavage, and constituting the principle ore of lead.

**galv.** *Abbr.* for Galvanized.

**galvanic action** (*gal-van-ic ac-tion*) when two dissimilar metals are immersed in the same electrolytic solution and connected electrically, there is an interchange of atoms carrying an electric charge between them. The anode metal with the higher electrode potential corrodes, the cathode is protected. Thus magnesium will protect iron. Iron will protect copper. See ELECTROLYSIS.

**galvanize** (*gal-va-nize*) **1.** to coat (iron or steel) with a thin coating of zinc as an aid in resisting rust or corrosion. **2.** to subject metal to the action of an electric current. *Abbr.* *galv.*

**galvanized iron** (*gal-va-nized iron*) iron covered with a thin coating of zinc, which resists rust. *Abbr.* G.I.

**gang shower** (*gang show-er*) See SHOWER, GANG.

**garbage disposer** (*gar-bage dis-po-ser*) See FOOD WASTE GRINDER UNIT.

**garbage grinder** (*gar-bage grind-er*) See FOOD WASTE GRINDER UNIT.

**garden hose** (*gar-den hose*) usually a rubber, or rubber-like, flexible tubing  $\frac{3}{4}$ " , or smaller, equipped with a  $\frac{3}{4}$ " standard hose thread female inlet fitting and a  $\frac{3}{4}$ " standard hose male outlet and intended for garden, grass, shrubbery, etc. It may be reinforced or non-reinforced tubing.

**gas cock** (*gas cock*) a core-type shutoff valve incorporated in the gas line and used to control the flow of gas. It may be lever handle, wrench handle, plain or lock type.

**gas cock wrench** (*gas cock wrench*) a wrench of either the open-end or box type used to operate the generally square or oblong-headed core valves used in gas fittings.

**gas dome** (*gas dome*) a steel cover floating on the gas overlying the sludge in sludge digestion tanks.

**gascon** (*gas-con*) (foreign) See OAKUM.

**gasket** (*gas-ket*) packing of any material placed between two metals, or similar surfaces, that are to be drawn together in a water or gas-tight joint.

**gasket, closet** (*gas-ket, clo-set*) a sealing unit doughnut in shape used to form a gas and liquid tight connection between the outlet of the water closet bowl (horn) and the plumbing drainage system.

**gasket tool** (*gas-ket tool*) a tool which cuts gaskets, usually circular gaskets.

**gasket, wedge** (*gas-ket, wedge*) a sealing material fashioned in wedge shape and thick to thin in two planes.

**gas meter riser** (*gas me-ter ris-er*) a fitting in the form of a tube or a pipe, usually metal which connects the underground gas line to the above-ground meter. Typically supports the weight of the meter.

**gas pliers** (*gas pli-ers*) stout pliers designed for gripping small pipe, rods, or other round objects.

**gas scrubber** (*gas scrub-ber*) an arrangement for washing gas to remove dust, ammonia and other impurities.

**gas stop** (*gas stop*) See GAS COCK.

**gas stop and wrench** (*gas stop and wrench*) A core type gas valve with a removable operating handle (key) called gascock. Gascock and wrench may be of plain or lock type.

**gas valve** (*gas valve*) See GAS COCK.

**gate** (*gate*) **1.** an opening for passage in an enclosing wall, fence, or barrier, especially such an opening with a movable frame or door for closing it. **2.** a door, valve, or other device for controlling the passage of fluid or other material (as through a sluice, channel or pipe).

**gate box** (*gate box*) See CURB BOX.

**gate valve** (*gate valve*) **1.** a valve in which the flow of water is controlled by means of a circular disk fitting against, and sliding, on machine smoothed faces, the motion of the disk being at right angles to the direction of flow. The straight through opening of the valve is as large as the full bore of the pipe. **2.** a type of motor-operated valve. *Abbr.* ga.

**gauge** (*gauge*) **1.** a device for determining whether the dimensions of a part are within specified limits. **2.** a measuring instrument. **3.** to measure exactly.

**gauge glass cutter** (*gauge glass cut-ter*) a tool for cutting tubing of glass, which scores the tube either internally or externally.

**gauge pressure** (*gauge pres-sure*) the pressure at a point in a fluid above that of the atmosphere. Compare with absolute pressure. *Abbr.* G.P.

**gauge siphon, steam** (*gauge si-phon, steam*) a pipe formed in the shape of a pig's tail used between a gauge and a steam boiler. Its function is to prevent water or steam from entering the gauge by means of an air cushion.

**gauge, tank** (*gas tank*) external glass or transparent sight glasses or gauges for a tank.

**gauge washer** (*gauge wash-er*) a peripheral resilient sealing member used around gauge glass tubing at its connection to metal fittings.

**geared valves** (*gear-ed valves*) valves operated with gears to provide easier opening and closing.

**gel coat** (*gel coat*) a coating of epoxy or resinous material applied to seal the surface of reinforced resin. See RESIN.

**general contractor** (*gen-er-al con-trac-tor*) a person, firm or corporation who secures a contract, or agreement, to build, repair, renovate or maintain work supplying articles and materials to complete all phases of work agreed upon in contract. *Abbr.* G.C.

**general information** (*gen-er-al in-for-ma-tion*) common knowledge.

**generally accepted standard** (*gen-er-al-ly ac-cep-ted stand-ard*) a specification, code, rule guide, or procedure in the field of construction or related thereto, recognized and accepted as authoritative.

**German silver** (*ger-man sil-ver*) See NICKEL SILVER.

**geyser** (*gey-ser*) an intermittent hot water spring. In plumbing, an old style type of water heater in which a measured amount of water passed through piping in a cylinder containing burners. The water was thus heated at the point of use.

**G.F.D.** *Abbr.* for Garage Floor Drain.

**G.I.** *Abbr.* for Galvanized Iron.

**G.I.** *Abbr.* for Grease Interceptor.

**gilding metals** (*gild-ing met-als*) a kind of brass rich in copper, from which articles to be gilded are made.

**gimlets** (*gim-lets*) a device for boring small holes by hand pressure. The bit form of gimlet is used in a brace, being adapted to heavier and quicker boring than the gimlet which has a handle. See TWIST DRILLS.

**gland ring, metal** (*gland ring, met-al*) a metal ring usually in packing boxes or glands as a friction ring.

**glass cutter** (*glass cut-ter*) a tool (as a metal hand tool equipped with a small wheel of hardened steel or a tooth with a diamond point) used for cutting or scoring glass.

**glass tubing cutter** (*glass tub-ing cut-ter*) any number of tools for scaling the surface of glass tubing so that it can be broken, or separated, cleanly.

**glauconite** (*glau-co-nite*) a mineral consisting of a dull, green, earthy iron potassium silicate occurring abundantly in greensand. See ZEOLITE.

**glazier putty** (*glaz-ier put-ty*) a mastic used by glaziers for setting glass and like substances. See PUTTY.

**globe radiator valve** (*globe ra-di-a-tor valve*) **1.** supply, or return, valve used on steam radiators. **2.** a compression valve.

**globe valve** (*globe valve*) **1.** (compression type) a valve in which the flow of water is controlled by means of a circular disk which is forced against, or withdrawn, from an annular ring, known as the seat, which surrounds the opening through which water flows in the valve. The direction of movement of the valve is parallel to the direction of flow of water through the valve opening and normal to the axis of the pipe to which the valve is connected. **2.** a type of motor operated valve.

**globe valve disc** (*globe valve disc*) the moveable member of a compression valve.

**go devil** (*go dev-il*) a cleaning scraper rotated and propelled through a pipeline by the force of flowing oil or water.

**gold** (*gold*) a malleable, ductile, yellow, metallic element sometimes used in plating faucets. It is indifferent to most chemicals but attached by chlorine and aqua regia, and is hardened, or changed in color, and of commercial use by alloying with copper, silver, zinc, cadmium and other metals.

**gold solder** (*gold sol-der*) **1.** an alloy containing gold used as a joiner requiring heat application. **2.** a hard solder comprised of gold, silver, copper, or brass.

**gooseneck** (*goose-neck*) **1.** the "J" bend of a trap (an improper term for a return-blend). **2.** the lead or similar flexible connection between a water service pipe and a water main. It is commonly used as a faucet for a pantry sink.

**gouge chisel** (*gouge chis-el*) a chisel with a hollow-shaped blade. It is a specialized tool for cutting rounded grooves.

**G.P.** *Abbr.* for Gauge Pressure.

**G.P.D.** *Abbr.* for Gallons Per Day.

**G.P.M.** *Abbr.* for Gallons Per Minute.

**G.P.S.** *Abbr.* for Gallons Per Second.

**grade** (*grade*) **1.** the fall (slope) of a line of pipe in reference to a horizontal plane. In drainage it is usually expressed as the fall in a fraction of an inch per foot length of pipe. **2.** an indicator of category, or rank, related to features, or characteristics, that cover different sets of needs for products, or services, for the same functional use.

**gram calorie** (*gram ca-lo-rie*) See CALORIE.

**graphite packing** (*graph-ite pack-ing*) **1.** a string-like packing of several strands. **2.** a packing impregnated with graphite. See PACKING.

**grating** (*grat-ing*) a screen or grid in a waste line. Used to prevent solids or other undesirable or insoluble contaminants from entering and blocking the line.



**gravity convection** (*gra-vi-ty con-vec-tion*) the natural movement of heat through a body of fluid that occurs when a warm fluid rises and cool fluid sinks under the influence of gravity.

**gravity type flushing system** (*grav-i-ty type flush-ing sys-tem*) 1. a method which relies on a storage tank or vessel, open to atmospheric pressure and usually used for flushing plumbing fixtures 2. products which predominantly rely on storage vessels, open to atmospheric pressure for flushing plumbing fixtures.

**gray iron** (*gray i-ron*) cast iron, or pig iron, which has a high carbon content which causes a fractured section to appear to be dark gray.

**grease** (*grease*) in sewage, includes fats, free fatty acids, waxes, calcium and magnesium soaps, mineral oils, and other non-fatty materials.

**grease cup** (*grease cup*) a lubricating, cup shaped fitting

**grease cup, oil** (*grease cup, oil*) a heavy viscosity oil used in lubricating cups.

**grease gun** (*grease gun*) a small hand pump for forcing grease under pressure into bearings.

**grease interceptor** (*grease in-ter-cep-tor*) See INTERCEPTOR.

**grease, soldering** (*grease, sol-der-ing*) See SOLDERING GREASE.

**grease trap** (*grease trap*) 1. a trap in a drain or waste pipe to prevent grease from passing into a sewer system. 2. a device installed in a drainage system to hold the grease content while allowing other materials to continue to flow. 3. interceptor used in drainage system to trap grease by the use of baffles and enlargement chambers slowing velocity of flow so grease coagulates on top and can be removed or drawn off. See INTERCEPTOR.

**grease trap draw-off valve** (*grease trap draw off valve*) a special valve used on some types of grease traps for removal of contained grease.

**grease trap, pot-type** (*grease trap, pot-type*) a cylindrical unit having a height equal to its diameter installed in a drainage system to retain the entrapped grease while allowing the continued flow of other materials. See INTERCEPTOR.

**green sand** (*green sand*) a common name for glauconite, a natural zeolite. See ZEOLITE.

**grinder** (*grind-er*) a rotating, solid stone or abrasive wheel used for grinding, sharpening, shaping, etc. (bench or portable).

**grit cloth** (*grit cloth*) sheets of cloth which are glued or imbedded, bits of abrasive material. Used generally in metalwork as sandpaper is used in woodwork.

**ground joint** (*ground joint*) a machined metal joint that fits tightly without gasket or packing.

**ground key faucet** (*ground key fau-cet*) See GROUND KEY VALVE.

**ground key valve** (*ground key valve*) a valve, or faucet, through which the rate of flow of water is controlled by means of a circular plug, or key, that fits closely in a cylindrical or conical machined seat. The axis of the plug is normal to the direction of the flow of water. The plug has a hole or passageway bored through it as a waterway.

**ground water** (*ground wa-ter*) water that is standing in, or flowing through, the ground.

**group vent** (*group vent*) a branch vent servicing two or more traps.

**gunmetal** (*gun-met-al*) 1. a bronze nine parts copper and one of tin. 2. an alloy or metal treated to imitate nearly black tarnished copper alloy gunmetal.

**gutter** (*gut-ter*) **1.** a channel, or gulley, worn by running water. Something forming, or intended, to form a channel. **2.** a groove at an eaves or metal trough under an eaves to catch rainwater and carry it off (as to a downspout) **3.** a low area, course, ditch, or furrow (as at a roadside) to carry off surface water (as to a sewer)

**gypsum** (*gyp-sum*) a mineral used for making plaster of paris, fertilizer, etc.

**G.V.** *Abbr.* for Gate Valve.

# Hh

**h. or ht.** *Abbr.* for Height.

**hacking knife** (*hack-ing knife*) **1.** lead working tool. **2.** knife used for cutting heavy sheet lead; the knife has a wide back on the blade which can be struck with a hammer. See CHIPPING KNIFE; DRAWING KNIFE.

**hacksaw** (*hack-saw*) hand held saw with a narrow blade set in a bow used primarily for cutting metal. Types: (a) close-quarter, (b) pistol-grip. See HAND SAW.

**hacksaw blade** (*hack-saw blade*) a blade used in a hacksaw. A thin blade of metal with cutting teeth on edge commonly with a hole at each end for attaching to the holder.

**hair felt** (*hair felt*) **1.** a non-woven material. **2.** a matted under pressure made of either animal or human hair. **3.** an insulation material.

**half round cape chisel** (*half round cape chis-el*) See CAPE CHISEL.

**half round file** (*half round file*) a file semi-circular in section, or one side curved to a circular segment and the other flat. Half round files are made in all lengths.

**half-S trap** (*half-s-trap*) ½-S=P type. See TRAP.

**hammer** (*ham-mer*) tool for striking, or repeated blows, consisting of a relatively long handle, with heavy metal head set at right angles to it; used to drive nails, caulking lead joints, drive chisels, work metal, break concrete, etc. Types of hammers: a.claw or carpenter's b.machinists or ball peen c.various weights d.sledge hammers, various weights.

**hammer head chisel** (*ham-mer head chis-el*) used to cut through floors, timbers, etc; preferable for hard usage.

**hammer head gouge** (*ham-mer head gouge*) used to cut through floors, timbers, etc.; preferable for hard usage.

**hammond joint** (*ham-mond joint*) See NORMANDY JOINT.

**hand held discharge piece** (*hand held discharge piece*) a type of hand held shower head or other accessory.

**handhole** (*hand-hole*) **1.** a hole large enough only for the insertion of a hand, as for lifting, or of a hand and arm, as for cleaning out otherwise inaccessible places or giving access to enclosed parts. **2.** a shallow form of manhole giving access to a top row of ducts in an underground electrical system.

**handhole gasket** (*hand-hole gas-ket*) **1.** a gasket to fit the oval tank or other opening covering member. **2.** a cleanout opening cover gasket. See MANHOLE GASKET.

**hand pump and spray** (*hand pump and spray*) a pump operated manually having a suction inlet and pressure outlet.

**hand saw** (*hand saw*) saw worked with one hand and operated by a backward and forward drive of the arm; wood cutting. See HACKSAW.

**hanger** (*hang-er*) **1.** something that hangs, overhangs, or is suspended. **2.** a depending part containing a bearing for a revolving piece, especially, a metal frame secured to the ceiling and carrying a bearing for overhead shafting. **3.** a device or contrivance by which or to which

something is hung or hangs. **4.** a metal strap used to hold an eave in place. **5.** a vertical tension member receiving its stress only from the part of the structure directly attached to it. **6.** an iron box secured to any projection from a wall or beam to carry one end of a joist or girder. **7.** devices for supporting and securing pipe, fixtures, and equipment, to walls, ceilings, floors, or any other structural members. See ANCHORS; PIPE HANGER.

**hard lead** (*hard lead*) lead with alloys to stiffen the base. Sometimes called acid lead, antimonial lead, chemical lead or copper lead.

**hard pressure** (*hard pres-sure*) (back pressure) a condition in which the pressure in a non-potable system is greater than the pressure in the potable water distribution system. Hard pressure will cause non-potable liquids to flow into the potable water distribution system through cross connections.

**hard solder** (*hard sol-der*) higher temperature than soft solder. A solder used for joining metals such as copper, silver, gold, or brass. Due to the high melting point of hard solder, a soldering copper cannot be used necessitating a coke, charcoal fire or blow pipe. Composed principally of copper and zinc. Terms hard soldering and brazing are often used interchangeably. See SOLDER; SPELTER SOLDER; BRAZING.

**Harrington (Tapered Sleeve) Joint** [*harring-ton (ta-pered sleeve) joint*] refers to machined tapered pipe ends, joined by a matching tapered sleeve coupling. Used in joining fibre pipe. Sometimes called taper joint or tapered sleeve joint. See BITUMINUS FIBRE PIPE, FIBRE PIPE.

**hatchet copper** (*hatch-et cop-per*) See SOLDERING IRON.

**hatchet iron** (*hatch-et iron*) a form of soldering iron.

**hazard** (*baz-ard*) **1.** a possible source of danger or peril. **2.** a condition that tends to create or increase the possibility of loss or harm.

**hazard, health** (*baz-ard, health*) an actual or potential threat of contamination or pollution of a physical or toxic nature to the potable water system to such a degree that there would be a danger to health.

**hazard, high** (*baz-ard, high*) a connection made to the potable water system whereby the risk of backflow occurring would be from toxic or chemically charged sources.

**hazard, low** (*baz-ard low*) **1.** a connection made to the potable water system whereby the risk of backflow occurring would be limited to the contamination of the potable water with objectionable, but nontoxic substances such as steam, air, food, beverage, etc. **2.** any actual, or potential, threat of pollution to the potable water supply that is considered aesthetically objectionable and would make the water look, smell, or taste bad but would not kill or cause illness

**H. B.** *Abbr.* for Hose Bibb.

**hd.** *Abbr.* for head.

**Hd. P.** *Abbr.* for Head Pressure.

**head** (*head*) **1.** a body of water kept in reserve at a height like a bank, dam, or wall. **2.** the difference in elevation between two points in a body of fluid. **3.** the resulting pressure of the fluid at the lower point expressible at this height; broadly: pressure of fluid. **4.** a ship's toilet. slang (Navy) for fixture. See WATER CLOSET.

**head and pressure** (*head and pres-sure*) the result of height converted to pounds per square inch pressure (kilograms per square centimeter)

**head pressure** (*head pres-sure*) the resulting pressure of the fluid at the lower point expressible at this height; broadly: pressure of fluid. *Abbr.* Hd.P.

**head shower and stop** (*head show-er and stop*) an elevated water distributor equipped with an integral water flow control valve.

**header** (*head-er*) a pipe of many outlets. The outlets can be parallel or may be at 90° to the center line of the header. See MANIFOLD.

**health agency or department** (*health agen-cy or de-part-ment*) the organization established by law to have jurisdiction over the water supply quality.

**health hazard** (*health ha-zard*) See HAZARD, HEALTH.

**heater** (*heat-er*) a plumbing fixture which heats water by the combustion of gas, electricity; oil, or other combustibles.

**heat exchanger** (*heat ex-chang-er*) a device, such as a coiled copper tube, immersed in a tank of water, that is used to transfer heat from one fluid to another through an intervening surface.

**heat loss** (*heat loss*) 1. loss of heat from one space to another. 2. energy or power transmitted out of a system in the form of heat.

**heat sources (class I and I-V)** (*heat sources*) heat sources provided by the enclosure manufacturers shall be constructed and installed so that water or other liquids do not enter and/or accumulate in, or on, the live wired sections or electrical components or wiring. (Electric heat sources and electrical components which are associated with the heat source and supplied by the manufacturer shall be listed by an independent product safety listing and certification agency for use in damp locations.)

**heating surface** (*heat-ing sur-face*) all surfaces which transmit heat from the flames or flue gases to the medium to be heated.

**heat pump** (*heat pump*) a mechanical device that transfers heat from one medium to another thereby heating the first and cooling the other.

**heat transfer** (*heat trans-fer*) the movement of heat from one body to another by means of radiation, convection or conduction.

**heat transfer fluid** (*heat trans-fer flu-id*) in a solar system the air, water, or other fluid which is used to carry thermal energy from one subsystem to another.

**heat trap** (*heat trap*) a device incorporating a down-flow, or return, designed to prevent auto-circulation of heated water in the outlet fitting of a water heater, thus preventing heat loss.

**heel inlet** (*heel in-let*) See BRANCH ELL.

**heel inlet elbow** (*heel in-let el-bow*) See BRANCH ELL.

**height of building** (*height of build-ing*) the height of a building measured at the center line of its principal front, from the street grade (or, if setting back from the street, from grade of the ground adjoining the building), to the highest part of the roof, if a flat roof or to a point two-thirds the height of the roof (if a gabled or hip roof).

**hematite** (*hem-a-tite*) an important iron ore.

**hex wrench** (*hex wrench*) hex jaws afford multi-sided grip on hex and square nuts, unions, packing nuts, etc.; smooth jaw design for use on polished surfaces. See OFFSET HEX WRENCH.

**“h” fitting** (*“h” fit-ting*) a drainage fitting designed exclusively for venting purposes. The side branch may be the same as the main, or reduced, in size. Sometimes called Limberdick.

**high hazard** (*high haz-ard*) See HAZARD, HIGH.

**hinged hook** (*binged hook*) a hook, or joint, on which a door or lid turns.

**hold backs for shower** (*hold backs for show-er*) sometimes called shower curtain tie back. A hook and chain, nickel or chrome plated, used in retaining cloth or plastic shower curtains in the full open position.

**hole cover, faucet** (*hole cov-er, fau-cet*) a convex disc to close unused holes, or drillings, in plumbing fixtures.

**hole saw** (*hole saw*) Also called cylinder saw or crown saw. See CROWN SAW.

**hole shooter** (*hole shoot-er*) See ELECTRIC DRILL.

**holiday** (*hol-i-day*) an area of applied lining or coating to tanks or vessels that has a discontinuity or an electrical resistance less than the specified value.

**hook, bead chain** (*hook, bead chain*) a hook usually of the "S" shape designed to be attached to the end of a bead type chain.

**hopper** (*hop-per*) 1. entry part of a food waste disposer; household or commercial.  
2. the space, or cavity, within a food waste grinder for receiving and containing food waste prior to and during the reduction process.

**hopper-bowl or closet** (*hop-per-bowl or clos-et*) the upper funnel-shaped portion of a hopper water closet. See HOPPER - LONG AND SHORT.

**hopper-long and short** (*hop-per-long and short*) the upper funnel-shaped portion of a hopper waste closet. Short pattern approx. 40" (101.6 cm) long; long pattern: longer than 40" (101.6 cm) See HOPPER - BOWL OR CLOSET.

**hopper trap** (*hop-per trap*) the four inch waste trap at the bottom of the hopper in a water closet.

**hor.** *Abbr.* for Horizontal.

**horizontal branch** (*hor-i-zon-tal branch*) a branch drain extending laterally from a soil, or waste stack, or a building drain, with or without vertical sections, or branches, which receives the discharge from one or more fixture drains, and conducts it to the soil, or waste stack, or the building drain.

**horizontal caulked joint** (*hor-i-zon-tal caulked joint*) a bell and spigot caulked connection in a horizontal run.

**horizontal pipe** (*hor-i-zon-tal pipe*) a pipe that is installed in a horizontal position, or that makes an angle of less than 45 degrees with the horizontal.

**horsepower** (*horse-pow-er*) a unit of power in the U.S. customary system equal to 745.7 watts or 550 foot-pounds per second. *Abbr.* H.P.

**hose bibb** (*hose bibb*) a faucet to which a hose may be attached. *Abbr.* H.B.

**hose bibb backflow preventer** (*hose bibb back-flow pre-ven-ter*) an assembly composed of a check valve internally force loaded to a closed position and an atmospheric vent valve or means force loaded in a closed position when device is not under pressure. Shall only be used on systems where additional sources of pressure are not introduced. For protection of the potable water supply against pollution by contaminants which can otherwise be caused to enter the system by backsiphonage through the hose threaded outlets.

**hose bibb vacuum breaker** (*hose bibb vac-u-um break-er*) a vacuum breaker designed to be installed on the discharge side of the hose bibb or sill cock; the design embraces a check valve member force loaded or biased to a closed position and an atmospheric vent valve, or means, force loaded, or biased, to an open position when the device is not under pressure; the device shall only be used on systems where additional sources of back pressure are not introduced by any means other than head pressure developed in a connected hose.

**hose connection backflow preventer** (*hose con-nec-tion back-flow pre-vent-er*) a backflow prevention device designed to be connected to a hose treaded outlet on a potable water system, consisting of two independent check valves force loaded in the closed position with an atmospheric vent located between the two check valves which is force loaded in the closed position, and provided with a means for attaching a hose.

**hose faucet** (*hose fau-cet*) a type of lawn faucet. A faucet, or valve, equipped with hose threads ( $\frac{3}{4}$  U.S. standard hose) to which a hose may be connected. The hose faucet may have a wheel, lever, tee, key or other handle permanently mounted; removable; or locked. See HOSE THREADED FAUCET; FAUCET; SILL COCK.

**hose gate valve** (*hose gate valve*) 1. a fire-extinguishing system component. 2. a valve with one threaded end for hose application.

**hose globe valve** (*hose globe valve*) globe valve with hose threaded at one end. See GLOBE VALVE.

**hose rack** (*hose rack*) a frame work for storing hose. *Abbr.* H.R.

**hose station** (*hose sta-tion*) a combination of valve, hose, nozzle, and hose rack. A part of a fire-extinguishing system.

**hose thread** (*hose thread*) a screw thread used on fittings to provide an attachment for a garden hose. Sometimes called garden hose thread. Usually 12 threads per inch of threaded surface on  $\frac{3}{4}$ " pipe size, as compared to 14 threads per inch of threaded surface on  $\frac{3}{4}$ " thread size.

**hose threaded faucet** (*hose thread-ed fau-cet*) a type of lawn faucet equipped with threads for attachment of a hose. See HOSE FAUCET.

**hose washer** (*hose wash-er*) a disc with a hole in its center. Used as a seal between the hose connector and its mate.

**hot air damper** (*hot air damp-er*) a shutter type device to control air passing through a pipe or duct.

**hot water** (*hot wa-ter*) water at a temperature not less than 120°F (49°C). *Abbr.* H.R.

**hot water boiler** (*hot wa-ter boiler*) a vessel for storing and/or heating water.

**hot water boiler flow control fitting** (*hot wa-ter boil-er flow con-trol fit-ting*) a valve automatic, semi-automatic or manually operated to control the outlet flow of heated water from the hot water boiler.

**hot water boiler thermometer** (*hot wa-ter boil-er ther-mom-e-ter*) heat registering device installed in water boiler to indicate internal temperature. See BOILER GAUGE.

**hot water dispensers, electric storage type** (*hot wa-ter dis-pen-sers, e-lec-tric stor-age type*) designed for household, or single, fixture and continuously vented to atmosphere, electrically heated storage tanks.

**hot water generator** (*hot wa-ter gen-er-a-tor*) an enclosed vessel in which water is heated for domestic or industrial use.

**hot water meter** (*hot wa-ter me-ter*) a device to measure volume of hot water and made of material compatible with the temperature involved. See WATER METER.

**hot water supply and return** (*hot wa-ter sup-ply and re-turn*) a system of piping to cause circulation of the heated water. *Abbr.* H.W.S. and H.W.R.

**house drain** (*house drain*) that part of the lowest horizontal piping of a drainage system which received the discharge from soil, waste, and other drainage pipes within a building and conveys it to the building or house sewer (beginning three feet to five feet outside the building wall) See BUILDING DRAIN.

**household dishwasher** (*house-hold dish-wash-er*) an appliance which, with the aid of water, automatically washes, rinses and dries (where drying process is included) dishware, glassware and cutlery and most cooking utensils by chemical, mechanical or electrical means and discharges to the plumbing drainage system

**house sewer** (*house sew-er*) See BUILDING SEWER.

**house slant** (*house slant*) a tee or wye connection in the sewer for the purpose of connecting to the house sewer. See SLANT.

**house tank** (*house tank*) an elevated reservoir which received water to be distributed, usually by gravity, to the building's water system. See ATTIC TANK.

**house trap** (*house trap*) a trap in the house drain for preventing the entrance of gases from a sewer. See BUILDING TRAP.

**H.P.** *Abbr.* for Head Pressure and Horsepower

**Hr.** *Abbr.* for Hour.

**H.R.** *Abbr.* for Hose Rack.

**hub** (*hub*) the enlarged end of a pipe made to provide a connection into which the end of the joining pipe fits. See BELL.

**hubless class cast iron soil pipe** (*hub-less class cast iron soil pipe*) a descriptive designation of various sizes cast iron, soil pipes. See SOIL PIPE.

**hub-type ferrules, or sleeves, brass** (*hub-type fer-rul-es, or sleeves, brass*) See SOIL PIPE.

**hub-type soil pipe** (*hub-type soil pipe*) See SOIL PIPE.

**humidity** (*hu-mid-i-ty*) 1. moisture. 2. dampness. 3. a moderate degree of wetness, which is perceptible to the eye or touch, esp. of the atmosphere, or of anything which has absorbed moisture from the atmosphere. 4. a relationship of H<sub>2</sub>O to air given usually in percentage.

**humus** (*hu-mus*) 1. a brown, or black, complex and varying material formed by slow decomposition of vegetable and animal matter 2. the organic portion of soil.

**H.W.** *Abbr.* for Hot Water.

**H.W.H.** *Abbr.* for Hot Water Heater.

**H.W.R.** *Abbr.* for Hot Water Return.

**H.W.S.** *Abbr.* for Hot Water Supply.

**hydrant** (*hy-drant*) a valve, or faucet, for drawing water from a pipe. The term is usually applied to an outside installation for supplying a relatively large quantity of water for sprinkling, watering, fire protection, and similar purposes. See YARD HYDRANT.

**hydraulic** (*hy-draul-ic*) 1. operated by or employing water or other liquids in motion. 2. operated by water, or other liquids, under pressure.

**hydraulic gradient** (*hy-draul-ic gra-di-ent*) represents the slope of the surface of the sewage, or drain water, in a pipe and depends on the velocity head.

**hydraulic jump** (*hy-draul-ic jump*) the increase in depth of water in the horizontal drain at the base of a stack caused by the reduced velocity of water flowing in the horizontal pipe when receiving flow from a vertical stack.

**hydraulic pipe cutter** (*hy-draul-ic pipe cut-ter*) chain pipe-cutter utilizing hydraulic ram to cut cast iron pipe. See SOIL PIPE CUTTER.

**hydraulic radius** (*hy-draul-ic ra-dius*) 1. the ratio of the cross-sectional area of a channel or pipe in which a fluid is flowing to the wetted perimeter of the conduit. 2. the ratio of area to wetted perimeter.

**hydraulic ram** (*hy-draul-ic ram*) the utilization of gravity flow to increase pressures.

**hydrochloric acid** (*hy-dro-chlo-ric ac-id*) an aqueous solution of hydrogen chloride (HCL) that is a strong, corrosive, irritating liquid which is normally present in diluted form in gastric juices, and is widely used in industry (as for pickling metals) and in the laboratory. Also called Muriatic Acid.

**hydrodynamics** (*hy-dro-dy-nam-ics*) the science or study of the motions of fluids and the forces acted on solids within these fluids and in motion within them.



**hydrogen** (*hy-dro-gen*) a non-metallic univalent element that is the simplest and lightest of the elements and is normally a colorless, odorless, highly flammable diatomic gas. Used especially in the production of its economic compounds.

**hydrogen sulfide** (*hy-dro-gen sul-fide*) a flammable poisonous gas  $H_2S$  of disagreeable odor. Found especially in many mineral waters and in putrefying material.

**hydrokinetic** (*hy-dro-ki-net-ic*) **1.** the term used to describe the phenomena of the motions of fluids or the forces which produce or affect such motions. **2.** a branch of kinetics that deals with liquids; opposite of hydrostatic. See KINETIC.

**hydro-mechanical** (*hy-dro-me-chan-i-cal*) a term sometimes used to describe the physical, or mechanical, phenomena of hydraulics.

**hydro-mechanics** (*hy-dro-me-chan-ics*) a branch of mechanics that deals with the equilibrium and motion of fluids and solids immersed in them.

**hydronics** (*hy-dron-ics*) a coined word meaning the art, or practice, of heating and cooling with water.

**hydropneumatic** (*hy-dro-pneu-mat-ic*) referring to, or relating to, operation by a combination of water and air or other gas.

**hydropneumatic test** (*hy-dro-pneu-mat-ic test*) a test for fluid leakage in a piping system. In this test the portion of the piping system to be tested is sealed with water under air pressure. Test is to determine where there is leakage which will be indicated by pressure drop.

**hydrostatic joint** (*hy-dro-stat-ic joint*) used in large water mains in which sheet lead, or other sealant material, is forced lightly into the bell of a pipe by means of the hydrostatic pressure of a liquid.

**hydrostatic pressure** (*hy-dro-stat-ic pressure*) **1.** pressure exerted by, or existing within, a liquid at rest with respect to adjacent bodies. **2.** a pressure exerted uniformly and perpendicularly to all surfaces, as by a homogeneous fluid.

**hydrostatics** (*hy-dro-sta-tics*) the science, or study of, the characteristics of fluids at rest; particularly with the pressure exerted by a liquid on an immersed body.

**hydrostatic test pressure** (*hy-dro-sta-tic test pres-sure*) the pressure applied to a vessel, or other equipment, to test its ability to operate safely at its rated water working pressure.

**hygroscopic** (*hy-gro-scop-ic*) readily taking up and retaining moisture.

**hygroscopic material** (*hy-gro-scop-ic mate-ri-al*) a material which readily takes up and retains moisture.

# Ii

**icebox** (*ice-box*) an insulated container having a compartment for ice and used for refrigeration.

**icebox waste** (*ice-box waste*) **1.** a drain to carry away the liquid (result of melted ice) from food storage coolers. **2.** a drain to carry away the condensate from the cooler coils of a food storage unit. Waste is not connected to plumbing drainage or waste system except by indirect means.

**ice cube maker** (*ice cube ma-ker*) See ICE MACHINE, ICE MAKER.

**ice machine** (*ice ma-chine*) a term used to describe the equipment used to make and/or store and dispense a variety of potable ice.

**ice maker** (*ice ma-ker*) term used to describe the equipment which makes or produces potable ice, usually in the form of cubes. See ICE MACHINE.

**I. D.** *Abbr.* for Inside Diameter.

**Imhoff cone** (*im-hoff cone*) a conically shaped graduated vessel used to measure approximately the volume of settleable solids in various liquids of sewage origin.

**Imhoff tank** (*im-hoff tank*) a tank for sewage clarification consisting of an upper or sedimentation chamber with sloping floor leading to slots through which the solids settle to the lower or sludge-digestion chamber. Named after its developer. Differs from septic tanks in that digestion takes place in a separate compartment from which settlement occurs.

**Imp.** *Abbr.* for Imperial.

**impact wrench** (*im-pact wrench*) an electrically, or pneumatically, operated wrench that gives a rapid succession of sudden torques.

**impeller** (*im-pel-ler*) **1.** a rotor or blade of a rotor or pump. **2.** one which pushes or impels a liquid.

**impervious** (*im-per-vi-ous*) a surface and texture generally smooth which does not offer suitability to absorption.

**in. or "** *Abbr.* for Inches.

**inc.** *Abbr.* for Increaser or Increased.

**inch** (*inch*) a unit of measure equal to one-twelfth (1/12) part of a foot or to a thirty-sixth (36th) part of a yard. *Abbr.* in. or ".

**incinerator** (*in-cin-er-a-tor*) a furnace or a container for incinerating waste materials.

**increaser** (*in-crea-ser*) **1.** a fitting which permits an increase in the size of a pipe. Constructed of many different materials. **2.** a fitting so shaped that one end receives smaller pipe size in direction of flow. See REDUCER; WYE. *ABBR.* INC.

**independently acting checks** (*in-de-pen-dent act-ing checks*) **1.** two independent check valves with no common parts except for the body housing. There can be no contact between any moving components of either check valve through its normal operation. Total failure of either check valve shall in no way affect the operation of the other check valve. **2.** when one check valve becomes inoperative in any position

through its full travel it shall not affect the normal operation of the other check valve. **3.** an independently acting check valve is one that is not affected by any other component nor does it affect the action of another component.

**index-sludge volume** (*in-dex-sludge volume*) the volume in milliliters occupied by one gram of dry solids after the aerated mixed liquor settles 30 minutes.

**indicator post** (*in-di-ca-tor post*) mechanically operated indicator showing the seat position when a valve (with a non-rising stem) is buried underground.

**indirect connection** (*in-di-rect con-nection*) See INDIRECT WASTE PIPE.

**indirect cross connection** (*in-di-rect cross con-nection*) a potential cross connection in which the interconnection is not continuously enclosed and the completion of the cross connection depends on the occurrence of one or more abnormal conditions.

**indirect vent** (*in-di-rect vent*) a pipe installed to vent a fixture trap and connects with the vent system above the fixture served or terminates in the open air. See BACK VENT.

**indirect waste pipe** (*in-di-rect waste pipe*) a waste pipe that does not connect directly with the drainage system, but discharges into the drainage system through an air break or air gap into a trap, fixture, receptacle, or interceptor, properly wasted and vented.

**indirect waste receiver** (*in-di-rect waste re-ceiver*) a receptacle to receive wastes from other fixtures or plumbing units.

**individual sewage disposal system** (*in-di-vid-ual sew-age dis-pos-al sys-tem*) a system for disposal of domestic sewage by means of a septic tank, cesspool, or mechanical treatment. Designed for use apart from a public sewer to serve a single establishment where a public sewer is not available. See CESSPOOL; SEPTIC TANK.

**individual vent** (*in-di-vid-u-al vent*) a pipe installed to vent a fixture drain. It connects with the vent system above the fixture served or terminates outside the building into the open air at a point above the roof level. See BACK VENT.

**individual water supply, private** (*in-di-vid-u-al wa-ter sup-ply, pri-vate*) a supply other than an approved public water supply which serves one or more families.

**industrial wastes** (*in-dus-tri-al wastes*) the liquid wastes resulting from the processes employed in industrial and commercial establishments.

**influent** (*in-flu-ent*) flowing in, especially contributing water to the zone of saturation and thereby sustaining or raising the water table.

**infrared radiation** (*in-fra-red ra-di-ation*) radiation with wave lengths greater than 70 millionths centimeter (7000 angstroms units) but less than the radio waves, about 5.5 centimeters.

**initial outlet set temperature** (*in-i-tial out-let set tem-per-a-ture*) the average of the values of the mixed temperature (T3) for the ten (10) seconds immediately preceding the start of the test.

**injection burner** (*in-jec-tion burn-er*) a burner employing the energy of a jet of gas to inject air for combustion into the burner and mix it with gas.

**inlet** (*in-let*) supply opening to the plumbing fixture or device.

**inline offset** (*in-line off-set*) one or more fittings close coupled to control the flow rate of waste in the stack(s).

**input rating** (*in-put rat-ing*) the gas-burning capacity of an appliance in B.T.U. per hour as specified by the manufacturer. Appliance input ratings are based on sea level operation and need not be changed for operation up to two thousand feet. Input ratings should be reduced at the rate of four percent per one thousand feet above sea level.

**insanitary** (*in-san-i-tary*) a condition which is contrary to sanitary principles or is injurious to health. Conditions to which the word insanitary applies include the following: (a) any trap which does not maintain a proper trap seal. (b) any opening in a drainage system, except where lawful, which is not provided with an approved water-sealed trap. (c) any plumbing fixture or other waste discharging receptacle or device, which is not supplied with water sufficient to flush it and maintain it in a clean condition. (d) any defective fixture, trap or pipe. (e) any trap, except where in this code exempted directly connected to a drainage system the seal of which is not protected against siphonage and backsiphonage by a vent pipe. (f) any connection, cross-connection, construction or condition, temporary or permanent, which would permit or make possible by any means whatsoever, any unapproved foreign matter to enter a water distribution system used for domestic purposes.

NOTE: the foregoing enumerations of conditions to which the term insanitary shall apply does not preclude the application of that term to conditions that are in fact insanitary.

**insertable sisson joint** (*in-sert-able sis-son joint*) **1.** a bell and spigot connection in which the hub or bell depth is several pipe diameters long. **2.** specialty fitting used only in a vertical line of waste or soil installations.

**inside caulking** (*in-side caulk-ing*) See CAULKING IRON.

**inside soil pipe cutter** (*in-side soil pipe cut-ter*) the tool employs cutting wheels fixed radially near the end of a shaft which is inserted into the open end of a pipe. A handle on the opposite end of the shaft is turned causing the cutting wheels to revolve and extend developing sufficient pressure to cut the pipe. See SOIL PIPE CUTTER.

**inside thread** (*in-side thread*) continuous regularly spaced grooves and ribs in the internal wall of a fitting, or tube, which form a helix. Used for connecting fixtures together. Sometimes called female thread. Compare outside thread.

**in-situ** (*in-si-tu*) from Latin "in place; in its original place."

**inspector** (*in-spec-tor*) See ADMINISTRATIVE AUTHORITY.

**installed** (*in-stalled*) altered, changed, or a new installation.

**insulated pipe units** (*in-su-la-ted pipe units*) prefabricated complete unit of one or more pipes insulated usually with fiber glass and protected by a tube or conduit against external damage.

**integral seat** (*in-te-gral seat*) a seat that is not a separate unit but integral with the water closet fixture. Found in prison or detention-type buildings for safety reasons.

**integral strainer** (*in-te-gral strain-er*) a strainer within the body, or within an extension of the body, of the device.

**integrated type** (*in-te-gra-ted type*) a complete and independent device which is assembled but is separate and independent of any working part of the device.

**intercepting sewer** (*in-ter-cep-ting sew-er*) a large sewer, or conduit, which receives the discharges from many smaller tributary sewers. Sometimes called a trunk sewer.

**interceptor** (*in-ter-cep-tor*) a device designed and installed so as to separate and retain deleterious, hazardous, or undesirable matter from normal wastes while permitting normal sewage or liquid wastes to discharge into the drainage system by gravity. See RECEPTOR; CATCH BASIN; GREASE TRAP; GREASE TRAP, POT-TYPE; AND TRAP.

**interconnection** (*in-ter-con-nec-tion*)

**1.** to connect solidly, permanently or temporarily. **2.** a cross connection (not to be confused with crossover). **3.** a cross connection between two separate systems (*i.e.*: a vendor's system and a user's system).

**internal pipe wrench** (*in-ter-nal pipe wrench*)

any of several types of wrenches having jaws or gripping devices designed to grip a pipe or tube internally.

**internal strainer** (*in-ter-nal strain-er*)

a perforated plate, screen or mesh within the body, or within an extension, of the body of a valve.

**inv. el.** *Abbr.* for Invert Elevation.**invert** (*in-vert*)

**1.** the lowest portion of the inside of any horizontal pipe. **2.** to turn as upside down.

**invert elevation** (*in-vert el-e-va-tion*)

the elevation of the inside bottom of a pipe or conduit.

**inverted joint** (*in-vert-ed joint*)

a fitting reversed in position, upside down, or turned in a contrary direction.

**inverted key curb stop** (*in-vert-ed key curb stop*)

a core-type valve in which the larger diameter of the core is at the bottom; the key or operating device or lug is on the smaller diameter end of the core.

**inverted poured joint** (*in-vert-ed poured joint*)

a molten lead joint made with the bell pointed downward and the male inserted end pointing upward.

**invert iron** (*in-vert iron*)

a caulking, or yarning iron, shaped similar to the letter "S" for awkward locations. These tools are also available in left and right versions or styles.

**inverts** (*in-verts*)

general reference to ports in the sewage system; either entry or outlet.

**ion** (*i-on*)

**1.** an atom, or group of atoms, that carry a positive, or negative, electric charge as a result of having lost, or gained, one or more electrons. **2.** a free electron or other charged subatomic particle. See ACID; ALKALI.

**I.P.S.** acronym for iron pipe size**iron** (*i-ron*)

a heavy, malleable, ductile, magnetic element, chiefly bivalent and trivalent, that readily rusts in moist air. It is silver-white when pure. Very chemically active. Occurs native in meteorites and combined in most igneous rocks, that is usually extracted from its ores by smelting with coke and limestone in a blast furnace. It is widely used metal and plays a vital role in biological processes. Atomic #26, atomic wt. 55.85, density 7.86, hardness 4-5 (iron); steel 5-8.5, melting point 1535 °C, boiling point 3000 °C.

**iron, cast** (*i-ron, cast*)

See CAST IRON.

**iron drain** (*i-ron drain*)

a drain, floor, barn, or other made of iron; usually, cast iron.

**iron pipe** (*i-ron pipe*)

piping made of iron. Several types: cast iron, wrought iron, centrifrically cast iron pipe and alloys.

**iron pipe size** (*i-ron pipe size*)

the approximate inside diameter of pipe. Pipe in these sizes may be made from several materials such as steel, brass, copper, plastic, etc. *Abbr.* I.P.S.

**irons** (*i-rons*)

See CAULKING IRON.

**iron, sand of** (*i-ron, sand of*)

a common name for ferrous sulphate.

**iron water filter** (*i-ron wa-ter fil-ter*)

a filter used to remove iron from water or other liquid. *Abbr.* I.W.F.

**irrigation** (*ir-ri-ga-tion*)

**1.** to wet; to range; to dislodge, (*i.e.*: lawn or ground wetting.). **2.** hospital's, or clinic's, device used in treating humans or animals.

**irrigation water** (*ir-ri-ga-tion wa-ter*)

water distributed on, or toward, plant life to promote growth. See WATER.

**isolation or internal protection** (*is-o-la-tion or in-ter-nal pro-tec-tion*)

the appropriate type of method of backflow protection within the consumer's potable water system at the point of use, commensurate with the degree of hazard.

**isolation (policy)** (*is-o-la-tion* [*pol-i-cy*]) **1.** to confine a potential source of contamination to the non-potable system being served **2.** to provide a backflow prevention mechanism at each actual or potential cross-connections. (sometimes called: internal isolation)

**isometric view** (*i-so-met-ric view*) an “exploded”, or open drawing, of the component of an assembly shown separately in their relative positions.

**Italian-corrugation** (*i-tal-ian- cor-ru-ga-tion*) a roof with no boards under the metal roofing.

**I.W.** *Abbr.* for Indirect Waste.

**I.W.F.** *Abbr.* for Iron Water Filter.

# Jj

**jacket** (*jack-et*) the outer casing, shell, hater or storage vessel.

**jackhammer** (*jack-ham-mer*) a pneumatic rock drill of the hammer type usually held in the hands of the operator.

**jackscrew** (*jack-screw*) a screw operated jack for lifting or for exerting pressure.

**J Bend** (*j bend*) a return bend - a 180 degree turn. See TRAP; P TRAP; S TRAP.

**jet pump** (*jet pump*) a pump in which a small jet of steam, air, water, or other fluid in rapid motion lifts, or otherwise moves by its impulse, a large quantity of the fluid with which it mingles.

**jig saw** (*jig saw*) a narrow saw mounted vertically in a frame used for cutting curves.

**john** (*john*) slang. See WATER CLOSET.

**joint** (*joint*) **1.** the result of joining either solidly or loosely; tightly or loosely. **2.** the juncture of two pipes.

**joint cement** (*joint ce-ment*) See PIPE DOPE.

**joint chisel** (*joint chis-el*) a tool chisel in an arc form at the cutting edge which is at right angles to the center of the tool.

**joint component** (*joint com-pon-ent*) any gasket, collar, clamp or other device used to connect pipe to pipe or pipe to fitting, in the form of a mechanical joint.

**joint runner** (*joint run-ner*) a piece of asbestos rope with clamps placed around a pipe, or tile joint, to serve as a dam for the retention of poured molten metal later to be caulked in. An incombustible type of packing, generally used for guides and holds lead in a bell during the pouring of a joint.

**joint wiping** (*joint wip-ing*) **1.** to spread by or as if by wiping. **2.** to form a joint between lead pipes, by applying solder in repeated increments individually spread and shaped with greased cloth pads.

**journey plumber or journey** (*jour-ney plumb-er or jour-ney*) **1.** a plumber who does plumbing work for another for hire. **2.** one who has served his apprenticeship. **3.** a person, who by himself, does work in plumbing, subject to inspection under any law, ordinance, by law, rule, or regulation.

**jumpover** (*jump-o-ver*) See CROSSOVER; RETURN OFFSET.

**junction manhole** (*junc-tion man-hole*) a manhole at the joining point of two or more sewers. See MANHOLE.

# Kk

**kerosine or kerosene** (*ker-o-sine or ker-o-sene*) a flammable hydrocarbon that is less volatile than gasoline usually obtained by distillation of petroleum and used for a fuel and as a solvent.

**key hole saw** (*key hole saw*) a hand held long bladed saw set into a pistol grip for cutting out or around objects.

**kilogram calorie** (*ki-lo-gram ca-lo-rie*)  
See CALORIE.

**kinetic** (*ki-net-ic*) relating to kinetics or to the motion of material bodies and to the force and energy associated therein.

**kinetic energy** (*kin-et-ic en-er-gy*) energy available from a flowing column of water due to its velocity.

**knockout** (*knock-out*) **1.** something that can be loosened or forced out typically to release or force out something else. **2.** the hole produced when such a piece is forced out.

**krapper** (*krap-per*) SEE CRAPPER.

**"K" type copper tube** (*"k" type cop-per tube*) a designation of wall thickness of a copper tube.



# L

**l. or lgth.** *Abbr.* for Length.

**laboratory faucet type, backflow preventer** (*lab-o-ra-to-ry fau-cet type, back-flow pre-vent-er*) See BACKFLOW PREVENTER.

**labor union** (*la-bor un-ion*) an organization created for the purpose of advancing (as by collective bargaining) its members' interests (as in respect to wages and working conditions)

**ladder** (*lad-der*) an instrument of wood, metal, or rope for climbing, consisting of two parallel pieces connected by cross pieces at regular intervals which serve as foothold.

**ladle** (*la-dle*) spoon, or cup-shaped, tool with a long handle, used in pouring molten wiping solder, caulking lead, zinc, sulphur, etc.; made in either single or double lipped and in various sizes.

**lag bolt** (*lag bolt*) See LAG SCREW.

**lag hook** (*lag hook*) a course threaded rod with a hook on the protruded end.

**lag screw** (*lag screw*) a screw having a wrench head and wood-screw threads terminating in a point. Also called lag bolt.

**lamp hole** (*lamp hole*) **1.** an opening provided in the side or top of a tank so that a light may be inserted to aid examination of the interior. **2.** a vertical pipe or shaft between manholes, to enable inspection of the interior of a sewer.

**lap joint, eaves trough** (*lap joint, eaves trough*) the joined areas are overlayed by a given dimension. See EAVES TROUGH.

**lap weld** (*lap weld*) a weld in which two metallic surfaces are connected by lapping one over the top of the other. Sometimes used in making small-sized iron pipe from sheet metal.

**large calorie** (*large ca-lo-rie*) See CALORIE.

**lateral** (*lat-er-al*) in plumbing, a secondary pipeline. In sewage, a common sewer to which no other common sewer is a tributary. It receives sewage from building sewers.

**latrine** (*la-trine*) **1.** a water closet consisting of a continuous trough in a floor containing water. The trench extends under two, or more, adjacent seats, or spaces, for occupancy. Multi-person use at one time. **2.** a fixture, or apparatus, to receive abdominal cavity discharges; device sometimes flushed with a constant flow of liquid (water) See WATER CLOSET; RANGE CLOSET.

**laundry faucet** (*laun-dry fau-cet*) a valve to control the flow of water either hot or cold, at laundry tray.

**laundry tray** (*laun-dry tray*) a sink for the purpose of washing laundry. *Abbr.* L.T.

**laundry tub** (*laun-dry tub*) See LAUNDRY TRAY.

**lav.** *Abbr.* for Lavatory.

**lavatory (*lav-a-to-ry*)** **1.** a basin, or vessel, for washing. **2.** a plumbing fixture, as above, especially placed for use in personal hygiene. Principally not used for laundry purposes and never used for food preparation, or utensils, in food services. **3.** a fixture designed for the washing of the hands and face. Sometimes called a wash basin. *Abbr.* lav. See BASIN; CHINA BASIN; SINK; EARTHENWARE BASIN; LAVATORY, INSTITUTIONAL; LAVATORY, PEDESTAL; LAVATORY, SURGEONS; LAVATORY, WALL-HUNG; OVAL BASIN.

**lavatory connectors (*la-va-to-ry con-nec-tors*)** See BASIN CONNECTIONS; BATH CONNECTIONS; FLEXIBLE SUPPLIES.

**lavatory (corner) [*lav-a-to-ry (cor-ner)*]** lavatory constructed with sides in contact with two adjacent walls.

**lavatory (dental) [*lav-a-to-ry (den-tal)*]** a fixture supplied with water and waste connections used in a dentist office for the washing of hands.

**lavatory, institutional (*lav-a-to-ry, in-sti-tu-tion-al*)** a lavatory constructed to be vandal-proof. See LAVATORY.

**lavatory leg (*lav-a-to-ry leg*)** pedestal or other vertical member intended to support the fixture, but may be primarily decorative.

**lavatory, pedestal (*lav-a-to-ry, ped-es-tal*)** a lavatory constructed and supported by a base. See LAVATORY.

**lavatory supply pipe (*lav-a-to-ry sup-ply pipe*)** the water carrying conduit from the branch supply pipe to the lavatory faucet.

**lavatory, surgeons (*lav-a-to-ry, sur-geons*)** a fixture used by doctors to scrub up.

**lavatory, wall-hung (*lav-a-to-ry, wall-hung*)** a lavatory hung on the wall. See LAVATORY.

**lawn faucet (*lawn fau-cet*)** *Abbr.* L.F. See HOSE BIBB; HOSE FAUCET.

**lb. *Abbr.*** for Pound.

**leach (*leach*)** **1.** the action of percolating water, or other liquids, in order to separate the soluble components. **2.** to dissolve out by the action of a percolating liquid. **3.** to remove nutritive, or harmful, elements from (soil) by percolation.

**leaching cesspool (*leach-ing cess-pool*)** a cesspool that is not water tight.

**leaching field (*leach-ing field*)** a system of pipes installed to leak its flow liquid into the soil.

**leaching well/pit (*leach-ing well/pit*)** a pit or receptacle having porous walls which permit the contents to seep into the ground.

**lead (*lead*)** a heavy, soft, malleable, ductile plastic but inelastic metallic element that is bluish white when freshly cut but tarnishes readily in moist air to dull gray and used especially in pipes, cable sheaths, solder type metal, and shields against radioactivity. Symbol Pb.

**lead bend (*lead bend*)** a 90° lead fitting between the vertical discharge opening of a water closet and the entry into a soil pipe system.

**lead burning (*lead burn-ing*)** lead welding.

**lead caulking (*lead caulk-ing*)** a gray-blue soft metal used for caulking.

**lead C. P. (*lead c p*)** chemically pure. Sometimes commercially pure.

**leader (*lead-er*)** an exterior drainage pipe for conveying storm water from roof or gutter drains. A pipe to convey rain water from the roof to the building storm drain, combined building sewer, or other means of disposal. See CONDUCTOR; CONDUIT; DOWNSPOUT.

**lead joint (*lead joint*)** usually means the making of a joint by pouring molten lead into the annular space between a bell and spigot and then making the joint tight by caulking.

**lead of a screw thread** (*lead of a screw thread*) the distance that a nut, or female threaded, fitting will move forward if it is turned one revolution on the thread. In a single threaded screw the lead and pitch are equal; in a double threaded screw thread, the nut will move forward through two threads, etc. Compare with pitch of screw threads.

**lead pig** (*lead pig*) the term "pig" means the metal as cast into bars at the conclusion of the process of smelting.

**lead pipe** (*lead pipe*) pipe made from lead. See LEAD.

**lead pipe cutter** (*lead pipe cut-ter*) a tool with thin rotating discs which cut through the side wall of lead pipe when rotated around the pipe or when the pipe is rotated inside it.

**lead pipe expanding pliers** (*lead pipe expanding pliers*) devised to do the work of several sizes of turn pins.

**lead pot** (*lead pot*) See SOLDER POT.

**lead screw anchor** (*lead screw an-chor*) an envelope unit between the screw and the hole in some solid material as rock, stone, and masonry.

**lead sheet** (*lead sheet*) thin, but large square or rectangular piece of lead. Usually defined by weight per square foot, i.e. 21 lbs. = 21 lbs./square foot, 4 lbs. = 4 lbs./square foot, etc. Used for lining tanks, roof, or chimney flashings.

**lead sundries** (*lead sun-dries*) miscellaneous items made of lead. See LEAD TACKS.

**lead tacks** (*lead tacks*) pieces of lead that are soldered or burned or welded to lead pipe so that it can be secured or supported.

**lead trap** (*lead trap*) a plumbing fitting (trap) made of lead. See TRAP.

**lead wool** (*lead wool*) lead in the form of fine shreds or shavings used for caulking pipe joints.

**leak cement** (*lead ce-ment*) a compound to stop leaks by swelling action or by causing corrosion.

**leat** (*leat*) an artificial water trench, especially one to, or from, a mill.

**leather-side** (*leath-er-side*) pertaining to a leather washer; the finished side.

**leather-side washers and packing** (*leath-er-side wash-ers and pack-ing*) leather materials treated and finished on one side.

**length of pipe** (*length of pipe*) the overall distance measured along the center line.

**level** (*lev-el*) instrument for ascertaining a level, for testing whether objects are on the same horizontal line, or whether different parts of a surface are horizontal.

**lever handle faucet** (*lev-er han-dle fau-cet*) a valve operated by means of a lever, rather than a wheel.

**L.F.** *Abbr.* for Lawn Faucet, See HOSE BIBB; HOSE FAUCET.

**L.H.** *Abbr.* for Left Hand.

**lime wash** (*lime wasjh*) to wash with a solution of lime; to whitewash.

**limit control** (*lim-it con-trol*) an electrical control used to limit the pressure of steam, the temperature of water or air, depending on the type of system to which the control is applied. See CONTROL.

**line, pressure equalizing** (*line, pres-sure e-qua-liz-ing*) See PRESSURE EQUALIZING LINE.

**line, pressure relief** (*line, pres-sure re-lief*) See PRESSURE RELIEF LINE.

**line pipe** (*line pipe*) a special, high test pipe having recessed and taper-thread couplings, and usually greater length of thread than Briggs Standard.

**line pressure** (*line pres-sure*) single or multiple lines that, when tested, show(s) a positive pressure above zero (0).

**line support** (*line sup-port*) See PIPE HANGER.

**lining** (*lin-ing*) a coating applied to the inside surface of piping, tanks or vessels.

**linings - copper** (*lin-ings - cop-per*) sheet copper formed into a box-like shape minus cover.

**linseed oil (boiled)** [*lin-seed oil (boil-ed)*] linseed oil whose drying properties have been improved by heating usually with dryers. The vehicle of putty, paints, etc. See LINSEED OIL (RAW)

**linseed oil (raw)** [*lin-seed oil (raw)*] the oil extracted from linseed but uncooked therefore slow to evaporate. See LINSEED OIL (BOILED)

**lipped urinal** (*lipped uri-nal*) a fixture with a projection toward the user. See URINAL.

**lip union** (*lip un-ion*) a special form of union having a lip or seat that prevents the gasket from being squeezed into the pipe so as to obstruct the flow.

**liq.** *Abbr.* for Liquid.

**liquefaction** (*liq-ue-fac-tion*) **1.** the changing of the organic matter in sewage from an insoluble state to a soluble state, and effecting a reduction in its solid contents. **2.** act, or process, of making, or becoming, liquid by heat, or of a gas into a liquid by cold or pressure.

**liquefied petroleum gases** (*liq-ue-fied pe-tro-le-um gas-es*) **1.** fuel gases, including commercial propane (predominately propane and/or propylene) or commercial butane (predominately butane, isobutane, and/or butylene). **2.** liquefied petroleum gas supplied in cylinders and used without liquid vaporizers must be either commercial propane or butane as defined above in order to avoid major variations in heating value of the gas as it is released from the cylinder. *Abbr.* for LPG

**liquid waste** (*liq-uid waste*) the discharge from any fixture, appliance, area, or appurtenance, which does not contain human or animal waste matter. See WASTE.

**liquor** (*li-quor*) **1.** any liquid **2.** water sewage **3.** industrial sewage, or any combination of the three.

**liquor, mixed** (*in sewage treatment*) [*li-quor, mixed (in sew-age treat-ment)*] a mixture of activated sludge and sewage in the aeration tank undergoing activated sludge treatment.

**liquor, supernatant** (*li-quor, su-per-na-tant*) **1.** the liquor overlying deposited solids. **2.** the liquid in a sludge-digestion tank which lies between the sludge at the bottom and the floating scum at the top.

**litharge** (*li-tharge*) a fused lead monoxide. (In plumbing) used as a threaded joint compound when mixed with boiled linseed oil or glycerine.

**litmus** (*lit-mus*) a blue colored matter from lichens that turns red in acid solutions and remains blue in alkaline solutions and is used as an acid-base indicator.

**litmus paper** (*lit-mus pa-per*) unsized paper treated with litmus.

**little inch** (*lit-tle inch*) a term used to describe pipe and pipe lines that are less than 24" in diameter. Compare with big inch.

**load factor** (*load fac-tor*) the percentage of the total connected fixture unit flow which is likely to occur at any point in the drainage system. It varies with the type of occupancy, the total flow unit above this point being considered, and with the probability factor of simultaneous use.

**loading** (*load-ing*) **1.** material used to load something; filler. **2.** BOD filter, the pounds of oxygen demand in the applied liquid per unit of filter bed area, or volume of stone per day. **3.** Weir: gallons overflow per day per foot of weir length.

**loadstone** (*load-stone*) variation of lodestone.

**local vent (*lo-cal vent*)** **1.** a pipe or conduit to convey foul air from a plumbing fixture, room or other space, to the outer air. **2.** a pipe on the fixture side of the trap through which vapor or foul air is removed from the room or fixture. not connected to plumbing piping system of waste, soil, or pressure equalization piping. See STERILIZER VENT.

**locknut (*lock-nut*)** a supplementary nut to hold a cock or valve in place.

**lodestone (*lode-stone*)** magnetite processing polarity.

**long curve nose pliers (*long curve nose pli-ers*)** See PLIERS.

**long nosed caulking iron (*long nosed caulking i-ron*)** a packing tool of extra length to reach extraordinary conditions of construction.

**long radius fitting (*long ra-dius fit-ting*)** any fitting on which the radius of the elbow turn between openings is greater than the standard radius for that size fitting.

**long screw (*long screw*)** a nipple six inches long with one thread six inches longer than the standard thread.

**loop vent (*loop vent*)** a vent pipe connected to a horizontal drainage pipe receiving the discharges from one, or more, unvented fixtures. The vent pipe rises above the overflow level or flood rim of the highest fixture connected to the vented drainage pipe, and the vent pipe is connected to a vent stack.

**loose key faucet (*loose key fau-cet*)** a valve of a design that requires a tool (the key) to operate, the tool (key) or handle is not affixed. To keep unauthorized use or vandalism to a minimum.

**loose key stop (*loose key stop*)** See LOOSE KEY FAUCET.

**low hazard (*low ha-zard*)** See HAZARD, LOW.

**low head pressure (*low head pres-sure*)** pressure considered to be equal to, or less than, ten feet or three meters.

**low water cut-off (*low wa-ter cut-off*)** a water leveling control - its function is to break electric contact when water in a heating device is lower than safe operating level.

**lozenge point chisel (*loz-enge point chisel*)** See DIAMOND POINT CHISEL.

**L.P. Abbr.** for Low Pressure.

**LPG Abbr.** for Liquefied Petroleum Gases.

**LP gas-air mixture (*l-p gas-air mix-ture*)** liquefied petroleum gases distributed at relatively low pressures and normal atmospheric temperatures which have been diluted with air to produce desired heating value and utilization characteristics.

**L.T. Abbr.** for Laundry Tray.

**"L" type copper tube (*"l" type cop-per tube*)** a designation of the wall thickness of a copper tube.

**lute (*lute*)** a substance, as cement or clay, for packing a joint or coating a porous surface to make it impervious to gas or liquid. See PUTTY.

**L.W. Abbr.** for Light Weight.

# Mm

**m.** *Abbr.* for thousand.

**machine bolt** (*ma-chine bolt*) a metal rod with usually a square, or hexagonal, wrenchhead at one end and threads at the other that is commonly available in a size range of from ¼ inch to 3 inches in diameter.

**magnesium** (*mag-ne-si-um*) **1.** a very light, silver-white metallic chemical element, noted for its ductility and unmalleability. Magnesium is used in photography, fireworks, metal alloys, etc. **2.** for plumbing, magnesium is used in water heater storage tanks. It interacts electrochemically in the tank to produce a current which prevents corrosion. See CATHODIC PROTECTION.

**magnesium anode rod** (*mag-ne-si-um an-ode rod*) a rod-shaped bar of magnesium used in a water heater tank as a sacrificial element to produce an electrical potential in the hot water to prevent corrosion by making a cathode of the tank metal. See CATHODIC PROTECTION; GALVANIC ACTION.

**magnetic iron ore** (*mag-net-ic iron ore*) See MAGNETITE.

**magnetite** (*mag-net-ite*) an important iron ore that is strongly attracted by a magnet; blackiron oxide. Magnetite that possesses polarity is called lodestone.

**mag rod** (*mag rod*) See MAGNESIUM ANODE ROD.

**main** (*main*) the principal pipe artery to which branches may be connected.

**main control valve** (*main con-trol valve*)

a valve in the gas line before all regulating devices and the branch to the pilot (s), except when such pilot (s) are equipped with independent shutoff valves, for the purpose of completely turning on, or shutting off, the gas supply to the appliance.

**main sewer** (*main sew-er*) See PUBLIC SEWER.

**main soil or waste vent** (*main soil or waste vent*) the main soil or waste vent is the part of the stack above the highest installed branch of the fixture connection.

**main trap** (*main trap*) See BUILDING TRAP.

**main vent** (*main vent*) vent pipe extending vertically with, or without, changes of direction and acts as a terminal for other vents, and terminates through the roof or connects with the main soil or waste vent at a point two feet or more above the highest soil or waste opening, but in no case less than three feet above the highest floor on which soil, or waste, openings are installed.

**mainline valve assembly** (*main-line valve as-sem-bly*) **1.** any backflow prevention assembly located at the point nearest the connection of the water service. **2.**

the primary valve assembly in a double check valve detector assembly, or reduced pressure zone valve detector assembly, in relation to the smaller by-pass assembly that contains the flow meter. **3.** the primary assembly in a dual, or parallel, assembly with the secondary assembly

acting as a redundant, or by-pass, assembly when the primary assembly is out of service due to maintenance, repair or replacement.

**major diameter** (*ma-jor di-am-e-ter*) formerly called outside diameter. It refers to the largest diameter of a thread on a screw or nut.

**male thread** (*male thread*) an external thread of a pipe or fittings, etc. Preferably called an outside thread. See OUTSIDE THREAD.

**mall.** *Abbr.* for Malleable.

**malleable** (*mal-lea-ble*) capable of being extended, or shaped, by beating with a hammer, or by the pressure of the rollers. Most metals are malleable. The term "malleable iron" also has the older meaning (still universal in Great Britain) of "wrought iron." *Abbr.* Mall.

**malleable drop ell** (*mal-lea-ble drop ell*) a malleable iron 90° fitting with two internal threads and the fitting has extended flanges with holes to facilitate anchoring.

**malleable ell, outside outlet** (*mal-lea-ble ell, out-side out-let*) a fitting having three outlets each a female thread and any opening related to any other opening has a 90° included angle; sometimes referred to as a three way ell.

**malleable iron** (*mal-lea-ble iron*) cast iron that has been heat treated to render it less brittle than cast iron and to toughen it. *Abbr.* M.I. See WROUGHT IRON.

**malleable iron fitting** (*mal-lea-ble iron fit-ting*) plumbing fittings made of heat-treated cast iron.

**malleable iron hanger** (*mal-lea-ble iron hang-er*) a hanger consisting of a lag screw, a piece of pipe, a socket, and an adjustable ring. See PIPE HANGER.

**malleable iron pattern return bend** (*mal-lea-ble iron pat-tern re-turn bend*) a fitting of small radii in which the inlet and outlet at 180° included angle are parallel.

**mallet** (*mal-let*) a type of hammer fashioned of wood with a strong cane-like handle and, preferably, a boxwood head used in working lead in place of the steel hammer; many other uses.

**manganese** (*man-ga-nese*) a grayish-white, usually hard and brittle, polyvalent metallic element that resembles iron, but is not magnetic. It increases the strength, harness and soundness of steel.

**manhole** (*man-hole*) an opening constructed to permit a human to gain access to an enclosed space.

**manhole gasket** (*man-hole gas-ket*) a gasket to make a tight joint between the opening of a tank and manhole cover. See HANDHOLE GASKET.

**manifold** (*man-i-fold*) **1.** the conduit of an appliance which supplies gas to the individual burners. **2.** a fitting or pipe with many outlets or connections relatively close together. See HEADER.

**manometer** (*man-o-me-ter*) an instrument for measuring the pressure of gases and vapors. Pressure is balanced against a column of mercury in a U-tube, or against the elastic force of a spring, diaphragm, or the like, as in the aneroid barometer.

**march gas methane** (*march gas meth-ane*) a colorless, odorless flammable gaseous saturated hydrocarbon CH<sub>4</sub> that is lighter than air and forms explosive mixtures with air, or oxygen, that occurs naturally as a product of decomposition of organic matter in marshes and mines and especially in natural gas. Is used chiefly as a fuel.

**master plumber** (*mas-ter plumb-er*) **1.** a contracting plumber. **2.** a contractor. **3.** in charge of the mechanics, apprentices, and journeymen plumbers. **4.** a plumber having a regular place of business and who works by himself, with journeymen plumber, or has apprentices in his employ.

**math.** *Abbr.* for Mathematic.

**mathematics** (*math-e-ma-tics*) the study of number, form, arrangement and associated relationships, using rigorously defined literal, numerical and operational symbols.

**Matheson joint** (*math-e-son joint*) a bell and spigot joint in wrought pipe.

**matter** (*mat-ter*) anything which occupies space. In plumbing, solids, liquids, or gases. Material (as feces or urine) discharged from the living body.

**matter, inorganic** (*mat-ter, in-or-gan-ic*)  
 1. being or composed of matter other than plant, animal or mineral. 2. being, containing, or relating to, a chemical substance not usually classed as organic. 3. artificial.

**matter, organic** (*mat-ter, or-gan-ic*) matter relating to, or derived from, living organisms; plant; animal; human; includes carbon.

**matter, suspended** (*mat-ter, sus-pend-ed*) floating, or non-settled, material in a liquid vehicle. In plumbing, solids in suspension in liquid vehicle.

**max.** *Abbr.* for Maximum.

**maximum demand** (*max-i-mum de-mand*) in plumbing, the greatest requirement of flow of either water supply or waste discharge for all the fixtures of a building, or any specific segment thereof.

**maximum projected roof area** (*max-i-mum pro-ject-ed roof area*) in plumbing, the addition of the adjusted roof area to the projected roof area. See: ADJUSTED ROOF AREA, PROJECTED ROOF AREA.

**may** (*may*) this word, when used in a plumbing code, is permissive and implies that the authority has the power to do that which is specified. Compare meanings of "Must" and "Shall", each of which requires an action.

**mech.** *Abbr.* for Mechanical.

**mechanical joint** (*me-chan-i-cal joint*) 1. a connection between pipe, fittings, or pipes and fittings which is neither screwed, caulked, threaded, soldered, brazed, or welded. 2. a semi-telescopic joining using a form of internal gasket to assemble. Said compression is applied along the center line of the pieces being joined.

**medical gas system** (*med-i-cal gas sys-tem*) the system to convey medical gases for direct application from a central supply system (bulk tanks, manifolds and medical air compressors) through piping networks with pressure and operating controls alarm warning systems, etc. and extending to station outlet valves at use points.

**medical vacuum system** (*med-i-cal vac-u-um sys-tem*) the system consisting of central vacuum producing equipment with pressure and operating controls, shut-off valves, alarm warning systems, gages, and a network of piping extending to and terminating with suitable suction inlets at locations where suction may be required.

**medium soil pipe** (*me-di-um soil pipe*) the side wall thickness of soil pipe between service and extra heavy weights.

**medium solder** (*me-di-um sol-der*) a solder of equal parts of lead and tin. A degree of soft solder. See SOLDER.

**melting point** (*melt-ing point*) the temperature at which a solid melts. *Abbr.* M.P.

**membrane filter coliform count** (*mem-brane fil-ter col-i-form count*) a technique for determining presence of members of the coliform group of bacteria using a thin porous dish made generally of cellulose esters. *Abbr.* MFCC. See MOST PROBABLE NUMBER.

**memory** (*mem-o-ry*) the ability to retain original physical characteristics despite being subjected to extremes of temperature and/or pressure.

**merchant pipe** (*mer-chant pipe*) a pipe usually five to ten percent thinner than full weight pipe.



**mercury** (*mer-cu-ry*) a heavy silver-white univalent and bivalent poisonous metallic element that is liquid at ordinary temperatures. It is used chiefly in scientific instruments, mercury boilers, mercury pumps, and mercury vapor lamps.

**mercury gauge** (*mer-cu-ry gauge*) a gauge using liquid mercury for measuring; generally pressures both positive and negative.

**mercury switch** (*mer-cu-ry switch*) a switch in which an electric circuit is closed and opened by tilting a reservoir of liquid mercury.

**metal** (*met-al*) any of certain chemical elements, as iron, gold, silver, copper, lead, and aluminum, typically characterized by high specific gravity, fusibility, malleability, conductivity for heat and electricity and a characteristic (more or less) identifying luster.

**metal, base** (*met-al, base*) See BASE METALS.

**metal, bell** (*met-al, bell*) See BELL METAL.

**metals, noble** (*met-als, no-ble*) See NOBLE METALS.

**meter** (*me-ter*) a flow measurement and recording device.

**metering faucet** (*me-ter-ing fau-cet*) a valve with an adjustment, either manual or automatic, which measures the flow of liquid to a desired rate.

**mfcc.** *Abbr.* for Membrane Filter Coliform Count.

**mfg.** *Abbr.* for Manufacture.

**M.H.** *Abbr.* for Manhole.

**M.I.** *Abbr.* for Malleable Iron.

**micro-organism** (*mic-ro-or-ga-nism*) any organism of microscopic size, applied especially to bacteria and protozoa.

**mill board asbestos** (*mill board as-bes-tos*) hard pressed asbestos material in sheet form.

**mill file** (*mill file*) a single-cut (tapered or blunt) file which acquired its name from its early use in filing mill or circular saws. It is thinner than the ordinary hand file.

**min.** *Abbr.* for Minimum or Minutes.

**mineral wool** (*min-er-al wool*) any of various light-weight vitreous materials produced in the form of fibers that resemble wool or glass and are used after conversion into granular form, felted form (as in batts, blankets, or boards) or molded form, chiefly in heat and sound insulation in insulating cements, and as filter media, (i.e.: an insulated blanket of mineral wool covers a hot water tank).

**minimum** (*min-i-mum*) red lead of Iberian origin. Found as a mineral, but usually prepared synthetically; tri-lead tetroxide. See RED LEAD. *Abbr.* min.

**minor diameter** (*mi-nor di-am-e-ter*) the smallest diameter of the thread on a screw or nut.

**minor repairs** (*mi-nor re-pairs*) **1.** repairs are defined to consist of fixing leaks and removing of obstructions in soil, waste, and supply lines and to restore defective valves, faucets and similar appliances to an efficient operating condition. **2.** to restore to sound or good condition.

**mirror** (*mir-ror*) a polished or smooth substance that forms images by the reflection of light. A looking glass used by mechanics in repair work.

**miter box** (*mi-ter box*) a box or apparatus for use in cutting miters. The abutting surface or level on either of the pieces joined in a miter joint.

**mixer face** (*mix-er face*) the fair inlet end of the mixer head.

**mixing valve** (*mix-ing valve*) a valve or faucet to mix liquids by means of automatic or manual regulation. See SHOWER REGULATOR.

**modulating water temperature control** (*mod-u-lat-ing wa-ter tem-per-a-ture con-trol*) a valve in which the intermixing of hot and cold water is done by slow reactance.

**module** (*mod-ule*) the size of one part. In plumbing, the complete unit of an ensemble.,( i.e.: a dishwasher to a kitchen).

**mold** (*mold*) **1.** cavity for casting material such as metal or plastic in the heating or fluid state. **2.** to form a malleable material, hot or cold, by pressing into a cavity. See FUNGUS.

**monel** (*mon-el*) an alloy of approximately 67% nickel, 28% copper and 5% other elements that is made by direct reduction for ore in which the constituent metals occur in these proportions.

**monkey wrench** (*mon-key wrench*) a wrench with an adjustable jaw for turning nuts of different sizes.

**mop sink** (*mop sink*) a deep receptacle supplied with running water, connected to a drainage system; especially installed for janitorial use. *Abbr:* M.S.

**most probable number - bacteria count** (*most prob-a-ble num-ber - bac-te-ria count*) in testing the bacterial density by the dilution method, that number of organisms per unit volume which, in accordance with statistical theory, would be more likely than any other possible number to yield the observed test results or which would yield the observed test results with the greatest. *Abbr:* M.P.N.

**mother liquor** (*moth-er liq-uor*) the solution remaining after a salt has been crystallized out. Also called mother liquid or mother water.

**motor-operated valve** (*mo-tor op-er-ated valve*) any valve which is opened, or closed, by a motor.

**M.P.** *Abbr.* for Melting Point.

**M.P.N.** *Abbr.* for Most Probable Number.

**M.R.** *Abbr.* for Mop Receptor.

**M.S.** *Abbr.* for Mop Sink.

**M.S.P.S.** *Abbr.* for Male Standard Pipe Size.

**“M” type copper tube** (*“m” type cop-per tube*) the designation of a given wall thickness in a copper tube.

**multiple dwelling** (*mul-ti-ple dwell-ing*) building containing more than one dwelling unit.

**municipal sewage waste** (*mu-ni-ci-pal sew-age waste*) **1.** the residual material after sewage treatment processes. **2.** the input to a sewage treatment plant. **3.** the combined outfall from a community's untreated sewage.

**muriatic acid** (*mu-ri-at-ic ac-id*) a commercial name for hydrochloric acid. See HYDROCHLORIC ACID.

**muriatic acid - cut** (*mu-ri-at-ic ac-id - cut*) the commercial name of hydrochloric acid in less than full strength.

**muriatic acid - raw** (*mu-ri-at-ic ac-id - raw*) undiluted muriatic acid.

# Nn

**N.** *Abbr.* for Nitrogen.

**nail, copper** (*nail, cop-per*) any shape or size nail made of copper.

**nail, masonry** (*nail, ma-son-ry*) a hardened nail capable of being driven directly into masonry without a lead hole or pilot hole.

**nail puller** (*nail pul-ler*) a device, as a bar with a notched end, for gripping and drawing a nail.

**nail, roofing** (*nail, roof-ing*) a large headed nail used principally by the roofing trade. Sometimes called tar-paper nails.

**nail set** (*nail set*) a short, stout piece of steel one end is flat for striking with a hammer and the other end tapered to a rather pointed but flat end. Used to drive nails flush with, or into, a wooden surface avoiding hammer marks.

**naphtha** (*naph-tha*) petroleum; any of several volatile, flammable, liquid hydrocarbon mixtures obtained by distilling certain carbonaceous materials. Used chiefly as solvents and dilutents and as raw materials for conversion to gasoline.

**national coarse thread** (*na-tion-al coarse thread*) reference to number of threads per inch - coarser than National Fine Threads. *Abbr.* N.C.

**national pipe thread straight** (*na-tion-al pipe thread straight*) a pipe thread without taper. The diameter of the threaded surface is uniform over the length of the effective threads; not usually used for water pipe. *Abbr.* N.P.S. See NATIONAL PIPE THREAD TAPERED.

**national pipe thread tapered** (*na-tion-al pipe thread ta-pered*) a tapered pipe thread which enlarges at the rate of  $3/4"$  per foot. *Abbr.* N.P.T.

**N.C.** *Abbr.* for National Coarse Thread.

**N.D.T.S.** *Abbr.* for Not Drawn to Scale.

**needle valve** (*nee-dle valve*) a valve in which the opening, consisting of a small hole, is opened or closed by a long, needle-like spindle that is thrust into or is withdrawn from the hole. Used where the fine control of liquids is required.

**negative pressure** (*neg-a-tive pres-sure*) pressure that is less than atmospheric. In a piping system it can induce a partial vacuum that can siphon non-potable liquids back into the potable water distribution system.

**negligence** (*neg-li-gence*) not meeting one's responsibilities and causing harm. The failure to exercise the care that a prudent person usually exercises.

**neutral solution** (*neu-tral so-lu-tion*) a solution with a pH of seven, i.e.: it is neither acid nor base. A neutral solution contains both hydrogen and hydroxide ions at the same concentration.

**N.I.C.** *Abbr.* for Not In Contract.

**nickel** (*nick-el*) a nearly silver-white hard, malleable, ductile, metallic element capable of a high polish and resistant to corrosion. Used chiefly in alloys and as a catalyst. Nickel increases both the strength and toughness of steel.

**nickeled** (*nick-eled*) plated with nickel.

**nickel plated** (*nick-el plat-ed*) coated with nickel by electroplating or other means.

**nickel plated chain, S-hook** (*nick-el plat-ed chain, s-hook*) an “S” shaped hook for nickel plated chains. Used to connect two pieces of chain or accessory.

**nickel silver** (*nick-el sil-ver*) a silver white alloy of copper, zinc, and nickel.

**nip.** *Abbr.* for Nipple.

**nippers** (*nip-pers*) small pincers used for cutting light reinforcing rod, nails, wire, etc.

**nipple** (*nip-ple*) **1.** a short piece of pipe. **2.** a device (as a stopcock) with an orifice through which the discharge of a liquid can be regulated. **3.** a small projection through which oil, or grease, is injected into machinery. *Abbr.* Nip. See COPPER-PLATED NIPPLE.

**nipple extractor** (*nip-ple ex-tract-er*) See Internal Pipe Wrench.

**nipple holder** (*nip-ple hold-er*) a device to receive the end of a nipple which is first threaded to save the thread from the damage while the other end is being threaded.

**nitric acid** (*ni-tric ac-id*) a corrosive liquid inorganic acid  $\text{HNO}_3$  used chiefly as an oxidizing agent, in nitrations and used in making dyes, explosives, etc., and in etching.

**nitrification** (*ni-tri-fi-ca-tion*) the process of nitrifying; specifically, the oxidation by bacteria of ammonium salts to nitrites and to nitrates whenever the proper conditions of temperature, air, moisture and alkalinity allow the nitrobacteria to act as in all productive soils and in the heaps of waste organic matter formerly used in manufacturing potassium nitrate.

**nitrification bed or field** (*ni-tri-fi-ca-tion bed or field*) a septic tank effluent soil absorption system such as a seepage bed or seepage trench.

**nitrogen** (*ni-tro-gen*) a non-metallic element occurring as a colorless, odorless, almost inert diatomic gas, constituting nearly four-fifths of air by volume. *Abbr.* N.

**nitro-hydrochloric acid** (*ni-tro- hy-dro-chlo-ric ac-id*) See Aqua Regia.

**nitrous oxide** (*ni-trous ox-ide*) a colorless, sweet inorganic gas  $\text{N}_2\text{O}$  used as an anesthetic. Also call laughing gas.

**no. or #** *Abbr.* for Number.

**no-flow set pressure** (*no-flow set pres-sure*) pressure setting at device outlet with no water flowing through the device.

**noble metals** (*no-ble met-als*) **1.** a metal (as gold, silver or platinum) or alloy relatively superior in resistance to corrosion or oxidation. **2.** any metal that is not readily oxidized or attacked by acids, i.e. gold, silver, platinum.

**nominal pipe size** (*nom-i-nal pipe size*)

**1.** the approximate inside diameter of pipe. **2.** a standard expression in inches and fraction, or in millimeters, to denote an equal (i.e.: the conduit or tube is nominal pipe size in keeping with the general dimensions of Schedule 40 steel pipe). *Abbr.* NPS.

**non-absorbent or non-absorbable** (*non-ab-sor-bent or non-ab-sorb-able*) unable to absorb or soak into.

**non-freeze protection enclosures** (*non-freeze pro-tec-tion en-clo-sures*) class III and III-V are designed and constructed to provide system security for components when freezing temperatures are not a consideration. Class III enclosures are designed for components that do not generate positive and/or negative air pressures. Class III-V enclosures are designed for components that generate positive and/or negative air pressures and include an air inlet and/or outlet.

**non-health hazard** (*non-health haz-ard*) a cross-connection, or potential, cross-connection involving any pollutant which will not create a health hazard, but will create a nuisance or be aesthetically objectionable if introduced into the potable water supply.

**non-potable water system** (*non-po-ta-ble wa-ter sys-tem*) water not safe for drinking, personal, or culinary use.

**non-siphon trap** (*non-si-phon trap*) **1.** a kind of trap which cannot siphon. **2.** a trap in which the diameter is not greater than about four inches, the depth of seal is between about three and four inches, and the volume of water held in the trap is not less than one quart.

**non-toxic** (*non-tox-ic*) refers to something non poisonous; a substance that will not cause illness or discomfort if consumed.

**normal recovery capacity** (*nor-mal re-cov-er-y ca-pac-it-ty*) (water heater) amount of water in U.S. gallons raised 100°F (38°C) per hour, or per minute, when calculated on a thermal efficiency of seventy percent, representing the water heated by a gas input of 1190 B.T.U. per cubic foot.

**normal supply pressure** (*nor-mal sup-ply pres-sure*) the water pressure normally provided in the supply system.

**normal test pressures** (*nor-mal test pres-sures*) (water heater) those pressures specified for testing purposes at which adjustment of the burner ratings and primary air adjustments are made.

**normandy joint** (*nor-man-dy joint*) a joint in which the plain ends of two pipes are connected by a sleeve whose ends are made tight by rings of packing compressed between bolting rings and the sleeves.

**novels solder** (*nov-els sol-der*) a solder for aluminum.

**nozzle** (*noz-zle*) **1.** the outlet from a faucet, the end of a pipeline or hoses designed so the issuing stream of water is thrown in a shape, or size, different from the diameter of the pipe. **2.** to shape. **3.** to increase velocity.

**N.P.S.** *Abbr.* for Nominal Pipe Size. Formerly I.P.S. for Iron Pipe Size.

**N.P.S.** *Abbr.* for National Pipe Thread Straight.

**N.P.T.** *Abbr.* for National Pipe Thread Tapered.

**NTS** *Abbr.* for Nominal Tube Size.

**nuisance** (*nui-sance*) **1.** obnoxious, inconvenient, or insanitary. **2.** public nuisance known as common law or in equity jurisprudence. **3.** dangerous to human life or detrimental to health **4.** a building, structure, or premise not sufficiently ventilated, sewerred, drained, cleaned, or lighted, in reverence to its intended or actual use; and whatever renders the air or human food or drink or water supply unwholesome.

# Oo

**O.** *Abbr.* for Offset

**oak, seat and cover** (*oak, seat and cov-er*) a toilet seat with a cover, each piece made of oak wood.

**oak tank shell** (*oak tank shell*) reference is to the lining or a tank made of oak wood. See COPPER-LINED TANK.

**oakum** (*oa-kum*) **1.** loosely twisted hemp, or jute fiber, impregnated with tar, or a tar derivative, and used in caulking seams and packing joints. **2.** a ropelike material used in making joints in systems of piping.

**O.C.** *Abbr.* for On Center.

**O.D.** *Abbr.* for Outside Diameter.

**odor control** (*o-dor con-trol*) in water and sewage treatment, the elimination, or reduction, of odors and/or algae by aeration, super-chlorination, activated carbon treatment, or other processes.

**offset** (*off-set*) a combination of elbows, or bends, which brings one section of the pipe out of line but into a line parallel with the other section. *Abbr.* O.

**offset caulking tool** (*off-set caulk-ing tool*) right and left hand offset, or corner iron, used to caulk the back side of pipe joints run in corners.

**offset coupling** (*off-set cou-pling*) a fitting to cause a change in the straight line of a pipe.

**offset flush pipes** (*off-set flush pipes*) **1.** pipes with a change in direction and returning to the original direction of flow of fluid. **2.** a pipe connecting the water closet tank and the bowl which is offset.

**offset hex wrench** (*off-set hex wrench*) a hex smooth jaw opening parallel to handle, for use on hard-to-get-at fittings and nuts. See Hex Wrench.

**offset iron, caulking** (*off-set iron caulking*) same as a caulking iron except that the force from the impactor is directed in a non-straight line. Offset irons are made in left and right versions.

**offset pipe wrench** (*off-set pipe wrench*) a wrench with the jaw opening parallel to the handle and designed for use in confined areas.

**offset soil pipe** (*off-set soil pipe*) a fitting to digress the flow and return it to the original direction. Used in soil installations or drainage conduits.

**offset tool, left hand** (*off-set tool, left hand*) a caulking tool offset to reach out of straight line of reach or sight. See CAULKING IRON.

**offset tool, right hand** (*off-set tool, right hand*) a caulking tool offset to reach out of a straight line of reach or sight. See CAULKING IRON.

**ogee joint** (*o-gee joint*) a cement joint in a plain end spigot to bell in other pipes. There is some belief that ogee joint only refers to cement joint when materials are not similar such as cast iron to clay pipe or copper to cast iron, etc. So called because of "S" shape of cement profile as in ogee molding.

**ohmmeter** (*ohm-me-ter*) an instrument for indicating resistance of a conductor in ohms directly.

**O.I.** *Abbr.* for Oil Interceptor.

**oil can** (*oil can*) a small container used to apply oil, and lubricate cutting and threading equipment.

**oiler** (*oil-er*) a device designed to serve as a reservoir to supply, collect, and resupply oil as needed to lubricate the surface of pipe while cutting and threading.

**oil interceptor** (*oil in-ter-cep-tor*) See INTERCEPTOR.

**oligotrophic** (*ol-i-go-tro-phy*) deficient in plant nutrients and usually having abundant dissolved oxygen with no marked stratification. Said of lakes. See EUTROPHIC.

**open hearth steel** (*open hearth steel*) either wrought iron or steel scrap made from pig iron, usually charged with lime, etc.

**open plumbing** (*open plumb-ing*) **1.** installation of plumbing so that traps, drainage pipes and the surroundings beneath these fixtures are ventilated, accessible, and open to inspection. **2.** exposed plumbing installations.

**open return bend** (*open re-turn bend*) similar to a close return bend except that the arms are separated, but remain parallel.

**operating pressure** (*op-er-at-ing pres-sure*) the pressure at which the water supply system nominally operates.

**operating pressure range** (*op-er-at-ing pres-sure range*) that pressure which will permit the device to function properly in accordance with the standard.

**organoleptic** (*or-gan-o-lep-tic*) use of (human) sense organs - odor, color, taste, etc., of food and drug products. Recently developed in plumbing with advent of plastics because of leeching or degrading.

**orientation** (*o-ri-en-ta-tion*) the direction of flow in a backflow prevention device identified by the direction of flow at the inlet and outlet.

**orientation, horizontal** (*o-ri-en-ta-tion hor-i-zon-tal*) the direction of flow at the inlet of the device and outlet of the device is horizontal.

**orientation, horizontal/vertically down** (*o-ri-en-ta-tion, hor-i-zon-tal/ver-ti-cal-ly down*) the direction of flow at the inlet of the device is horizontal and at the outlet of the device is vertically down.

**orientation, horizontal/vertically up** (*o-ri-en-ta-tion, hor-i-zon-tal/ver-ti-cal-ly up*) the direction of flow at the inlet of the device is horizontal and at the outlet of the device is vertically up.

**orientation, vertical down** (*o-ri-en-ta-tion, ver-ti-cal down*) the direction of flow at the inlet of the device is horizontal and at the outlet of the device is vertically down.

**orientation, vertical down/horizontal** (*o-ri-en-ta-tion, ver-ti-cal down/hor-i-zon-tal*) the direction of flow at the inlet of the device is vertically down and at the outlet of the device is horizontal.

**orientation, vertical down/up** (*o-ri-en-ta-tion, ver-ti-cal down/up*) the direction of flow at the inlet of the device is vertically down and at the outlet of the device is vertical up.

**orientation, vertical up** (*o-ri-en-ta-tion, ver-ti-cal up*) the direction of flow at the inlet of the device and outlet of the device is vertical up.

**orientation, vertical up/down** (*o-ri-en-ta-tion, ver-ti-cal up/down*) the direction of flow at the inlet of the device is vertically up and at the outlet of the device is vertical down.

**orientation, vertical up/horizontal** (*o-ri-en-ta-tion, ver-ti-cal up/hor-i-zon-tal*) the direction of flow at the inlet of the device is vertically up and at the outlet of the device is horizontal.

**orifice** (*or-i-fice*) **1.** the opening in an orifice cap, orifice spud or other device, whereby the flow of gas is limited and through which the gas is discharged. **2.** a given opening in a fitting allowing a given amount of gas, or liquid, to pass through based on a given pressure.

**orifice insert** (*or-i-fice in-sert*) a metering device, one which may be replaced.

**orifice spud** (*or-i-fice spud*) a removable plug, or cap, containing an orifice which permits adjustment of the flow of gas by substitution of a spud with a different sized orifice or by the motion of a needle with respect to it (water heater).

**O-Ring** (*o-ring*) **1.** a washer, the section of the material of the gasket is round. **2.** a gasket in the form of the letter "O".

**O.S. and Y.** *Abbr.* for Outside Screw and Yoke.

**osmosis** (*os-mo-sis*) the passage of one fluid into another through a semi-permeable membrane between them. It occurs with both liquids and gases. The transfusion results in a mixture of the two fluids.

**O.S.Y.** *Abbr.* referring to an open sight yoke valve of either the gate or compression type.

**ounce** (*ounce*) a unit of weight in the United States customary system,  $\frac{1}{16}$  of a pound. *Abbr.* oz.

**outfall sewers** (*out-fall sew-ers*) large sewers that receive the sewage from smaller sewer units. The large sewers carry the sewage to the treatment or final discharge point.

**outlet** (*out-let*) **1.** the discharge opening from the flushometer, faucet, hydrant, or similar device. **2.** discharge opening from the flushometer.

**outlet, drain / terminal** (*out-let, drain / ter-mi-nal*) See TERMINAL OUTLET.

**outside caulking** (*out-side caulk-ing*) See CAULKING.

**outside drop** (*out-side drop*) a sewer connection to a manhole made by a vertical pipe tapped horizontal at, or near, the bottom of the manhole. Sometimes referred to as a drop manhole.

**outside thread** (*out-side thread*) an external thread of a pipe or fitting.

**oval basin** (*oval ba-sin*) oval shaped fixture. See LAVATORY.

**overflow tube** (*over-flow tube*) a pipe, tube or conduit which conveys liquid after the desired amount has been received in a tank, vat, fixture, tray, pool apparatus, or mechanism.

**over-rim tub fitting** (*over-rim tub fit-ting*) a valve or faucet intended to be installed above the highest liquid level of the tub.

**oxidant** (*ox-i-dant*) a substance, as dissolved oxygen, nitrate, nitrite, sulfate, etc., which gives up oxygen in the oxidation of organic matter.

**oxidation** (*ox-i-da-tion*) **1.** the act, or process, of oxidizing. **2.** the state, or result of, being oxidized.

**oxidation, biochemical** (*ox-i-da-tion, bi-o-chem-i-cal*) See OXIDATION; SEWAGE.

**oxidation, biological** (*ox-i-da-tion, bi-olog-i-cal*) See OXIDATION; SEWAGE.

**oxidation, sewage** (*ox-i-da-tion, sew-age*) the process where living organisms and organic matter contained in sewage in the presence of oxygen is converted into a more stable form.

**oxidize** (*ox-i-dize*) **1.** to combine with oxygen. **2.** add oxygen chemically to a substance often by means of a series of reactions.

**oxyacetylene** (*ox-y-a-cet-y-lene*) of, pertaining to, or consisting of, a mixture of oxygen and acetylene.



**oxygen** (*ox-y-gen*) a colorless, tasteless, odorless gas in the atmosphere and is used in oxyacetylene and oxyhydrogen flames in welding and cutting metals and other metallurgical processes in chemical industries and combustion processes.  
*Abbr.* O<sub>2</sub>.

**oxygenate** (*ox-y-gen-ate*) to impregnate, combine, or supply with oxygen.

**overflow rim** (*o-ver-flow rim*) See FLOOD LEVEL RIM.

**oz.** *Abbr.* for Ounce.

**ozone** (*o-zone*) an allotropic triatomic form of oxygen. Sometimes used for the disinfection of water but more frequently for the oxidation of taste.

# Pp

**P.** *Abbr.* for Pitch.

**packing** (*pack-ing*) a relatively soft material used in making joints watertight or airtight by being squeezed or compressed in the joining operation. See ASBESTOS PACKING; GRAPHITE PACKING.

**packing, asbestos graphite** (*pack-ing, as-bes-tos graph-ite*) **1.** a fibrous, ropelike material made from asbestos (mineral) and impregnated with graphite. **2.** a lead by-product known for its lubricity in dry form.

**packing tool** (*pack-ing tool*) See CAULKING IRON.

**packing-yarn** (*pack-ing-yarn*) a stringlike woven, or twisted, asbestos, jute, or hemp, material, or combinations.

**pantry cock** (*pan-try cock*) See PANTRY FAUCET.

**pantry faucet** (*pan-try fau-cet*) **1.** a valve (faucet) for use on food service sink. **2.** an elevated discharge spouted faucet.

**pantry sink** (*pan-try sink*) See SINK.

**pap** (*pap*) **1.** a nipple shaped projection. **2.** the bulge on the bottom of a sink or basin.

**paraffin oil** (*par-af-fin oil*) **1.** any of various hydrocarbon oils obtained from petroleum and used for burning, lubricating, making oil, gas, etc. **2.** a lubricating oil from paraffin distillate.

**paring chisel** (*par-ing chis-el*) a long-handled hand chisel having a short thin blade for paring wood surfaces.

**parlor stove lining** (*par-lor stove lin-ing*) a fire clay material shaped to fit the inner walls of the fire box of a parlor stove.

**passages, flow** (*pas-sag-es, flow*) See FLOW PASSAGES.

**passive solar energy collector system** (*pas-sive so-lar en-er-gy col-lec-tor sys-tem*) a solar heating system that uses no mechanical power to move the collected solar heat.

**paste** (*paste*) See SOLDERING PASTE.

**pathogen** (*pa-tho-gen*) a disease causing agent or organism.

**patina** (*pa-ti-na*) a usually green film formed naturally on copper and bronze by long exposure or artificially (as by acids), and often valued esthetically for its color.

**pazzuelona or pozzolana** (*paz-zue-lo-na or paz-zo-la-na*) a volcanic rock or ash used in molding hydraulic cement. It contains silica, alumina, lime, etc. See ROMAN CEMENT.

**P.C.** *Abbr.* for Plumbing Contractor.

**P.E.** *Abbr.* for Professional Engineer. Also commonly used to designate plain end pipe.

**peat acid** (*peat ac-id*) peat, vegetable matter, and moisture combined. Peat acids in water readily dissolve lead.

**pedestal urinal** (*ped-es-tal uri-nal*) See URINAL, PEDESTAL - BLOW-OUT.

**peen** (*peen*) to forge or shape hot or cold metal by hammering repeatedly. In plumbing, to tighten a joint by compression with repeated blows of a hammer or other similar tool.

**peppermint oil** (*pep-per-mint oil*) a pungent, aromatic mint oil sometimes used in testing a drainage system, or soil and water piping systems. By pouring peppermint oil down each closed roof terminal followed by hot water; the odor of peppermint indicates a leak. See PEPPERMINT TEST.

**peppermint test** (*pep-per-mint test*) a test for leakage using peppermint and heated or hot water as the medias, and the sense of smell as the determining factor. See PEPPERMINT OIL; SCENT TEST.

**percolation** (*per-co-la-tion*) **1.** the flow or trickling of a liquid downward through a contact, or filtering medium, the liquid may, or may not, fill the pores of the medium. **2.** the movement or flow of water through the interstices or the pores of a soil or other porous medium, also termed filtration.

**permanent set** (*per-ma-nent set*) **1.** to become solid, or thickened, by chemical or physic alterations. **2.** to acquire a permanent twist, or bend, resulting from strain, **3.** the amount by which a material stressed beyond its elastic limit fails to return to its original size, or shape, when the load is removed.

**person** (*per-son*) **1.** a human being, man, woman, or child. **2.** every individual, partnership, corporation, firm, association, or group, including a city, town, county or other governmental unit, owning property or carrying on an activity regulated by a particular plumbing code or law.

**pet cock** (*pet cock*) a small cock, faucet or valve, set in a water pipe, pump, drain outlet, end of a cylinder, in a radiator or water jacket and used to drain water, steam or air.

**petroleum** (*pe-tro-le-um*) flammable liquid hydrocarbon. Processed for natural gas, gasoline, naphtha, kerosene and oils.

**pewter** (*pew-ter*) any of various alloys having tin as the chief component especially a dull alloy with lead. Formerly used for domestic utensils. See WHITE METAL; BRITANNIA METAL.

**Pex Tubing** (*pex tub-ing*) the common name for cross linked high density polyethylene tubing. It is used in hydronic heating systems and for domestic water piping. It is predominantly used in radiant heating systems.

**P.G.** *Abbr.* for Pressure Gauge.

**pH** (*p h*) the hydrogen-ion activity in gram equivalents per liter used in expressing both acidity and alkalinity on a scale whose values run from zero to fourteen, with the lower the number less than seven indicating increasing acidity and numbers greater than seven increasing alkalinity. See ACID; ALKALI.

**phosphorus** (*phos-pho-rus*) a non-metallic, multivalent element of the nitrogen family that occurs especially as phosphates. Sometimes used in steel as it enhances the strength and makes it better able to resist abrasion.

**photosynthesis** (*pho-to-syn-the-sis*) the formation of carbohydrates in the chlorophyll-containing-tissues of plants exposed to light.

**physical disconnection** (*phy-sic-al dis-con-nec-tion*) removal of pipe, fittings or fixtures which connect a potable water supply to a non-potable system or one of questionable quality.

**picking out chisel** (*pick-ing out chis-el*) picking iron used in picking out the lead of a caulked joint.

**piezometer** (*pie-zom-e-ter*) a device for the measurement of pressure in pipes, or conduits, consisting of a vertical transparent tube which is connected at its lower end to a piezometer orifice in the wall of the pipe, or conduit, and is open to atmosphere at its upper end. The height to which fluid rises in the tube is a measure of the head pressure in the pipe or conduit.

**piezometer orifice** (*pie-zom-e-ter or-i-fice*) a small hole through the wall of a pipe, or conduit, drilled at a 90° angle to the wall and carefully finished at the inner edge of the hole.

**pig (*pig*)** **1.** a crude casting of metal (as iron). **2.** an oblong mass of metal, especially of iron or lead obtained from the smelting furnace and run into a mold, usually of sand while hot so that it is of a size and shape convenient for storage.

**pig bed (*pig bed*)** a bed of sand in which iron is cast into pigs.

**pig, caulking lead (*pig, caulk-ing lead*)**  
See LEAD.

**pig ears (*pig ears*)** soldered on tabs for fastening lead pipe as a support. Named because of their shape.

**pig iron (*pig i-ron*)** **1.** crude iron, the direct product of the blast furnace. Pig iron is either refined to produce steel, wrought iron, or ingot iron, or is remelted and cast into special shapes. **2.** another name for cast iron, the molten iron being run into molds called "pigs". See CAST IRON.

**pig lead (*pig lead*)** the term "pig" means the metal cast into bars at the conclusion of the process of smelting.

**pig-lugging (*pig- lug-ging*)** See DOG-EARING.

**pilot (*pi-lot*)** a small flame which is utilized to ignite the gas at the main burner(s).

**pilot light, gas (*pi-lot light, gas*)** a small flame that burns constantly to ignite the main gas supply.

**pine and oak tank shells (*pine and oak tank shells*)** reference to wooden material from which tanks (usually water closet and urinal) are made. The outer side clad to lead, copper or other sheet metal tanks.

**pineapple strainer, urinal (*pine-ap-ple strain-er, uri-nal*)** the shape (pineapple or pear) of the added, vertically, strainer to trough urinals. A vertical "bee hive" is another name given the strainer. See URINAL.

**pipe (*pipe*)** a cylindrical conduit or conductor, the wall thickness of which is sufficient to receive a standard pipe thread conforming to national standards for United States standard tapered pipe

thread. May be installed plain ended or threaded. Compare with tube.

**pipe and fitting sizes (*pipe and fit-ting sizes*)** the dimensions of pipe and fittings refers to the bore, or diameter, of the pipe.

**pipe bending tools (*pipe bend-ing tools*)** a variety of devices composing hand tools and machines for bending pipe or tubing.

**pipe chase (*pipe chase*)** a recess, or channel, in a wall for the purpose of recessing pipes and / or other conduits. See CHASE.

**pipe coating (*pipe coat-ing*)** any of a number of materials such as lacquer, paint, or plastic used as a covering over the surfaces of piping material.

**pipe covering (*pipe cov-er-ing*)** **1.** an insulating material used to wrap around pipe. **2.** insulating material applied around a pipe to prevent heat exchange between contents and surroundings.

**pipe cutter (*pipe cut-ter*)** **1.** a pipe cutter is an instrument for cutting pipes, consists of a bent lever, partially encircling the pipe, on which one, or more, cutting discs are mounted, the pressure and feed of the cutting discs being regulated by a screw as the lever is rotated around the pipe. **2.** a tool, or machine, for cutting pipe: especially a hand tool comprising a grasping device and three sharp-edged wheels forced inward by screw pressure that cut into the pipe as the tool is rotated. See TUBE CUTTERS.

**pipe die (*pipe die*)** a screw plate used for cutting threads on pipe.

**pipe dope (*pipe dope*)** See PIPE THREAD DOPE.

**pipe fitter (*pipe fit-ter*)** one who fits, threads, installs and repairs piping.

**pipe fitting (*pipe fit-ting*)** a piece (as a coupling or elbow) used for connecting pipe lengths or to change the direction.

**pipe grip (*pipe grip*)** See PIPE WRENCH.

**pipe hanger** (*pipe hang-er*) **1.** a device for suspending pipe. **2.** a bracket, clamp, clip or loop used to suspend pipe (as from ceilings, overhead beams). See ADJUSTABLE HANGER; ANCHORS; HANGER; MALLEABLE IRON HANGER; STRAP HANGER.

**pipe holders** (*pipe hol-ders*) tool, or clamp, to hold pipes rigidly or to keep pipes in a desired position or places.

**pipe, i.p.s.** (*pipe i p s*) pipe bearing i.p.s. refers to the standard wall thickness and outside diameter of iron or steel pipes. See IRON PIPE SIZE.

**pipeless furnace** (*pipe-less fur-nace*) a furnace with a single short pipe to connect it with the space to be heated.

**pipeline** (*pipe-line*) a line of pipe including fittings, valves, and control devices for conveying liquids, gases or finely divided solids.

**pipe machine** (*pipe ma-chine*) a machine used in the cutting and threading of pipe.

**pipe reamer** (*pipe ream-er*) a device to remove a burr left on the inside of the pipe in order that the circulation of water flowing through the pipe may not be impeded. It consists of a fluted and tapered tool, the blades being out of the solid metal by planing or milling on a machine, the flutes are then backed off like a tap to give a good cutting edge.

**pipe rest** (*pipe rest*) See PIPE SUPPORT.

**pipe ring hook** (*pipe ring hook*) a hanger shaped in a circle, or ring, on the tangent is a bar or boss for the purpose of anchoring the hanger to allow pipes to be supported.

**pipe roll** (*pipe roll*) a roller for supporting a pipe without restraining its longitudinal movement caused by expansion and contraction.

**pipe saddle** (*pipe sad-dle*) See SADDLE FITTING.

**pipe size** (*pipe size*) a reference, usually expressed in inches and portions of inches, to the nominal, or average, bore size of a conduit or pipe.

**pipe stock** (*pipe stock*) a die holder.

**pipe support** (*pipe sup-port*) a bracket, or brace, which supports pipes. Also called pipe rest.

**pipe tap** (*pipe tap*) tool to cut female screw threads in fittings, etc. See TAP.

**pipe thread** (*pipe thread*) a screw thread used on pipe and pipe fittings characterized by a somewhat fine pitch and usually a tapering diameter.

**pipe thread chaser** (*pipe thread cha-ser*) **1.** a tool used to clean or restore threads. **2.** a thread cutting tool, formed to cut a pipe thread of predetermined dimension.

**pipe thread dope** (*pipe thread dope*) a general term describing a number of compounds of plastic type materials used to lubricate pipe threads to help achieve maximum engagement or make-up. Also a help in sealing threads.

**pipe threader** (*pipe thread-er*) tool used to cut threads into pipe ends; consists of a handle called a stock, and a die with which to cut threads. There are basically two types: **a.** ratchet and fixed; or **b.** solid.

**pipe threading** (*pipe thread-ing*) the act or science of cutting threads in or on pipes.

**pipe thread stock** (*pipe thread stock*) See PIPE THREADER.

**pipe tongs** (*pipe tongs*) **1.** a hand tool for gripping or turning pipes, etc. **2.** a crude form of pipe wrench. See CHAIN TONGS.

**pipe vise** (*pipe vise*) a gripping appliance for holding pipes while being threaded, or cut, having two v-shaped serrated jaws sliding within one another, the grip being applied, or released, by means of a screw and toggle.

**pipe wrench** (*pipe wrench*) wrench designed to grip pipe having an adjustable L-shaped jaw sliding in a sleeve that is pivoted to and loosely encircles the handle so that pressure on the handle increases the grip. See CHAIN TONGS; STILLSON WRENCH.

**piping** (*pip-ing*) an assembly of pipes, or conduit, together with fitting of compatible design which serves in a plumbing system. See PIPE.

**piston pump** (*pis-ton pump*) a pumping machine in which either pressure or suction is the result of the movement of a piston type plug or plunger.

**pitch** (*pitch*) the number of threads per inch of thread surface. See GRADE. *Abbr.* P.

**pitch of screw threads** (*pitch of screw threads*) the distance from the center of one thread to the center of the next thread. Sometimes used to denote the number of threads per inch of thread surface.

**P.I.V.** *Abbr.* for Post Indicator Valve.

**plain end pipe** (*plain end pipe*) the term used to describe pipe on which there is no end treatment such as threads. The ends are plain or merely left as cut off. *Abbr.* P.E.

**plankton** (*plank-ton*) the passively floating or weakly swimming animal and plant life in a body of water.

**plaster of paris** (*plas-ter of par-is*) a fine white powder consisting of the hemihydrate of calcium sulfate [ $\text{CaSO}_4 \cdot \frac{1}{2} \text{H}_2\text{O}$  or  $2\text{CaSO}_4 \cdot \text{H}_2\text{O}$ ] and made by calcinating gypsum until it is partially dehydrated, combining it with water to form a paste which soon sets, and is used chiefly for casts and molds, building materials and surgical bandages. Also called calcinated gypsum.

**plastic** (*plas-tic*) **1.** capable of being molded. **2.** any of numerous organic, synthetic, or processed materials that are molded, cast, extruded, drawn or laminated into objects, films or filaments. **3.** any of various non-metallic compounds, synthetically produced (usually form organic compounds by polymerization), which can be molded into various forms and hardened for commercial use. Among the various trademark names for plastic are: Lucite; Vinylite; Bakelite, etc.

**plastic fitting** (*plas-tic fit-ting*) fittings made of resinous (non-metallic) materials. See FITTING.

**plasticizer** (*plas-ti-ci-zer*) a chemical added to rubber and resins to impart flexibility, workability, or stretchability.

**plastic pipe** (*plas-tic pipe*) pipes or tubes made from resinous material other than metal.

**plastic tubing** (*plas-tic tub-ing*) **1.** conduit made of non-metal. **2.** conduit made of resinous material. **3.** conduit made of several types of man-made non-metallic materials. Sometimes it may be rigid or sometimes flexible or pliable. See ABS; PVC.

**plate** (*plate*) **1.** to cover with an adherent layer mechanically, chemically, or electrically. **2.** to deposit (as a layer) on a surface. **3.** a smooth, flat, thin piece of metal; forged, rolled, or case metal in sheets usually thicker than  $\frac{1}{4}$  inch. See GALVANIZE; ELECTRO-PLATE.

**plated flange** (*plat-ed flange*) a disc fitting with a cover over plating, i.e.: chrome, brush brass, nickel, etc.

**platina** (*pla-ti-na*) crude native platinum.

**pliers** (*pli-ers*) small pinchers for holding, bending or cutting small objects or wire. Types include: (a) arc joint type "channel-locks or pump pliers"; (b) slip joint type with or without side cut; c. lineman's pliers; (d) end-cutting nippers; (e) diagonal-cutting; (f) wide-jaw diagonal; (g) long chain nose; (h) bent needle-nose; (i) curved diagonal; (j) wire and cable strippers; (k) locking plier wrenches (used as clamping tool; vise, pipe or locking wrench, referred to commonly as "vise grips").

**plot plan** (*plot plan*) the overview or drawn representation of an entire property as it would be seen from directly above.

**plug** (*plug*) a pipe fitting with male thread that is used for closing the opening in another fitting.

**plug cock** (*plug cock*) See GROUND KEY VALVE.

**plumb** (*plumb*) **1.** to seal with lead. **2.** to supply with a system of plumbing. **3.** to be vertical. *Abbr.* for Plumbing.

**plumb bob** (*plumb bob*) the metal bob suspended by a cord used to determine perpendicularity.

**plumber** (*plumb-er*) **1.** one who installs and repairs piping fixtures, appliances, appurtenances in conjunction with water supply, and drainage systems, etc.; both inside and outside of buildings. **2.** a worker of lead or similar materials. **3.** a person trained and experienced in the art of plumbing, design, fabrication, engineering and installation.

**plumber's candle** (*plumb-er's can-dle*) a cylindrical burnable material with a wick. In plumbing it is a non-salted, non paraffin compound - mixture of chemicals including tallow - is used as a soldering flux as well as a lubricant and light source.

**plumber's friend** (*plumb-er's friend*) a cup-shaped device of rubber on the end of a wood, or metal handle used for eliminating stoppage in pipes by the action of siphonage or compression. Also called pneumatic plunger. See FORCE CUP; CLOSET PLUNGER, RUBBER.

**plumber's furnace** (*plumb-er's fur-nace*) a fired firepot or similar device for melting or heating as needed by the artisan. Types of furnaces: gasoline; liquid petroleum gas; charcoal; natural gas; and electric. See SOLDER POT.

**plumber's rasp** (*plumb-er's rasp*) a file type tool for filing lead.

**plumber's round iron** (*plumb-er's round iron*) a form of soldering iron used for soldering seams in tanks.

**plumber's soil** (*plumb-er's soil*) a mixture of lampblack and glue used in leadwork.

**plumber's tape** (*plumb-er's tape*) See PIPE HANGER.

**plumber's test plug** (*plumb-er's test plug*) a device inserted into a pipe or fitting and expanded to form a temporary stoppage.

**plumbing** (*plumb-ing*) **1.** includes the work and/or practice, materials and fixtures used in the installation, removal, maintenance, extension, and alterations of a plumbing system of all piping, fixtures, fixed appliances and appurtenances in connection with any of the following: sanitary drainage, storm drainage facilities, special wastes, the venting system and the public or private water supply systems, within or adjacent to any building, structure, or conveyance to their connection with any point of public disposal or other acceptable terminal within the property line. **2.** the pipes, fixtures and all other apparatus concerned in the introduction, distribution and disposal of water in a building. **3.** the pipes, fixtures and other apparatus of a water, gas or sewage system. **4.** the work of a plumber.

**plumbing appliance** (*plumb-ing ap-pliance*) **1.** a unit whose operation and/or control may be dependent upon one or more energized components, such as motors, controls, heating elements, or pressure or temperature sensing elements. Such fixtures may operate automatically through one or more of the following actions: a time cycle; a temperature range; a pressure range; a measured volume or weight; or, the fixture may be manually adjusted or controlled by the user or operator. **2.** an adjunct, usually mechanical, and similar to a plumbing fixture except that it is designed for a specific purpose and not generally indispensable in the operation of the plumbing system.

**plumbing appurtenance** (*plumb-ing ap-pur-te-nance*) a manufactured, pre-fabricated, or an on-the-job assembly of component parts and is an adjunct to the basic piping system and plumbing fixtures. An appurtenance demands no additional water supply, nor does it add any discharge load to a fixture

or the drainage system. It is presumed that it performs some useful function in the operation, maintenance, servicing, economy, or safety of the plumbing system.

**plumbing contractor** (*plumb-ing con-trac-tor*) in plumbing, a person who contracts on predetermined terms to provide labor, materials and knowledge and be responsible for installing a plumbing job according to established practices and specifications. See MASTER PLUMBER. *Abbr.* P.C.

**plumbing fixture** (*plumb-ing fix-ture*)

1. an installed appurtenance to the potable water supply system, which makes available intended potable water; or a receptor which receives and discharges liquids, or liquid-borne, waste directly or indirectly into the drainage system. 2. plumbing fixtures are approved type installed receptacles, devices or appliances which are supplied with water or which receive liquids, or liquid-borne, wastes and discharge such wastes into the drainage system to which they may be directly or indirectly connected. 3. industrial or commercial tanks, vats, and similar processing equipment are not plumbing fixtures; but they may be connected to, or discharged into, approved traps or plumbing fixtures. 4. a permanent appendage usually designed as a receptacle and intended to receive and/or discharge liquid or liquid-borne waste to a drainage system.

**plumbing hazard** (*plumb-ing haz-ard*)

an integral type cross-connection in a consumer's potable water system that may be either a pollution or a contamination type of hazard. This includes, but is not limited to, cross-connections to toilets, sinks, lavatories, wash trays, domestic washing machines and lawn sprinkling systems. Such a connection, if permitted to exist, must be properly protected by an appropriate type of backflow prevention assembly.

**plumbing inspector** (*plum-ing in-spec-tor*) 1. a trained person qualified to pass judgment. 2. administrative authority.

**plumbing system** (*plumb-ing sys-tem*)

1. plumbing system includes the water supply and distribution pipes, plumbing fixtures and traps, soil, waste and vent pipes; building drains and building sewers, including their respective connections, devices and appurtenances within the property lines of the premises; and water-treating and water-using equipment. Plumbing system means and includes all potable water supply and distribution pipes, all plumbing fixtures and traps, all drainage and vent pipe and all building drains, including their respective joints and connections, devices, receptacles and appurtenances within the property lines of the premises and shall include potable water piping, potable water treating or using equipment, fuel gas piping, water heaters and vents for same. Sometimes fire protection systems, and chilled water piping in connection with refrigeration, and gas piping systems are excluded from the piping systems are excluded from the legal meaning of plumbing, sometimes all or some of these parts are included. 2. An arrangement of pipes, fittings, traps, vents, and component parts so designed as to provide an adequate supply of water to the premises and convey liquids and liquid borne wastes to a disposal terminal.

**plumbing trap** (*plumb-ing trap*) a fitting placed in a drain line from a plumbing fixture for the purpose of holding water, or other fluid, to form a seal that will prevent the passage of gases or odors from the drain pipe into the air within a building.

**plumbing wall** (*plumb-ing wall*) a wall-like structure resulting by prefabrication in the enclosure. A part of a plumbing system.

**plumbism** (*plum-bism*) poisoning through lead or some compound of lead. This condition might arise from soft water dissolving lead from pipes, or through other means. The dangers are now so well recognized that this is rare.



**plumbum** (*plum-bum*) latin for lead. See PLUMB.

**plunger** (*plun-ger*) device used to remove stoppages at plumbing fixtures. See FORCE CUP.

**pneumatic hammer** (*pneu-ma-tic ham-mer*) See AIR HAMMER.

**pneumatic plunger** (*pneu-ma-tic plunger*) See PLUMBER'S FRIEND.

**point-of-use** (*point-of-use*) the final outlet of the water supply system just prior to discharge to atmosphere.

**point of cross-connection** (*point of cross-con-ec-tion*) the specific point or location in a public or a consumer's potable water system where a cross connection exists.

**point of relief** (*point of re-lief*) a larger mass of water in the system to which the branch is connected; point of relief could be a larger diameter main or riser, water tank or hot water boiler; a larger diameter pipe is a main which is at least two nominal pipe sizes larger than the branch line in question

**pointed copper** (*point-ed cop-per*) See SOLDERING IRON.

**poison** (*poi-son*) a substance that can injure, impair or cause death to a living organism.

**poker** (*po-ker*) a rigid, fairly heavy, straight metal rod (iron or steel) that typically has one end fitted with, or shaped with, or shaped into, a handle and the other bent or hooked; is usually used for adjusting, or stirring, burning logs or coals (as in a fireplace) or similar burning material.

**policy** (*po-li-cy*) a definite course or method of action selected from among alternatives and in light of given conditions to guide and determine present and future decisions.

**polished brass** (*pol-ish-ed brass*) brass material in a polished state rather than rough or unfinished.

**pollutant** (*pol-lu-tant*) **1.** the addition to a natural body of water of any material which diminishes the optimal economical use of the water body by the population which it serves, and has an adverse effect on the surrounding environment. **2.** a substance that deteriorates the aesthetic quality of water, or other materials, but is not harmful to health. **3.** the impairment of the quality of water to a degree which does not create an actual hazard to the public health, but which does adversely and unreasonably affect such waters for domestic use.

**pollution** (*pol-lu-tion*) the specific impairment of water quality by agricultural, domestic or industrial wastes (including thermal and atomic), to a degree that has an adverse effect upon any beneficial use of water. See CONTAMINATION

**pollution hazard** (*pol-lu-tion ha-zard*) a water quality impairment to a degree which does not create a health hazard, but does adversely and unreasonably affect the water for domestic use. Pollution will make the water look, smell, and/or taste bad, but illness or death will not result. See NON-HEALTH HAZARD.

**polyester** (*poly-es-ter*) any number of synthetic resins, produced by reaction of dibasic acids with dihydric alcohols. Used especially in making fibers and plastics.

**polymer** (*poly-mer*) a chemical compound or mixture of compounds formed by polymerization and consisting essentially of repeating structural units.

**polymerization** (*poly-mer-i-za-tion*) the uniting of two, or more, monomers to form a polymer.

**polystyrene** (*poly-sty-rene*) a hard, rigid, dimensionally stable, clear thermoplastic polymer that is easily colored and molded.

**polyvinyl chloride** (*poly-vi-nyl chlor-ide*) man-made plastic used in making conduit, fittings and valves.

**pond** (*pond*) a body of water smaller than a lake and larger than a pool either naturally or artificially confined.

**pool** (*pool*) a reservoir of water. See SWIMMING POOL.

**pop safety valve** (*pop safe-ty valve*) See TEMPERATURE AND PRESSURE RELIEF VALVE.

**population equivalent** (*pop-u-la-tion e-qui-va-lent*) in plumbing and sewage treatment the estimated number of people contributing sewage equal in strength to a unit volume of the waste or to some other unit.

**pop valve** (*pop valve*) See RELIEF VALVE.

**porcelain** (*por-ce-lain*) a fine ceramic ware that is hard, translucent, sonorous and non-porous.

**porcelain enamel** (*por-ce-lain e-na-mel*) See VITREOUS ENAMEL.

**port** (water heater) [*port (wa-ter heat-er)*] any opening in a burner head through which gas, or an air-gas mixture, is discharged for ignition.

**portland cement** (*port-land ce-ment*) named after the Isle of Portland, England; a powder containing about 60 percent lime, 25 percent silica, 10 percent alumina, iron oxide and gypsum. It is mixed with water and other materials such as sand and gravel to make concrete.

**ports, vent** (*ports, vent*) See VENT PORTS.

**post hole auger** (*post hole au-ger*) an auger specifically designed for digging post holes.

**post hydrant** (*post hy-drant*) a vertical hydrant for the supply of water in places such as parks, golf courses, cemeteries. See HYDRANT.

**post indicator valve** (*post in-di-ca-tor valve*) a buried valve stem extended above grade usually enclosed in a casing with a visible indication of the valve being open or closed. *Abbr.* P.I.V.

**pot** (*pot*) slang for Water Closet or Plumber's Furnace. See PLUMBER'S FURNACE; SOLDER POT; WATER CLOSET.

**potable water** (*po-ta-ble wa-ter*) **1.** water which is suitable for drinking, culinary, and personal purposes. **2.** water free from impurities present in amounts sufficient to cause disease or harmful physiological effects. **3.** water from any source which has been approved for human consumption by the health agency having jurisdiction.

**pot, grease trap** (*pot, grease trap*) See GREASE TRAP, POT-TYPE.

**pothook** (*pot-hook*) a hook used for lifting the lead, solder sulphur, etc., pot from the furnace or heating device, etc.

**pot metal** (*pot met-al*) **1.** an alloy of copper and lead used especially for making large vessels. **2.** zinc or other die casting metals. **3.** a cast iron used for making pots and other hollow ware.

**pound** (*pound*) a unit of mass in the English Absolute system of units. *Abbr.* lb.

**pouring rope** (*pour-ing rope*) rope, usually asbestos, which is wrapped around a pipe at a joint to retain the molten lead when it is poured into the caulked joint.

**power burner** (*pow-er burn-er*) (water heater) a burner in which either gas or air (or both) are supplied at pressures exceeding the gas line and atmospheric pressures. This added pressure being applied at the burner. A pre-mixing burner is a power burner in which all, or nearly all, of the air for combustion is mixed with the gas as primary air.

**power vise** (*pow-er vise*) a tool to hold; operated by some source of energy other than human.

**P.P.M.** *Abbr.* for Parts Per Million, i.e.: three parts chlorine (liquid) with one million parts water.

**precipitate** (*pre-cip-i-tate*) a substance, usually crystalline, separated out from a solution as a solid.

**precipitation** (*pre-cip-i-ta-tion*) the phenomenon which occurs when a substance held in solution in a liquid passes out of solution into a solid form.

**precipitation, chemical** (*pre-cip-i-ta-tion, chem-i-cal*) precipitation induced by addition of chemicals.

**press.** *Abbr.* for Pressure.

**pressure** (*pres-sure*) the normal force exerted by a homogeneous liquid, or gas, per unit of area, on the wall of the container. *Abbr.* Press.

**pressure, atmospheric** (*pres-sure at-mos-pher-ic*) See ATMOSPHERIC PRESSURE.

**pressure, back** (*pres-sure, back*) See BACK PRESSURE.

**pressure burner** (*pres-sure burn-er*) a burner which is supplied with an air-gas mixture under pressure (usually from 0.5 to 14.0 inches of water and occasionally higher).

**pressure, burst** (*pres-sure, burst*) See BURST PRESSURE.

**pressure, differential** (*pres-sure, dif-fer-en-tial*) the difference in pressure of the fluid between two points in a piping system, (i.e.: the difference between the inlet and outlet on a water filter or backflow preventer.)

**pressure envelope** (*pres-sure en-ve-lope*) the outside of the fitting, tank, vessel, etc. which withstands and contains the water pressure.

**pressure equalizing line** (*pres-sure e-qual-i-zing line*) a branch within the drainage system serving as a shunt to equalize the pressure between two points.

**pressure filter** (*pres-sure fil-ter*) a filter used to strain solids from a gas, or liquid, while the material to be strained is under pressure higher than atmospheric 29.92" @ 59°F (14.8°C).

**pressure, flow** (*pres-sure, flow*) See FLOW PRESSURE.

**pressure gauge** (*pres-sure gauge*) instrument for measuring the pressure of fluids, gases or air. *Abbr.* P.G.

**pressure, hydrostatic** (*pres-sure, hy-dro-sta-tic*) See HYDROSTATIC PRESSURE.

**pressure, initial** (*pres-sure, i-ni-tial*) See SUPPLY PRESSURE.

**pressure, line** (*pres-sure, line*) See LINE PRESSURE.

**pressure, lock-up** (*pres-sure, lock-up*) See NO-FLOW SET PRESSURE.

**pressure loss** (*pres-sure loss*) 1. the reduction of pressure that occurs when liquid passes through an assembly. 2. the decrease in pressure in a piping system due to the resistance caused by pipes, fittings, valves, filters, water meters, backflow assemblies, etc.

**pressure, low head** (*pres-sure, low-head*) See LOW HEAD PRESSURE.

**pressure, no-flow** (*pres-sure, no-flow*) See NO-FLOW SET PRESSURE.

**pressure, normal supply** (*pres-sure, nor-mal sup-ply*) See NORMAL SUPPLY PRESSURE.

**pressure, operating** (*pres-sure, op-er-at-ing*) See OPERATING PRESSURE.

**pressure recorder, sensitive electronic** (*pres-sure re-cord-er, sen-si-tive elec-tron-ic*) a pressure gauge utilizing an electronic transducer capable of recording pressure in specified increments.

**pressure reducing regulator** (*pres-sure re-duc-ing reg-u-la-tor*) a diaphragm, or piston, operated device designed to reduce and maintain lower pressures in liquids or gases. See PRESSURE REGULATOR.

**pressure reducing valve** (*pres-sure re-duc-ing valve*) a valve which maintains a uniform pressure on its outlet side irrespective of how the pressure on its inlet side may vary above the pressure to be maintained. *Abbr.* PRV.

**pressure reducing tank** (*pres-sure re-duc-ing tank*) a storage vessel used to bleed off, or receive, liquids from a pressure line to atmospheric pressure.

**pressure regulator** (*pres-sure reg-u-la-tor*) any device by means of which pressure may be regulated, as in a reducing valve, where a high pressure is reduced to a definite lower pressure, maintaining the latter at a constant height irrespective of fluctuations in the higher pressure. See PRESSURE REDUCING REGULATOR; SHOWER REGULATOR.

**pressure relief line** (*pres-sure re-lief line*) a branch extending from the deaerator fitting to a minimum point of ten (10) pipe diameters (based on stack size) downstream of the base of the stack.

**pressure relief valve** (*pres-sure re-lief valve*) a safety valve. A valve held closed by a spring or other means, which automatically relieves pressure in excess of its setting. See POP VALVE; TEMPERATURE AND PRESSURE RELIEF VALVE.

**pressure, static** (*presssure, sta-tic*) See STATIC PRESSURE.

**pressure, supply** (*presssure, sup-ply*) See SUPPLY PRESSURE.

**pressure surge** (*pres-sure surge*) a sudden increase in pressure caused by turbulence in a contained liquid.

**pressure transducer** (*pres-sure trans-ducer*) a pressure sensitive device that will produce an electric signal proportional to the pressure to which it is subjected. The signal capable of amplification.

**pressure type flushing system** (*pres-sure type flush-ing sys-tem*) a product which uses the water supply to create a pressurized discharge to flush exclusive of gravity type flushing systems.

**pressure vacuum breaker assembly** (*pres-sure vac-u-um break-er as-sembly*) the term shall apply to an assembly containing an independently operating loaded check valve and an independently

operating loaded air inlet valve located on the discharge side of the check valve. The assembly is to be equipped with properly loaded test cocks and tightly closing shut-off valves located at each end of the assembly. This assembly is designed to protect against a health hazard (i.e.: contaminant) under a backsiphonage condition only. *Abbr.* PVB.

**pressure valve** (*pres-sure valve*) a device to maintain, control or release pressure.

**pressure, working** (*presssure, work-ing*) See WORKING PRESSURE.

**pressurized plumbing fixture flushing device** (*pres-sur-i-zed plumb-ing fix-ture flush-ing de-vice*) a product which uses the water supply to create a pressurized discharge to flush the fixture exclusive of gravity type flushing systems. Flushometer valves and tanks are examples of pressurized plumbing fixture flushing devices.

**primary air** (*pri-mary air*) (water heater) the air introduced into a burner which mixes with the gas before it reaches the port(s).

**primary air inlet** (*pri-mary air in-let*) (water heater) the openings through which primary air is admitted into a burner.

**primary branch** (*pri-mary branch*) (water) the largest single branch of the main water supply in the building or structure.

**primary branch, drainage** (*pri-mary branch, drain-age*) the primary branch of the building drain is the single sloping drain from the base of a stack to its junction with the main building drain or with another branch thereof.

**primary use** (*pri-mary use*) a bleeding application control which reduces the hot water temperature to an acceptable range at source of hot water.

**private dwelling** (*pri-vate dwell-ing*) any building used only for living purposes and occupied by not more than one family.

**private sewer** (*pri-vate sew-er*) **1.** a sewer that is privately owned, servicing one or more buildings or areas. **2.** a sewer serving two or more buildings or areas. **3.** a sewer, serving one or two or more buildings, privately owned, and not directly controlled by public authority. See SEWERS.

**private use** (*pri-vate use*) in plumbing codes the term used to differentiate fixtures which are intended for use in residences, apartments and similar installations for private or individual use.

**privy** (*priv-y*) a structure used for the deposition of human excrement in a container or in a vault beneath the structure.

**privy vault** (*priv-y vault*) a pit beneath a privy in which excrement collects.

**probe** (*probe*) a slender, blunt-ended instrument used for exploring and to ascertain depth.

**process, activated sludge** (*pro-cess, ac-ti-va-ted sludge*) See ACTIVATED SLUDGE PROCESS.

**professional engineer** (*pro-fes-sion-al en-gi-neer*) an engineer who has been licensed, or registered, by a state to practice engineering. *Abbr.* P.E.

**projected roof area** (*pro-ject-ed roof a-re-a*) in plumbing, the plan size of the roof space to be drained as the result of the placement of a building. See ROOF AREA.

**protected cross connection** (*pro-tec-ted cross con-ec-tion*) a cross connection between a potable and non-potable system where adequate methods are provided to prevent backflow.

**protected waste pipe** (*pro-tec-ted waste pipe*) a waste pipe from a fixture that is not directly connected to a drain, soil, vent, or waste pipe.

**protractor** (*pro-trac-tor*) an instrument with graduated scales, for measuring angles.

**PRV** *Abbr.* for Pressure Reducing Valve. ASSE 1003.

**psig** *Abbr.* **1.** pound pressure per square inch as viewed on a gauge. **2.** pounds per square inch above atmospheric pressure.

**p-trap** (*p-trap*) a p-shaped trap used especially for sinks, lavatories and tubs.

**public or public use** (*pub-lic or pub-lic use*) in the classification of plumbing fixtures, public applies to fixtures in general toilet rooms of schools, gymnasiums, railroad stations, public buildings, bars, public comfort stations, hotels (including the fixtures in rooms) and other installations (whether pay or free). The number of fixtures are installed so their use is similarly unrestricted.

**public potable water system** (*pub-lic po-ta-ble wa-ter sys-tem*) any publicly, or privately, owned water system operated as a public utility under a valid health permit to supply water for domestic purposes. This system will include all sources, facilities, and appurtenances between the source and the point of delivery such as valves, pumps, pipes conduits, tanks, receptacles, fixtures, equipment and appurtenances used to produce, convey, treat or store potable water for public consumption or use.

**public building** (*pub-lic build-ing*) any building where the use is similarly unrestricted.

**public sewer** (*pub-lic sew-er*) **1.** a sewer that is publicly owned to which all abutters have equal rights of connection. **2.** a common sewer directly controlled by public authority. See SEWERS.

**public water main** (*pub-lic wa-ter main*) a water supply pipe for public use controlled by public authority.

**puddle** (*pud-dle*) the stirring of molten metal during welding, brazing, lead burning or joining methods.

**puddling, iron** (*pud-dling iron*) the process of converting pig iron into wrought iron or, rarely, steel by subjecting it to heat and frequent stirring in a furnace in the presence of oxidizing substances.

**puddling, steel** (*pud-dling steel*) the process of converting pig iron into wrought iron or rarely iron by subjecting it to heat and frequently stirring in a furnace in the presence of oxidizing substances.

**pump** (*pump*) **1.** a device, or machine, that raises, transfers, or compresses fluids or that attenuates gases especially by suction or pressure or both. **2.** apparatus for raising, exhausting, driving or compressing fluids, air, or gases, by means of a piston, plunger, or rotating vanes.

**pump, jockey** (*pump, joc-key*) a small, usually high pressure, pump used to maintain the design system pressure in a fire protection (sprinkler or standpipe) system.

**pump gauge** (*pump gauge*) an instrument to measure pressure or volume of flow associated to a pump.

**punch** (*punch*) a tool usually in the form of a short, stout piece of steel one end of which is made flat for striking with a hammer and the other being shaped either to a blunt point or hollow with a cutting edge. Used primarily to set into metal a small indentation to act as a guide, or pilot, for the boring, or drilling, of a hole.

**purification** (*pu-ri-fi-ca-tion*) the removal, by natural or artificial methods, of objectionable matter from water.

**push-fit connector** (*push-fit con-nec-tor*) a connection that is integral to plumbing devices.

**push-fit fitting** (*push-fit fit-ting*) a type of fitting that joins pipes that are not caulked, threaded, soldered, cemented, brazed or welded. These joints consist of elastomeric seals and corrosion resistant tube grippers. Such jointss can be permanent, or nonpermanent, depending on design and must be installed in accordance to the manufacturer's instructions.

**putrefaction** (*pu-tre-fac-tion*) **1.** the decomposition of organic matter by the agency of bacterial and fungi with the formation of foul smelling incompletely oxidized products. **2.** decay.

**putrescibility** (*pu-tres-ci-bil-i-ty*) capable of putrefaction.

**putty** (*put-ty*) **1.** a cement usually made of whiting and boiled linseed oil beaten, or kneaded, to the consistency of dough and used in fastening glass in sashes and stopping crevices in woodwork. **2.** a mixture of red and white lead and boiled linseed oil used as a lute in pipe fitting. See GLAZIER PUTTY; LUTE.

**PVC.** *Abbr.* for PolyVinyl Chloride.

# Qq

**Q.** *Abbr.* for quantity or total.

**quarter bend** (*quar-ter bend*) **1.** a fitting changing direction 90° (as in piping). **2.** a 90° fitting.

**quick compress faucet stop** (*quick compress fau-cet stop*) a fast operating shut-off valve in the water supply pipe to a faucet. Sometimes in reference to a spring return faucet. One which shuts off automatically, must be held open.

**Quick-Disconnect Device** (*quick dis-con-nect de-vice*) a hand operated device which provides a means for connecting and disconnecting an appliance or an appliance connector to a gas supply, and which is equipped with an automatic means to shut off the gas supply when the device is disconnected.

**quick opening valve** (*quick o-pen-ing valve*) a valve designed to open quickly; usually with a lever.

**quick silver** (*quick sil-ver*) See MERCURY.

# Rr

**rad.** *Abbr.* for Radius.

**radiant heat** (*ra-di-ant heat*) heat transmitted by radiation

**radiant heating / cooling system** (*ra-di-ant heat-ing / cool-ing sys-tem*) a piping grid system usually installed in floors, walls or ceilings that circulates heated/ chilled water to heat/cool a space by the radiation of the energy within the circulated system.

**radiator** (*ra-di-a-tor*) a heating device for the circulation of steam or hot water.

**radiator accessories** (*ra-di-a-tor ac-ces-so-ries*) any of several attachments or mechanical devices that aid in the operation of a radiator; such as valves, legs, fins, covers, tubes, coils, hangers and vents.

**radiator valves** (*ra-di-a-tor valves*) a shut off valve to control steam, or hot water, in a radiator.

**radioactivity** (*ra-di-o-ac-ti-vi-ty*) the emission of radiant energy. The property that some elements (such as radium, uranium) have to spontaneously give out rays which may be measured.

**radius** (*ra-di-us*) **1.** the length of a straight line segment from the center of a circular plane to the circle or surface. **2.** the measurement of a straight line from the center of a circle of a sphere to the circumference or surface. *Abbr.* rad.

**rainbow gasket** (*rain-bow gas-ket*) a sheet material of rubber compound usually red in color and used to form, or make, gaskets or seals. See RUBBER GASKET.

**rainwater conductor** (*rain-wa-ter con-duc-tor*) a pipe to conduct rainwater from the roof of a building to the house storm drain or other piping serving as a storm drain. See DOWNSPOUT. *Abbr.* R.W.C.

**raised-face flange** (*raised face flange*) a flange faced about  $\frac{1}{32}$  inch higher inside the bolt circle.

**rake angle** (*rake an-gle*) the angle of the cutting edge of a tap or die, drills and similar tools.

**random length pipe** (*ran-dom length pipe*) pipe which is furnished from the steel mill in lengths which vary from the normal 21' length by as much as 12" variance.

**range boiler** (*range boil-er*) **1.** a cylinder-shaped vessel with closed ends. **2.** a name given to a water reservoir intended to store water heated by an auxiliary unit; (i.e.: water heater; cooking range; side arm heater, etc).

**range boiler coupling** (*range boil-er cou-pling*) a fitting unique to the era of range boiler. See BOILER BUSHING.

**range boiler covering** (*range boil-er cov-er-ing*) See BOILER COVER.

**range boiler elbow** (*range boil-er el-bow*) **1.** a 90° fitting unique to the era of range boilers. **2.** a combination elbow and  $\frac{1}{2}$  union.

**range boiler flue tube** (*range boil-er flue tube*) the tube of a range boiler through which products of combustion are allowed to escape. This tube passes longitudinally through the water reservoir.



**range boiler stand** (*range boil-er stand*) **1.** the support for a range boiler. **2.** a circular ring on top of a pedestal to support a water reservoir.

**range boiler tube** (*range boil-er tube*) the tube inside a range boiler to deliver the inlet cold water to the bottom of the tank.

**range burner** (*range burn-er*) a source of heating, (i.e.: such as a gas burner).

**range closet** (*range clos-et*) a battery of seats placed close together or one continuous opening in a seat. All placed above a single water bearing trough, or receptacle, designed to receive human excrement. Also called a latrine. See LATRINE; WATER CLOSET.

**range lining** (*range lin-ing*) a stove lining made of fire clay used to line the fire box of a range.

**rasp** (*rasp*) kind of coarse file for smoothing rough surfaces usually worked by grasping at either end and drawing smartly across the rough surface.

**ratchet** (*ratch-et*) **1.** a pawl, click or detent for holding, or propelling, a ratchet wheel. **2.** a mechanism composed of a ratchet wheel and a pawl; specifically, a mechanism on a special wrench. **3.** a tool with a toothed-blade used to turn the toothed-wheels that clamp and release patent blocks on areas.

**ratchet screwdriver** (*ratch-et screw-driv-er*) a screwdriver that is operated by the reciprocating motion of the handle and usually has a removable screwdriver bit.

**ratchet stock** (*rat-chet stock*) See PIPE THREADER.

**ratchet thread** (*ratch-et thread*) See BUTTRESS THREAD.

**ratchet wrench** (*ratch-et wrench*) a wrench in which torque is applied in one direction only by means of a ratchet.

**rate of flow** (*rate of flow*) See FLOW RATE.

**rated flow** (*rat-ed flow*) See FLOW RATE.

**raw** (*raw*) in, nearly in, the natural state.

**R.D.** *Abbr.* for Roof Drain.

**readily accessible** (*rea-di-ly ac-cess-i-ble*) that which enables a fixture, appliance or equipment to be directly reached without requiring the removal or movement of any panel, door or similar obstruction and without the use of a portable ladder, step stool or similar device. Compare with accessible, which has come to mean having access thereto even though removal of an access door, or panel, may first be necessary.

**ream** (*ream*) to cut the burr from the inside of a pipe or to increase the opening of a pipe or orifice by cutting with a circular motion. See REAMER.

**reamed and drifted pipe** (*ream-ed and drift-ed pipe*) the term used to describe an end treatment of pipe in which the bore, or inside diameter at the very end, has been reamed and the outside diameter at the very end has been chamfered or de-burred.

**reamer** (*ream-er*) a special tool with cutting edge for reaming, countersinking, or enlarging a hole in metal. See ADJUSTABLE REAMER; BALL REAMER; EXPANSION REAMER; REAM.

**recalescence** (*re-ca-les-cence*) an increase in temperature that occurs while cooling metal through a range of temperatures in which change in structure occurs.

**receptor** (*re-cep-tor*) a fixture, or device, which receives the discharge from indirect waste pipes. See FLOOR DRAIN; CATCH BASIN; INTERCEPTOR.

**recessed cast iron fitting, black** (*re-cessed cast iron fit-ting, black*) a non-coated iron drainage fitting in which the female thread terminates in an enlarged annulus. See RECESSED CAST IRON FITTING, GALVANIZED.

**recessed cast iron fitting, galvanized** (*re-cessed cast iron fit-ting, gal-va-nized*) a fitting which has been coated with molten zinc. See RECESSED CAST IRON FITTING, BLACK.

**recessed drainage fitting** (*re-cessed drain-age fit-ting*) See RECESSED CAST IRON FITTING, BLACK; RECESSED CAST IRON FITTING, GALVANIZED.

**recessed drain fitting, brass** (*re-cessed drain fit-ting, brass*) a brass drainage fitting in which the female thread terminates in an enlarged annulus.

**recessed roof connection** (*re-cessed roof con-nec-tion*) a rain water leaderhead fitting installed in a flat roof where most of the fitting is below the roof and is supported by the flange at roof plane level.

**reclaimed water** (*re-claimed wa-ter*) treated wastewater now suitable for a direct beneficial or controlled use. It is not safe for human consumption. May also be known as “grey water”.

**red.** *Abbr.* for Reducer.

**red lead** (*red lead*) an orange-red to brick-red lead oxide  $Pb_3O_4$  that is prepared by heating lead monoxide in the presence of air that, when produced commercially, may contain litharge and other impurities. Used chiefly in storage battery plates, glass and ceramics, and as a paint pigment (as for protecting metals from corrosion). In plumbing: used as a threaded joint compound.

**reduced flowing pressure** (*re-duced flow-ing pres-sure*) the pressure maintained at the outlet of a valve when water is flowing at some measured rate.

**reduced pressure fall-off** (*re-duced pres-sure fall-off*) the change downward in the reduced pressure from lockup (no flow) which causes the valve to open and allow water to flow through it at the rate needed to satisfy demand.

**reduced pressure principle backflow preventer assembly** (*re-duced pres-sure prin-ci-ple as-sem-bly*) an assembly containing two independently acting, approved check valves together with a hydraulically operating, mechanically independent pressure differential relief valve located between the check valves and at the same time, below the first check valve. The unit shall include properly located test cocks and tightly closing shut-off valves at each end of the assembly. The assembly is designed to protect against a health hazard (i.e. contaminant). *Abbr.* RP.

**reduced pressure principle-detector backflow prevention assembly** (*re-duced pres-sure prin-ci-ple de-tec-tor back-flow pre-ven-tion as-sem-bly*) a specially designed assembly composed of a line size approved reduced pressure principle backflow preventing assembly with a specific bypass water meter and a meter-sized approved reduced pressure principle backflow prevention assembly. The meter shall register accurately for only very low rates of flow and shall show a registration for all rates of flow. This assembly is designed to protect against a health hazard (contaminant). *Abbr.* RPDA.

**reduced pressure zone assembly** (*re-duced pres-sure zone as-sem-bly*) a mechanical assembly consisting of two independently operating spring loaded check valves with a reduced pressure zone between checks. The zone contains a relief port which will open to atmosphere if the pressure in the zone falls within two (2) p.s.i. of the supply pressure. The unit shall include properly located locks and tightly closing shut-off valves at each end of the assembly. The assembly is designed to protect against both backpressure and backsiphonage. *Abbr.* RPZ.

**reduced pressure zone between the checks** (*re-duced pres-sure zone be-tween the checks*) the zone contains a relief port which will open to atmosphere if the pressure in the zone falls within two (2) p.s.i. of the supply pressure.

**reducer** (*re-duc-er*) **1.** a pipe fitting with inside threads; larger at one end than at the other. **2.** a fitting so shaped at one end to receive a larger pipe size in direction of flow. See INCREASER; TEE; WYE. *ABBR.* RED.

**reducer, eccentric** (*re-duc-er, ec-cen-tric*) a fitting that maintains the flow line at the same elevation as it reduces the size of the run. See ECCENTRIC FITTING.

**reducing elbow** (*re-duc-ing el-bow*) a 90° fitting in which the inlet and outlet are dissimilar in size.

**reducing flange** (*re-duc-ing flange*) a flange tapped, or bored, smaller than the original intended pipe size.

**reductant** (*re-duc-tant*) organic matter in streams and sewage which is stabilized under anaerobic conditions.

**reduction chamber** (*re-duc-tion chamber*) See HOPPER.

**refill tube** (*re-fill tube*) a discharge conduit of a fill valve that conveys a portion of the flowing water through a separate orifice to the overflow tube for the purpose of refilling the trap.

**refrigerator ice** (*re-frig-er-a-tor ice*) a cabinet, or room, for keeping food or other articles cool by means of ice or some other cooling agent. Some plumbing codes classify an ice refrigerator as a fixture.

**refusal of services** (*re-fus-al of ser-vices*) (shut off policy) a formal policy adopted by a utilities' governing board to enable the utility to refuse, or discontinue, service where a known, or potential, hazard exists and corrective measures are not undertaken to eliminate the hazard.

**registered design professional** (*re-gis-tered de-sign pro-fes-sion-al*) an architect or engineer, registered, or licensed, to practice professional architecture, or engineering, as defined by the statutory requirements of the professional registration laws of the state in which the project is to be constructed.

**regular caulking irons** (*reg-u-lar caulking irons*) having blades of different lengths beveled to caulk either the inside or outside edge of the joint.

**regular cycle** (*reg-u-lar cy-cle*) the sequence of dishwasher operations for regular, or normal soils, as indicated by the manufacturer.

**regulating agency** (*reg-u-la-ting a-gen-cy*) any local, state or federal authority given the power to issue rules, or regulations, having the force of law for the purpose of providing uniformity in details and procedures.

**regulator** (*reg-u-la-tor*) **1.** a governor to maintain an accurate designated characteristic of temperature or pressure of liquid, air or gases. **2.** a device for controlling and maintaining a uniform gas supply pressure.

**regurgitate** (*reg-gur-gi-tate*) **1.** gush, rush, or surge back **2.** to throw, cast, or pour back or out again (as from a cavity).

**reinforced resin** (*re-in-forced res-in*) a structural material made from mixing of resinous material which is strengthened, or filed, with fibers or fragments such as glass, hemp metal, particles, etc. See RESIN.

**relief device** (*re-lief de-vice*) **1.** a safety device designed to forestall the development of a dangerous condition in the medium being heated by relieving either the pressure, temperature or vacuum built up in the appliance. **2.** an automatic device which opens or closes a relief vent, depending on whether the pressure is above or below a predetermined value.

**relief valve** (*re-lief valve*) **1.** fusible plug type - a device which opens and keeps open a relief vent by the melting, or softening, of a fusible plug or cartridge at a predetermined temperature. **2.** Reseating or self-closing type - an automatic device which opens and closes a relief vent, depending on whether the temperature is above or below a predetermined value. See HOT WATER BOILER; THERMAL EXPANSION RELIEF VALVE.

**relief valve diaphragm** (*re-lief valve di-a-phragm*) a thin membrane, or sheet, as a part of the valve.

**relief valve, hot water boiler** (*re-lief valve, hot wa-ter boil-er*) a safety device which relieves overheated water or excessive pressure from the boiler. See RELIEF DEVICE; SAFETY DEVICE; TEMPERATURE AND PRESSURE RELIEF VALVE; TEMPERATURE VALVE.

**relief vent** (*re-lief vent*) **1.** an auxiliary vent, supplementary to regular vent pipes. Its function is to provide circulation of air between drainage and vent systems. **2.** a vent so planned as to permit additional circulation of air between drainage and vent systems.

**remote fixture** (*re-mote fix-ture*) a single fixture located on a branch line at a distance greater than 20 ft. from the upstream end of the branch line.

**reoxygenation** (*re-ox-y-gen-a-tion*) the replenishment of oxygen in a system from a) dilution water entering streams, b) biological reoxygenation through the activities of certain oxygen producing plants, and c) atmospheric reaction.

**representative sample** (*rep-re-sen-ta-tive sam-ple*) for the purpose of establishing a rated flow, a representative sample shall be of sufficient size of each model so that there is a probability of not less than 0.95 that the mean, maximum flow rate of the sample is within plus or minus five percent of the true mean maximum flow rate of the units.

**req'd** *Abbr.* for Required.

**resealing trap** (*re-seal-ing trap*) a trap on a plumbing fixture drain pipe designed so the rate of flow at the end of a discharge from that fixture will seal the trap and will not cause self-siphonage.

**reseating tool** (*re-seat-ing tool*) facing tool used to resurface worn faucet seats.

**residual chlorine** (*re-sid-u-al chlo-rine*) See CHLORINE.

**residual pressure** (*re-sid-u-al pres-sure*) See FLOWING PRESSURE.

**resin** (*res-in*) **1.** any of various hard brittle solid to semi-solid amorphous fusible flammable substances that are usually transparent, or translucent, and yellowish to brown in color with a characteristic luster; are formed especially in plant secretions and are obtained as exudates of recent, or fossil, origin or as extracts of plants that contain usually resin acids and their esters and are soluble in ether and other organic solvents but not in water. They are electrical, non-conductors and are used chiefly in varnishes, printing inks, plastics, medicine and as incense. **2.** any of a large class of synthetic products, usually of high molecular weight that have some of the physical properties of natural resins but typically are very different chemically, that may be thermoplastic or thermosetting and are made by polymerization or condensation. Used chiefly as plastics or the essential ingredients of plastics, in varnishes and other coatings, in adhesives, and in ion exchange. **3.** any of various products made from a natural resin or natural polymer.

**respirator mask** (*res-pi-ra-tor mask*) **1.** appliance worn over a mouth or nose to warm, or filter, the air which is breathed. **2.** a device used to prevent the inhalation of gas-fumes.

**restrained** (*re-strain-ed*) held securely in an immobile position that prevents movement.

**retention tank** (*re-ten-tion tank*) a vessel on which means are provided for holding fluids until their release is desired.

**retrofitting** (*ret-ro-fit-ting*) **1.** the application of a solar heating system to an existing building. **2.** the adding of auxiliary, or replacement, equipment to equipment already in place.

**return bend** (*re-turn bend*) an open return bend usually with inside threads but applied also to a 180° bend in a pipe. See CLOSE RETURN BEND.

**return line** (*re-turn line*) part of a circulating system in which the restoration to the point of a source is accomplished.

**return offset** (*re-turn off-set*) a double offset installed so as to return the pipe to its original alignment. See CROSSOVER FITTING.

**revent pipe** (*re-vent pipe*) an individual pressure equalization pipe interconnected with other pressure equalization pipes.

**reverberatory furnace** (*re-ver-ber-a-to-ry fur-nace*) designating a furnace kiln in which the flame is reflected from the roof on to the material treated.

**reverse impact** (*re-verse im-pact*) an impact applied to the pipe wall opposite to the lined wall.

**revolutions per minute** (*rev-o-lu-tions per min-ute*) a unit of measurement of an object as it revolves about its axis in a minute's time, such as a motor or pump, etc. *Abbr.* R.P.M.

**right angle drill** (*right an-gle drill*) a drill forming and having a right angle.

**rim** (*rim*) an unobstructed open edge of a fixture.

**rim sink** (*rim sink*) a sink made of many different sheet metals in which the outer peripheral edges are folded to give strength and eye appeal.

**ripening (sludge)** [*ri-pen-ing (sludge)*] the completion of the sludge digestion process.

**riser** (*ris-er*) **1.** vertical principal pipes. **2.** a water supply pipe that extends vertically one full story or more to convey water to branches or to a group of fixtures.

**river water** (*ri-ver wa-ter*) See WATER.

**rock wool** (*rock wool*) mineral wool made by blowing a jet of steam through molten rock, as limestone or siliceous rock, or through slag. Used chiefly for heat and sound insulation.

**roll grooving** (*roll groov-ing*) the process of impressing a groove into a pipe or tube to allow for a Mechanical coupling to be installed. Roll grooving removes no metal, displacing metal to form the groove. The process was invented by the Victaulic in 1955 and is used in many plumbing, pipefitting, and fire sprinkler applications

**Roman cement** (*ro-man ce-ment*) a mixture of slacked lime and volcanic ash pazzuolana. The ash produces a hydraulic cement that sets under water. See PAZZUELANA.

**roof area** (*roof ar-ea*) in plumbing, the space on a roof bounded by any barriers which create a drainage surface.

**roof collar** (*roof col-lar*) a metallic flange used to prevent weather damage between pipestack and roof.

**roof cutter** (*roof cut-ter*) a valley shaped device to collect storm water from a roof. See ROOF DRAIN.

**roof drain** (*roof drain*) receives water collected on the surface of a roof and discharges it to the leader, downspout, or conductor. Normally fitted with a strainer, or screen, to prevent influx of solids. *Abbr.* R.D.

**roof flange** (*roof flange*) device in fitting form used around pipe (vent, soil, waste, local) on flat roofs to form a leak proof seal.

**roof leader** (*roof lead-er*) See LEADER.

**roof tank** (*roof tank*) mounted on roof or in penthouse for the storage of water. See ATTIC TANK.

**rope** (*rope*) **1.** thick, strong twist of intertwined fibers of flax, hemp, jute, usually from one to ten inches circumference. **2.** something that binds, confines or holds in check. **3.** in plumbing, any of several rope-like materials used in caulking. See CAULKING.

**rosin** (*ros-in*) a translucent pale yellow or amber to dark red or darker brittle friable resin that is obtained by chemical means from the oleoresin, or dead wood, of pine trees by removal of the volatile turpentine or from tall oil by removal of the fatty acid components, that contains abietic acid and other resin acids as principal components and is used in the modified or unmodified form of a derivative chiefly in making varnishes, lacquers, printing materials, soldering fluxes, polishes and for rosinning the strings of musical instruments.

**rosin and grease box** (*ros-in and grease box*) a device containing rosin and grease to prevent them from scattering throughout the tool box or kit.

**rotary compressor, fan type** (*ro-ta-ry com-pres-sor, fan type*) See AIR COMPRESSOR.

**rotary hammer** (*ro-ta-ry ham-mer*) a tool which electricity, or compressed air, furnishes the energy to impact and revolves the driven member.

**roughing** (*rough-ing*) See ROUGH-IN.

**rough-in** (*rough-in*) **1.** the installation of all parts of a plumbing system which can be completed prior to the installation of fixtures which includes drainage, water supply, vent piping and all necessary fixture supports. **2.** the dimension from the finished wall or floor to center of waste or supply opening, or mounting holes. **3.** dimension from the finished wall, floor to center of waste, supply opening or mounting holes.

**round basin** (*round ba-sin*) a circular shaped basin, a fixture. See LAVATORY.

**round dresser** (*round dress-er*) wooden lead working tool used as a companion tool to the flat dresser. Employed to boss sheet lead, and in the bending of lead pipe, best suited for drawing lead from one point to another; one of the most useful of lead working tools. See FLAT DRESSER; DRESSER.

**round file** (*round file*) a file circular in section either tapered or parallel; the tapered files of small size being termed rat tail files. Round files are used generally for enlarging holes and shaping hollow curves. Round parallel files are also used for gulleting the teeth of large circular and pit saws.

**royal water** (*roy-al wa-ter*) See AQUA REGIA.

**RP** *Abbr.* for REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTER ASSEMBLY.

**RPDA** *Abbr.* for Reduced Pressure Principle-Detector Backflow Prevention Assembly

**R.P.M.** *Abbr.* for REVOLUTIONS PER MINUTE.

**RPZ** *Abbr.* for REDUCED PRESSURE ZONE ASSEMBLY.

**rubber** (*rub-ber*) an elastic substance obtained from the milky juice of various tropical plants, or made synthetically by various chemical processes. Pure rubber is a whitish hydrocarbon that becomes black and more easily worked when vulcanized for commercial use.

**rubber bumper** (*rub-ber bump-er*) rubber-shaped devices to absorb shock or dampen noises, i.e.: rubber bumpers on toilet seat, cover, etc.

**rubber bumper, toilet seat** (*rub-ber bump-er, toi-let seat*) rubber devices attached to a toilet seat to act as a cushion between toilet bowl and seat.

**rubber closet plunger** (*rub-ber clos-et plung-er*) **1.** a ball or pear-shaped unit on a handle to cause pressure to remove obstructions. **2.** a form of pump.

**rubber closet seal** (*rub-ber clos-et seal*) a gasket used between outlet of closet bowl and drain pipe flange.

**rubber gasket** (*rub-ber gas-ket*) a flat rubber material used as a sealer for water, gas, or steam used between two objects. See RAINBOW GASKET.

**rubber mallet** (*rub-ber mal-let*) hammer having the head and striking surface made of rubber.

**rubble drain** (*rub-ble drain*) See FRENCH DRAIN.

**rule** (*rule*) an instrument for measuring. Consists of a strip, or strips, of material marked in units of length such as inches or centimeters.

**run** (*run*) that portion of a pipe or fitting continuing in a straight line in the direction of flow in the pipe to which it is connected. Sometimes an appreciable length of straight or approximately straight pipe.

**running pressure** (*run-ning pres-sure*) **1.** the gauge pressure in a flowing plumbing supply line immediately upstream of a fixture valve. **2.** the residual pressure in the water supply pipe at the pressurized flushing device, or water outlet, while the water outlet is open and flowing.

**running rope** (*run-ning rope*) a braided asbestos rope used with a spring loaded scissors-type clamp for retaining hot, poured lead in caulked-type joints when these joints are made in other than level positions.

**running thread nipple** (*run-ning thread nip-ple*) See ALL THREAD NIPPLE.

**running trap, lead** (*run-ning trap, lead*) a fitting made of lead metal in which the inlet and outlet form a horizontal straight line. However, between these two points, the water way is depressed to below the bottom side wall tangent of either the inlet or outlet.

**running trap, soil pipe** (*run-ning trap, soil pipe*) a fitting made of cast iron four inches or larger in diameter in which the inlet and outlet are a horizontal straight line. However, between these two points the water way is depressed to below the bottom side tangent of either the inlet or outlet.

**rural or isolated buildings** (*ru-ral or i-so-la-ted build-ings*) those buildings situated at such a distance from a public sewer system that their drainage systems cannot become tributary.

**rust** (*rust*) **1.** the reddish, porous, brittle coating that is formed on iron especially when chemically attacked by moist air and that consists essentially of hydrated ferric oxide and sometimes iron carbonates and iron sulfates. **2.** similar coating provided on any of various metals by corrosion.

**rust joint** (*rust joint*) **1.** the resultant joining by the forces resulting from oxidation of materials placed as wicking. **2.** a joint in which some oxidizing agent is employed; either to cure a leak or to withstand high pressure.

**R.W.C.** *Abbr.* for Rainwater Conductor.

# Ss

**S.A.** *Abbr.* for Shock Arrestor.

**sabre saw** (*sa-bre saw*) used to make straight cuts and it can make its own starting hole when a cut must begin in the middle of a board or panel. Also spelled saber.

**sacrarium** (*sa-crar-i-um*) **1.** a fixture used in a place of worship. **2.** a fixture used for the washing of religious articles. Connected to a water supply, drained into a French drain or pit.

**saddle connection** (*sad-dle con-nec-tion*) in plumbing, a means of making a branch connection by virtue of a saddle and girth member or members. Saddle connections are prohibited in many areas.

**saddle fitting** (*sad-dle fit-ting*) a fitting attached to the outside of a pipe and sealed to the pipe with a gasket. Used to create a change in direction or to create a branch. See BELL.

**safe** (*safe*) a pan, or collector, placed beneath a pipe, or fixture, to prevent and catch the dispense leakage or other unusual discharge of fluid from the pipe or fixture.

**Safe Drinking Water Act** (*safe drink-ing wa-ter act*) act of 1974 the Federal Government established, through the Environmental Protection Agency (EPA), national standards of safe drinking water. *Abbr.* SDWA.

**safety chain** (*safe-ty chain*) a chain formed of sheet metal links with an elongated hole through each broad end and constructed by a repeated series of doubling a link upon itself, slipping the next link through the two now superimposed holes of the first and doubling it.

**safety device** (*safe-ty de-vice*) a device to provide safety against heat, cold, explosion, flood, etc. See RELIEF VALVE, HOT WATER BOILER; TEMPERATURE AND PRESSURE VALVE.

**safety eye goggles** (*safe-ty eye gog-gles*) large, transparent face wear to protect principally the eyes.

**safety eye shield** (*safe-ty eye shield*) large, transparent, blister-like unit to protect the face with emphasis on protecting the eyes.

**safety rubber apron** (*safe-ty rub-ber a-pron*) **1.** a rubber, or rubber-like, apparel. **2.** a personal body shield.

**safety shower** (*safe-ty sho-wer*) a deluge shower used in laboratories, industrial and power plants where occupants are exposed to toxic, corrosive or flammable materials, for washdown of the entire body, when spillage, splash or explosion occurs. *Abbr.* Saf. Sh.

**safety shutoff device** (*safe-ty shut-off de-vice*) a device that will shut off the gas supply to the controlled burner(s) in the event the source of ignition fails to ignite the gas at the burner(s). This device may interrupt the flow of gas to the main burner(s) only or to the pilot(s) and main burner(s) under its supervision.



**safety valve** (*safe-ty valve*) **1.** an automatic escape, or relief valve, (as for a steam boiler or hydraulic system) held shut by an arrangement exerting a definite, usually adjustable pressure so that the valve lifts and the steam, water, or other contents escape when the pressure exceeds a predetermined amount. **2.** a similar valve opening inward to admit air to a vessel in which the pressure is less than that of the atmosphere to prevent collapse. See TEMPERATURE AND PRESSURE RELIEF VALVE; TEMPERATURE REGULATOR.

**safe waste** (*safe waste*) the waste pipe from a safe.

**Saf. Sh.** *Abbr.* for Safety Shower.

**sal ammoniac** (*sal am-mo-ni-ac*) See AMMONIUM CHLORIDE.

**san.** *Abbr.* for Sanitary.

**sand bending** (*sand bend-ing*) a process sometimes used in the bending of pipe. The pipe is filled tightly with dried sand to prevent flattening.

**sand box** (*sand box*) an interceptor, or settling basin, designed to allow sand and grit to settle out.

**sand catcher** (*sand catch-er*) a device installed in a plumbing drainage system to allow the particles heavier than water to precipitate for later removal.

**sand cloth** (*sand cloth*) same as sand paper except sheeting material is made of cloth rather than paper.

**sand interceptor** (*sand in-ter-cep-tor*) See INTERCEPTOR. *Abbr.* S.I.

**sand paper** (*sand pa-per*) consist of tough paper covered with finely ground abrading material.

**sand plug** (*sand plug*) sizes 1", 1¼", 1½", and 2". wooden lead working tool used in bending lead pipe when inserted in the ends of the pipe after filling pipe with hot sand, it keeps the sand compressed. See BENDING SPRING; Bobbin.

**sand trap** (*sand trap*) a catch basin for the collection of sand or other gritty material. See INTERCEPTOR.

**sanitarian** (*san-i-tar-ian*) a professional practitioner of hygiene who works within the administrative framework of a community hygiene program.

**sanitary** (*san-i-tary*) **1.** pertaining to, or tending to promote, preserve, or restore health; hygienic. **2.** a water closet, urinal, or similar equipment fitted with sanitary plumbing. *Abbr.* san.

**sanitary engineer** (*san-i-tar-y-en-gi-neer*) one who supervises the planning and construction of water supply, sewage systems, etc.

**sanitary sewage** (*san-i-tar-y sew-age*) sewage containing human excrement and liquid household wastes. Also called domestic sewage.

**sanitary sewer** (*san-i-tar-y sew-er*) **1.** a sewer intended to receive sanitary sewage with, or without, industrial wastes and without the admixture of surface water, storm water, or clear water drainage. **2.** a pipe which carries sewage and excludes storm, surface and ground water.

**sanitary tee** (*san-i-tar-y tee*) a fitting used for drainage purposes only, with the inlet the same size or reducing. The inlet has a curved downward pitch forming a sanitary pattern.

**sanitation** (*san-i-ta-tion*) the neutralization or removal of conditions injurious to health. (e.g. sanitary engineering; purification of water supply; disposal of sewage; etc.)

**scaffold** (*scaf-fold*) temporary structure of poles and planks put up for workmen to stand on while erecting, repairing, painting, or working on a building.

**S.B.** *Abbr.* for Sitz Bath.

**scale** (*scale*) **1.** an accumulation of solid material, precipitated out of waters containing certain mineral salts in solution and formed on the interior surfaces of pipe lines, tanks, boilers, etc., under certain physical conditions. **2.** to separate and come off in scales; flakes. **3.** sometimes graduated especially when used as a measure or rate. **4.** very similar to rules and have graduations in the same fractions of an inch, but they are used for scaling work. **5.** used by draftsmen in laying out drawings of work. **6.** balance. **7.** an instrument or machine for weighing. **8.** the process, or situation, in which something is opposed to, or contrasted with, other like things or an established or assumed standard for such things.

**scavenger** (*scav-en-ger*) a person who engages in cleaning and emptying septic tanks, privies, or any other sewage facility. Slang: Honey Dipper.

**scavenger pumping system** (*sca-ven-ger pump-ing sys-tem*) a pumping system used to return liquid from a lower tank for re-use.

**scent test** (*scent test*) a test for leakage in a piping system. Usually made by putting into the piping a quantity of some pungent chemical. See PEPPERMINT TEST.

**schedule of pipe sizes** (*shed-ule of pipe sizes*) a formal listing of pipe wall thickness to allow the use of standard fittings for a given pipe size and produce uniform inside dimensions of the pipe.

**schematic plan or view** (*sche-mat-ic plan or view*) a diagrammatic representation of a plan, procedure or method of accomplishing a desired result by a specific application.

**scissors** (*scis-sors*) See SHEET METAL SHEARS.

**scoria** (*sco-ri-a*) **1.** excrement. **2.** the refuse from melting of metals or reduction of ores.

**scratch awl** (*scratch awl*) See SCRIBER.

**scratch cloth** (*scratch cloth*) a tool in the form of a pad resembling a fine wire brush used in cleaning and preparing lead pipe and fittings for soldering.

**screw** (*screw*) **1.** a simple machine of the inclined plane type consisting of a spirally grooved solid cylinder and a correspondingly grooved hollow cylinder of equal dimensions in which the applied force acts in a spiral path along the grooves while the resisting force acts along the axis of the cylinder. **2.** a cylinder with a helical cut groove on the outer surface or a cone with a conical spiral groove used variously (as to fasten, apply pressure, transmit motion, or make adjustments) especially where a large mechanical advantage and irreversible motion are desired; specifically, a small cylindrical or conical metal screw with a slotted or recessed head used alone or when cylindrical with a nut to unite two objects or to fasten one or more objects usually by being rotated. **3.** a hollow cylinder or cone with a spiral groove upon its inner surface into which a male screw may advance and fit when rotated in the proper direction.

**screwdriver** (*screw-driver*) a tool shaped like a chisel with a blunt edge/s and used for turning screws.

**screwed fittings** (*screw-ed fit-tings*) any of the threaded type of pipe fittings. Sometimes called screw fittings as opposed to welded, soldered or leaded joint fittings. See SCREW THREAD JOINT.

**screw thread joint** (*screw thread joint*) a threaded connection.

**scriber** (*scrib-er*) **1.** a hardened and pointed metal tool, usually steel, designed to mark other metals with a fine line. **2.** a hand tool. **3.** a scratch awl.

**Scr. S.** *Abbr.* for Scrub Sink.

**scrubber** (*scrub-ber*) **1.** an apparatus for removing impurities. **2.** a filter used in a water treatment plant for the partial removal of turbidity, prior to final filtration.

**scrub sink** (*scrub sink*) a sink used in medical installations for surgeons scrub-up prior to surgical procedures. *Abbr.* Scr.S.

**scum** (*scum*) **1.** extraneous matter or impurities which rise to, or are formed on the surface of liquids. **2.** any foul filmy covering floating on a liquid such as on a stagnant pool.

**scupper drain** (*scup-per drain*) a drain installed in the side of a wall, vessel or gutter to carry off water, or rainwater from the deck, roof or vessel. *Abbr.* S.D.

**S.D.** *Abbr.* for Scupper Drain.

**S.D.W.A.** *Abbr.* for Safe Drinking Water Act.

**seal of a trap** (*seal of a trap*) See TRAP SEAL.

**sealing ring** (*seal-ing ring*) a soft or resilient ring-shaped gasket used to seal this fixture to the piping through the floor or wall.

**seamless pipe or tubing** (*seam-less pipe or tub-ing*) pipe or tubing which has been extruded through a die when it is made so that there is no seam in the resulting pipe.

**seasonal efficiency** (*sea-son-al ef-fi-cien-cy*) in the solar energy field, the ratio of solar energy collected and used to that striking the collector over an entire season or segment of the year.

**seat** (*seat*) **1.** a part, or surface, upon which the base of something rests. **2.** in plumbing, the fixed portion in a valve usually a smooth surface to receive the moving stem and thereby accomplish a seal. See FAUCET SEAT.

**seat key** (*seat key*) tool used to remove and replace faucet seats.

**seat union** (*seat un-ion*) a fitting to join pipes in which no gasketing material is used; metal to metal contact.

**seating width** (*seat-ing width*) the seating surface area in contact with the resilient portion of the check valve disc at a pressure equal to its rated pressure.

**secondary air** (*sec-ond-ar-y air*) the air externally supplied to the flame at the point of combustion.

**secondary branch** (*sec-ond-ar-y branch*) any branch in a building drain other than the primary branch.

**secondary water** (*sec-ond-ar-y wa-ter*) See WATER.

**second foot** (*sec-ond foot*) a unit of flow used especially in connection with the flow of streams that is equal to one cubic foot per second.

**second hand** (*sec-ond hand*) when used in a plumbing ordinance, or code, to describe plumbing fixtures and/or materials, the term means the fixture, or material, has been installed and used or removed from its first installation and changed ownership.

**sectional pipe covering** (*sec-tion-al pipe cov-er-ing*) an annulus material used in covering fibers of a plumbing system which can be wrapped around the pipes, etc. and usually manufactured in three foot lengths.

**seeding, sludge** (*seed-ing, sludge*) the inoculation of undigested sewage solids with sludge that has undergone decomposition, for the purpose of introducing favorable organisms accelerating the initial stages of digestion.

**seepage pit** (*seep-age pit*) See SEEPAGE WELL.

**seepage well or pit** (*seep-age well or pit*) a covered pit with an open-jointed lining through which the septic tank effluent receives, seeps or leeches into the surrounding porous soil.

**self-actuated** (*self-ac-tu-at-ed*) a condition or state that requires no external mechanical, pneumatic, or electrical energy source to institute a control function.

**self-closing faucet (*self-clos-ing fau-cet*)**

a valve which automatically closes upon release of the operating handle.

**self-scouring flow (*self-scour-ing flow*)**

1. a discharge into a drainage system in sufficient volume and velocity to cause a filling of the drain pipe so as to have a cleaning action. 2. in plumbing, swift flow while the conduit is full.

**self-siphonage (*self si-phon-age*)**

1. the breaking of the seal of a trap as a result of removing the water 2. discharge of the fixture to which the trap is connected through siphonic action.

**semi-water gas (*semi-wa-ter gas*)**

a mixture of CO, CO<sub>2</sub>, H<sub>2</sub>, and N<sub>2</sub> obtained by passing a mixture of air and steam continuously through incandescent coke.

**sensing element (*sen-sing el-e-ment*)**

a device such as a bi-metal element, a fluid-filled bellows, or a thermostatic bulb, capable of sensing temperature variations.

**separator (*sep-a-ra-tor*)** See INTERCEPTOR.**septic (*sep-tic*)** See SEPTICIZATION.**septicization (*sep-ti-ciz-a-tion*)**

a term applied to anaerobic decomposition, whereby intensive growths of bacteria with the enzymes secreted by them liquify and gasify solid organic matters.

**septic tank (*sep-tic tank*)**

1. a reservoir, or tank, which receives crude sewage, and by bacterial action and sedimentation effects a process of clarification and decomposition of solids. 2. a tank in which the solid matter of continuously flowing sewage is deposited and retained until it has been disintegrated by anaerobic bacteria. 3. a water tight receptacle which receives the discharge of a building sanitary drainage system, or part, and is designed and constructed so as to separate solids from the liquid, digest organic matter through a period of detention, and allow the liquids to discharge into the soil outside of the tank through a system of open joints, or

perforated piping, or a seepage pit. See CESSPOOL; INDIVIDUAL SEWAGE DISPOSAL SYSTEM.

**service box (*ser-vice box*)** See CURB BOX.**service clamp (*ser-vice clamp*)**

a saddle-like connection used on a water main for a service connection.

**service class cast iron soil pipe (*ser-vice class cast iron soil pipe*)**

a designation by the wall thickness of various sizes of cast iron soil pipe and fittings.

**service connection (*ser-vice con-nec-tion*)**

the terminal end of a service connection from the public potable water system where the water purveyor may lose jurisdiction and sanitary control over the water at its point of delivery to the consumer's water system. If a meter is installed at the end of the service connection, then the service connection shall mean the downstream end of the meter.

**service ell (*ser-vice ell*)**

a 45° or 90° bend with one male thread and one female thread. See STREET ELL.

**service hopper, sink (*ser-vice hop-per, sink*)**

a sink, receptor or receptacle connected to a drainage system into which sink, or other services drain.

**service pipe (*ser-vice pipe*)**

the pipe from the water, gas, etc., main in the street or other source of supply to the building served.

**service protection (*ser-vice pro-tec-tion*)**

the appropriate type, or method, of backflow protection at the service connection, commensurate with the degree of hazard within a customer's potable water system.

**service tee (*ser-vice tee*)**

a tee with one male thread on one end of the run and a female thread on the other end of the run and on the branch.

**service water** (*ser-vice wa-ter*) domestic hot water, up to 180°F or 82°C, generated for the purpose of direct delivery to the kitchen, laundry process or other high temperature requirements.

**service weight** (*ser-vice weight*) a class of cast iron soil pipe. *Abbr.* S.W.

**service weight piping system** (*ser-vice weight pip-ing sys-tem*) See SERVICE CLASS CAST IRON SOIL PIPE.

**set tub** (*set tub*) See LAUNDRY TRAY.

**sewage** (*sew-age*) **1.** the liquid wastes conducted away from residences, business buildings, or institutions, together with those from industrial establishments, and with ground, surface, and storm water present. **2.** Any liquid waste containing animal or vegetable matter in suspension, or solution and may include liquids containing chemicals in solution. **3.** may be considered to be the used water supply of a community.

**sewage ejector** (*sew-age e-jec-tor*) **1.** a device for lifting and discharging sewage. **2.** a device for moving sewage by entraining it on a high velocity stream, air or water jet.

**sewer** (*sew-er*) **1.** a ditch or surface drain. **2.** an artificial, usually subterranean, conduit to carry off water and waste matter (as surface water from rainfall, household waste from sinks or baths, or waste water from industrial works). **3.** a combined sewer in a sewer, or drain, intended to receive domestic sewage, industrial water-carried wastes, surface, storm, and clear water, including: (a) a house drain that is part of the underground horizontal piping of a drainage system which receives the discharge of all soil, waste, and other drainage pipes inside of the walls of any building and conveys the same to the house sewer, three to five feet outside the foundation wall of such building. (b) a house sewer is that part of the horizontal piping beginning three feet from the foundation walls to its connection with the main sewer, bacterial tank, or other disposal terminal. (c) a private sewer is

a privately owned sewer. (d) a public sewer is a publicly owned sewer. (e) a sanitary sewer. (f) a storm drain is a conduit for carrying off surface, storm, and clear water. (g) a subsoil drain is that part of a drainage system which conveys the ground, or seeping, water from foot of walls or below the cellar floor under buildings to the house or storm drain. (h) a yard drain is that part of a horizontal piping and its branches which convey the surface drainage from areas, courts or yards, outside the walls of a building, to the house drain, house sewer or storm water drain. See PRIVATE SEWER; PUBLIC SEWER.

**sewerage** (*sew-er-age*) **1.** as a noun, the works comprising a sewer system, pumping stations, treatment works, and all other works necessary to the collection, treatment, and disposal of sewage. **2.** as an adjective, having to do with the collection, treatment, and disposal of sewage. **3.** the systematic removal and disposal of sewage and general surface water by sewers.

**sewer air or sewer gas** (*sew-er air or sew-er gas*) the mixture of vapors, odors, and gases found in a sewer.

**sewer cleaning machine** (*sew-er clean-ing ma-chine*) auger for probing or dislodging obstructions. Any of several types of power may be used, i.e.: electric, gasoline, etc.

**sewer pipe** (*sew-er pipe*) a conduit into which waste and sewage are conveyed. See SEWER PIPE CURVE.

**sewer pipe curve** (*sew-er pipe curve*) a long radius pipe. See SEWER PIPE.

**sewer rod** (*sew-er rod*) a flexible metal (generally steel) probe (rod-like) for disturbing, or dislodging, sewer pipe obstructions. See ELECTRIC SEWER MACHINE.

**shall** (*shall*) **1.** the term when used in a plumbing code, has a mandatory meaning. Compare “may” which is permissive rather than mandatory. **2.** a mandatory requirement.

**shampoo bowl** (*sham-poo bowl*) a lavatory type fixture appropriately shaped to comfortably rest a person's head during shampooing operations. Used in beauty and barber shops.

**shampoo faucet** (*sham-poo fau-cet*) a special valve on a fixture (lavatory) in barber and/or beauty shops.

**shave hook** (*shave hook*) plumbers', or metal workers', implement for scraping metal before soldering; used to bevel edges of lead pipe; for shaving off the oxidized surface of sheet lead pipe prior to soldering. Shave hook blades are made in three styles: ovals, half ovals, and triangular. Consists of a sharp-edged steel plate, set transversely at the end of a shank fixed in the handle.

**shears** (*shears*) See SHEET METAL SHEARS.

**shear steel** (*shear steel*) **1.** steel produced by heating blister steel (sheared in short lengths) to a high heat, welding by hammering, rolling or both, and finally finishing under the hammer at the same, or a slightly greater, heat. **2.** forge welding.

**sheet** (*sheet*) **1.** a broad, thinly expanded portion of metal or other substance. **2.** a plate forming part of a tank, or boiler, regardless of thickness. **3.** a portion of metal less than about a quarter or sometimes an eighth of an inch in thickness.

**sheet metal shears** (*sheet me-tal shears*) "snips"; "shears"; "scissors"; a cutting implement of two blades with overlapping edges crossing like a scissors pivoted together in the middle and opening into the form of X; types: (a) light metal straight-cut snips; (b) duckbill snips; and (c) compound-leverage snips (right cutting only; compound cutting only, straight cutting).

**sheet packing** (*sheet pack-ing*) See RAINBOW GASKET.

**shellac, orange and white** (*shel-lac, orange and white*) purified lac resin that is prepared in the form of thin orange or yellow flakes usually by heating and filtering seed lac, and is often bleached white and is used chiefly in varnishes, polishing and sealing waxes, binding agents, stiffening agents, electric insulators, phonograph records and other molded products.

**shell, tank** (*shell, tank*) See TANK SHELL.

**shielding device** (*shield-ing de-vice*) a component of the piping system used to protect the installed tubing from accidental puncture by nails, screws or similar hardware at concealed tubing support points

**shock** (*shock*) the force generated in a piping system by water hammer.

**shock arrestor** (*shock ar-res-tor*) in a pipe line, an engineered device to absorb the shock of energy which accumulates when liquid flow is suddenly obstructed. See AIR CHAMBER.

**s-hook** (*s-hook*) an s-shaped hook.

**s-hook, brass** (*s-hook, brass*) an s-shaped hook of brass.

**short-nosed caulking iron** (*short-nosed caulk-ing iron*) short end tool to face for packing or joining material. See CAULKING IRON.

**short-nosed packing iron** (*short-nosed pack-ing iron*) See SHORT-NOSED CAULKING IRON.

**should** (*should*) **1.** a term which indicated a feature, or requirement, which is desirable but not mandatory. **2.** indicates a recommended procedure, technique, or requirement.

**shoulder nipple** (*shoul-der nip-ple*) a nipple somewhat longer than a close nipple. It has an unthreaded space about  $\frac{1}{4}$ " between external threads.

**shovel** (*shov-el*) a tool somewhat resembling a spade in general shape but not usually used for digging, having a broad, slightly hollowed blade with a blunt edge. Used normally for shifting loose earth.

**shower** (*show-er*) a plumbing fixture and/or fitting. See SHOWER BATH.

**shower arm** (*show-er arm*) a bent pipe to accommodate a shower head.

**shower bath** (*show-er bath*) a bath in which water is showered upon the body from above or from the sides of the shower enclosure. See SHOWER COMPARTMENT.

**shower cabinet** (*show-er cab-i-net*) a complete three wall enclosure for the purpose of bathing under fine streams of water.

**shower compartment** (*show-er com-part-ment*) an enclosure, especially equipped with shower head or heads, water supply, control valves, and floor drain. See SHOWER BATH.

**shower curtain hook** (*show-er cur-tain hook*) **1.** a hook cast on a plate secured to a wall by screws. Its use is to hold shower curtain in place by means of a chain. **2.** a series of hooks which, when attached to the shower curtain allows it to move laterally along the shower curtain rod.

**shower, gang** (*show-er, gang*) two or more shower heads in a common area that can be used individually or simultaneously.

**shower head** (*show-er head*) a nozzle from which the water flows in a shower.

**shower hook** (*show-er hook*) See SHOWER CURTAIN HOOK.

**shower regulator** (*show-er reg-u-la-tor*) a device introduced into the supply line of a shower valve to regulate, or control, the liquid volume which can be discharged from the shower head. See MIXING VALVE; VOLUME REGULATOR.

**shower stall** (*show-er stall*) See SHOWER COMPARTMENT.

**shr. d.** *Abbr.* for Shower Drain.

**shrink fit** (*shrink fit*) a joint made by shrinking a heated piece of pipe over the ends of two cool pipes.

**S.I.** *Abbr.* for Sand Interceptor.

**siamese connection** (*si-a-mese con-nection*) a flush, or exposed divider on a building having two or three hose threaded inlets feeding a single outlet, and serves as part of that building's fire protection system.

**side outlet cross** (*side out-let cross*) a five opening "T" fitting.

**side outlet ell** (*side out-let ell*) an ell with outlet at right angles to the plane of the run.

**side outlet tee** (*side out-let tee*) a fitting in the shape of a "T" with another opening at the juncture of the two lines at 90° to the through line or run.

**side vent** (*side vent*) a vent connecting the drain pipe through a fitting at an angle not greater than 45° to the vertical.

**significant surface** (*sig-nif-i-cant sur-face*) any exposed surface which, if marred, would spoil the appearance of the fixture, fitting or equipment.

**sill cock** (*sill cock*) a faucet used on the outside of a building to which the garden hose can be attached.

**silver** (*sil-ver*) a white metallic element that is sonorous, ductile, very malleable, capable of a high degree of polish. Obtained as the main product and as a by-product in copper and lead smelting. Usually alloyed with copper to increase its hardness. In plumbing, used as an ingredient of hard solders.

**single control mixing valve** (*sin-gle con-trol mix-ing valve*) a device with a single control which serves to turn water on and off, and to change volume and temperature of the discharge flow.

**single lever faucet** (*sin-gle lev-er fau-cet*) a mixing valve, or valves, operated (turned on/off) by a single handle.

**single sink faucet** (*sin-gle sink fau-cet*) reference to a single water supply valve as used on a sink.

**single sweep tee** (*sin-gle sweep tee*) a fitting in the shape of a "T" with the side opening directing the flow to one end of the straight through line.

**sink** (*sink*) **1.** a shallow fixture that is commonly used in a kitchen (in connection with the preparation of food), for laboratory purposes, and for certain industrial processes. There are many types of special sinks, the purpose of which is indicated by the name prefixed before the word sink, such as slop sink, vegetable sink, etc. **2.** a stationary basin or a cabinet connected with a drain and usually a water supply for washing and drainage. *Abbr.* SK.

**sink bolt** (*sink, bolt*) a bolt used in the assembly of section fixtures (sinks) of a yesteryear era.

**sink, cook** (*sink, cook*) a fixture used as an aid in food preparation.

**sink, floor (mop basin)** [*sink, floor (mop bas-in)*] a shallow (10"-12" deep) floor mounted fixture used for filling and emptying mop pails and for cleaning and rinsing of floor mops.

**sink, flushing rim** (*sink, flush-ing rim*) See FLUSH RIM.

**sink funnel** (*sink fun-nel*) the outlet or opening in the bottom of a sink.

**sink, pot** (*sink, pot*) a sink designed and/or used to clean pots and other cooking utensils.

**sink, scullery** (*sink, scul-ler-y*) a sink designed and/or used for the cleaning and preparing of produce for cooking. Also called a vegetable sink.

**sink, service (slop)** [*sink, ser-vice (slop)*] a deep bowl fixture intended for the filing and emptying of buckets or pails. Generally used for janitorial services. *Abbr.* S.S.

**siphon** (*si-phon*) **1.** a tube, or conduit, in the form of an inverted U tube, one leg is longer than the other through and fluid flows over the weir of the tube to a lower level. **2.** a tube, or conduit, in the form of an inverted U which water can be caused (by atmospheric pressure) to flow from a vessel up over a barrier at an elevation above the level of the water in the vessel and down into another vessel at a lower level.

**siphon breaker** (*si-phon break-er*) a valve, device or appurtenance constructed and installed to prevent to backflow in the plumbing system or any portion thereof. See BACKFLOW; BACKSIPHONAGE.

**siphon jet** (*si-phon jet*) defines the action usually in plumbing fixtures.

**siphon jet closet** (*si-phon jet clos-et*) a toilet which empties and flushes with a volume of water assisted by a jet stream of water to enhance the built-in siphon of the toilet bowl drainage passageway.

**sitz bath** (*sitz bath*) See BATHTUB, SITZ. *Abbr.* S.B.

**size of pipe and tubing** (*size of pipe and tub-ing*) pipe is sized according to the approximate dimension of the bore or inside diameter, while the size of tubing is usually determined by measuring the outside diameter, expressed in inches and fractions. See DIAMETER.

**SK** *Abbr.* for Sink

**skimmer, grease** (*skim-mer, grease*) **1.** a piece of iron used to hold back grease (dirt) on the surface of molten metal to prevent it from entering the mold. **2.** a device for removing floating grease, or scum, from the surface of sewage in a tank.

**slag** (*slag*) the dross or scoria of a metal.

**slant** (*slant*) a branch connection from a house sewer to a common sewer. See HOUSE SLANT.



**sleek/slick** (*sleek/slick*) the thin oily film which gives characteristic appearance to the surface of water into which sewage, or oily waste, has discharged and having a smooth or polished surface.

**sleeve** (*sleeve*) **1.** a cylindrical tube surrounding the pipe, shaft or to create a void. **2.** a tubular part designed to fit over another part.

**sleeve axle** (*sleeve ax-le*) a hollow axle having relative movement to a shaft inside it. A long bushing or thimble.

**sleeve coupling** (*sleeve coup-ling*) a piece of pipe, or a thimble, for covering a joint or for coupling two lengths of piping.

**slick** (*slick*) See SLEEK.

**slide rule** (*slide rule*) an instrument consisting in its simple form of a ruler and a medial slide that are graduated with similar logarithmic scales labeled with the corresponding antilogarithms. Used for making mathematical calculations.

**slim taper file** (*slim ta-per file*) triangular file, more slender than the regular taper, used mainly for handsaw sharpening.

**slip coupling** (*slip coup-ling*) **1.** a form of coupling adapted for the use on slip carriages. **2.** a coupling designed to slip at heavy loads, and thus relieve the duty on the driving unit.

**slip fitting** (*slip fit-ting*) another name for telescopic fit of pieces of tubing or pipes in which a seal is made by a gland and packing.

**slip joint** (*slip joint*) a connection in which one pipe slides into another. The joint is made tight with a gasket, packing, "O" ring, or caulking.

**slip-on flange** (*slip-on flange*) a circular disc-like unit which readily envelops a pipe. See FLOOR FLANGE; CEILING FLANGE.

**slope** (*slope*) See GRADE.

**slop sink** (*slop sink*) a fixture deeper than an ordinary sink and intended for the receipt of slops. It is often equipped with an integral trap.

**slop stones** (*slop stones*) a fired, clay receptacle set over a trap and used as a slop receiver. Usually equipped with a grate or strainer.

**sloughing** (*slough-ing*) **1.** a filter casting off a thin film of scum or bacterial growth or fungus. **2.** the phenomenon associated with trickling filters and contact aerators, where slime and solids accumulated in the media are discharged with the effluent.

**sludge** (*sludge*) **1.** a muddy or slushy mass, deposit or sediment (as on tide land or river bed). **2.** the precipitated solid matter produced by water and sewage treatment processes. **3.** muddy sediment in a steam boiler. **4.** precipitate or settling from oils.

**sludge bed** (*sludge bed*) See SLUDGE DRYING BED.

**sludge drying bed** (*sludge dry-ing bed*) an area comprising natural, or artificial, layers of porous material upon which digested sewage sludge is dried by drainage and evaporation. A sludge bed may be open to the atmosphere or covered with a greenhouse type of superstructure.

**slug** (*slug*) the discharge of liquid or liquid carried wastes in which the volume of flow of discharge exceeds five times the daily average volume of flow for a period longer than fifteen minutes.

**smelting process** (*smelt-ing pro-cess*)

**1.** to melt or fuse, as one, with an accompanying chemical change, usually to separate the metal. **2.** to reduce, refine, flux or scorify. Usually done in a blast furnace in which combustion is forced by a current of air under pressure.

**smoke test** (*smoke test*) a testing procedure using smoke to locate potential leaks, or defects, to determine the soundness of a system(s).

**snake** (*snake*) See DRAIN CLEANER.

**snap cutter** (*snap cut-ter*) a tool used for cutting pipes and fittings of the cast iron variety. See SOIL PIPE CUTTER.

**sniff hole** (*sniff hole*) **1.** very old (approx. 1560 A.D.) identification of the hole in the side wall of a dip tube in a heated, or unheated, water reservoir. **2.** later version, a hole in the side wall of dip tube claimed to stop siphonage of water from tank.

**snifter valve** (*snif-ter valve*) a device with a threaded male end and on the other end with air-core attachment used to inject air into system to raise pressure for testing purposes. See HYDROPNEUMATIC TEST.

**snift hole** (*snift hole*) See SNIFF HOLE.

**snips** (*snips*) See SHEET METAL SHEARS.

**snow guard** (*snow guard*) any of several devices to prevent a slide of snow from a sloping roof.

**soakers** (*soak-ers*) flashings that are installed in pieces with about half of each piece going against the brick and the other half going under the roofing material.

**soap, soldering** (*soap sol-der-ing*) a finely powdered rosin with strong ammonia solution suitable for soldering copper wires.

**socket** (*sock-et*) See COUPLING.

**socket-eye hanger** (*sock-et-eye han-ger*) an opening, or cavity, into which anything is fitted endwise.

**socket plug** (*sock-et plug*) a plug with a recess in the face which a wrench will fit to turn the plug.

**soda ash** (*so-da ash*) partly purified sodium carbonate. Commercial anhydrous sodium carbonate  $\text{Na}_2\text{CO}_3$  obtained as a grayish white powder or as lumps.

**soda water** (*so-da wa-ter*) **1.** drinkable water charged with carbon dioxide gas to make it bubble and fizz for either taste and/or sparking effect. **2.** carbonated water.

**sodium** (*so-di-um*) a soft, silver white, metallic chemical element occurring only in compounds. Sodium is of the alkali metals which oxidizes rapidly in the presence of air and reacts violently with water ( stored under kerosine).

**sodium carbonate** (*so-di-um car-bon-ate*) **1.** a salt that occurs in a powdery white form and in a hydrated crystalline form called washing soda. It is used for softening water. **2.** a neutralizing agent, etc.

**sodium chloride** (*so-di-um chlo-ride*) common salt.

**sodium hydroxide** (*so-di-um hy-drox-ide*) caustic soda.

**sodium hypochloride** (*so-di-um hy-po-chlo-ride*) a crystalline salt, used as an insecticide and disinfectant.

**sodium phosphate** (*so-di-um phos-phate*) any of various colorless crystalline or white granular salts of sodium and phosphorus. Used in water softeners, laxatives, etc.

**sodium tetraborate** (*so-di-um tet-ra-bo-rate*) See BORAX.

**soft solder** (*soft sol-der*) solder which melts readily. An alloy of lead and tin that melts below 700°F and is used when melted to join metallic surfaces. See SOLDER.

**soil** (*soil*) **1.** earth and/or firm land. **2.** the upper layer of earth that may be dug or plowed, specifically. **3.** the loose surface material of the earth in which plants grow, usually consisting of disintegrated rock with an admixture of organic matter and soluble salts. **4.** in plumbing: to cause non-adherence, (to non whet) as in soldering techniques to guide and control. See BODY WASTES.

**soil branch** (*soil branch*) a horizontal projection of a vertical sanitary sewerage pipe or system of pipes.

**soil pipe** (*soil pipe*) **1.** a pipe through which liquid wastes carrying human excrement can flow. **2.** term generally applied to cast iron pipe in five feet lengths used for house drainage. **3.** any pipe which conveys the discharge of water closets, urinals or fixtures having similar functions with, or without, the discharge from other fixtures, to the building drain or building sewer. See EXTRA HEAVY.

**soil pipe connection** (*soil pipe connection*) See CONNECTIONS.

**soil pipe cutter** (*soil pipe cutter*) there are three basic types: (a) a tool similar to a pipe cutter as normally used to cut steel, etc. The pipe is held in a vice. (b) a tool with cutting wheels fixed to the shaft end, as well as to a chain which is wrapped around the outside wall of the pipe. As the tool is turned the chain is tightened causing the pipe to separate. The pipe is held in a vice. (c) a cutter employing a chain with cutting wheels, however, not turned around the pipe in the usual manner. The chain is wrapped around the outside of the pipe and the pipe cut with a tightening of the chain. Mechanical advantage principles are included. No vise is needed. See INSIDE SOIL PIPE CUTTER; HYDRAULIC PIPE CUTTER; SNAP CUTTER.

**soil pipe joining tool** (*soil pipe joining tool*) special tool designed to assemble and disassemble gasketed soil pipe.

**soil stack** (*soil stack*) a vertical soil pipe.

**soil vent** (*soil vent*) that portion of a soil stack above the highest fixture waste connection to it.

**solar** (*so-lar*) **1.** of or relating to the sun and its effect, especially on the earth's surface. **2.** produced or operated by action of the sun.

**solar absorber area** (*so-lar ab-sorb-er area*) the total heat transfer area in which the absorbed solar radiation heats the transfer fluid or of the absorber media if both transfer fluid and solid surfaces jointly perform the absorbing function, ft<sup>2</sup> (m<sup>2</sup>).

**solar absorber plate** (*so-lar ab-sorb-er plate*) the part of the solar collector which receives the incident solar radiation energy and transforms it into thermal energy. In some cases, the heat transfer fluid itself could be the absorber.

**solar absorptance** (*so-lar ab-sorp-tance*) **1.** the ratio of the absorber flux to the total incident flux, measured in terms of percent (%). **2.** the fraction of the solar irradiance which is absorbed.

**solar angle of incidence** (*so-lar an-gle of in-ci-dence*) the angle between the line of direct solar irradiation and the perpendicular to the aperture plane, degrees.

**solar angle of refraction** (*so-lar an-gle of re-frac-tion*) the angle between the refracted ray's propagation direction and perpendicular to the interface at the point of refraction, degrees.

**solar aperture area** (*so-lar ap-er-ture area*) the maximum projected area of a solar collector module area or a solar collector module including any integral mounting devices, ft<sup>2</sup> (m<sup>2</sup>).

**solar auxiliary energy subsystem** (*so-lar aux-il-ia-ry en-er-gy sub-sys-tem*) a configuration of equipment and components, utilizing conventional energy sources, to supplement the output of the solar system.

**solar collector** (*so-lar col-lec-tor*) a device used to absorb the sun's energy.

**solar collector, concentrating** (*so-lar col-lec-tor, con-cen-tra-ting*) a collector which uses reflectors, lenses or other optical devices to concentrate the radiant solar energy passing through the aperture onto an absorber of which the surface area is smaller than the aperture area.

**solar collector cover** (*so-lar col-lec-tor cov-er*) the transparent material placed over the aperture or absorber area of a solar collector to provide protection from the environment and reduce thermal losses from radiation or convection.

**solar collector efficiency** (*so-lar col-lector ef-fi-cien-cy*) the ratio of the energy collected (or absorbed) to the total solar energy incident on the collector, expressed in percent (%).

**solar collector gross area** (*so-lar col-lector gross ar-ea*) the maximum projected area of a solar collector which unconcentrated solar radiant energy is admitted, ft<sup>2</sup> (m<sup>2</sup>).

**solar collector subsystem** (*so-lar col-lector sub-sys-tem*) that portion, or assembly, of the solar system used for absorbing incident solar radiation, converting it to thermal energy and transferring this thermal energy to heat transfer fluid. The collector subsystem includes the solar collector(s), related piping or ducts, and regulating devices.

**solar collector tilt** (*so-lar col-lector tilt*) the angle above the horizontal plane at which a solar collector is mounted.

**solar collector, trickle** (*so-lar col-lector, trick-le*) a flat-plate collector over which nonpressurized liquids flow.

**solar concentrating ratio** (*so-lar con-cen-trating ra-tio*) the ratio of the aperture area to the absorber of a solar collector.

**solar concentrator** (*so-lar con-cen-tra-tor*) a reflector, lens or other optical device in concentration solar collectors used to focus the incident solar energy on the reduced absorber area.

**solar constant** (*so-lar con-stant*) the solar radiation intensity which is incident on a surface normal to the sun's rays, outside the earth's atmosphere at the distance from the sun equal to the mean distance between the earth and the sun. The accepted value of the solar constant is equal to 428.8 BTU/hr-ft<sup>2</sup> (1353 W/m<sup>2</sup>).

**solar degradation** (*so-lar deg-ra-da-tion*) the process by which exposure to sunlight deteriorates the properties of materials.

**solar emittance** (*so-lar e-mit-tance*) the fraction of heat radiated by the solar collector, measured in percent (%) of the absorbed energy by the panel.

**solar energy** (*so-lar en-er-gy*) the photon (electromagnetic) energy originating from the sun.

**solar energy transport subsystem** (*so-lar en-er-gy trans-port sub-sy-tem*) that portion of a solar system which contains the heat transfer media and transports the energy throughout the solar system, including related piping and regulating devices.

**solar heat transfer medium** (*so-lar heat trans-fer me-di-um*) fluid used in the transport of thermal energy.

**solar hot water system** (*so-lar hot wa-ter sys-tem*) the complete assembly of subsystems or components necessary to convert solar energy into thermal energy and use this energy, in combination with auxiliary energy, where required, to provide hot water for domestic uses.

**solar irradiation (insolation)** [*so-lar ir-ra-di-a-tion (in-so-la-tion)*] instantaneous. The quantity of solar radiation incident on a unit surface area in a unit time, BTU/h-ft (W/m<sup>2</sup>).

**solar of reflection** (*so-lar of re-flec-tion*) the angle between the reflected ray's propagation direction and the perpendicular to the surface at the point of reflection.

**solar performance factor efficiency** (*so-lar per-for-mance fac-tor ef-fi-cien-cy*) the ratio of the useful output capacity of a system to the input required to obtain it.

**solar radiant emittance (existence)** [*so-lar ra-di-ant e-mit-tance (ex-ist-ence)*] the quotient of the radiant flux leaving an element of the surface containing the point by the area of the element.

**solar radiant intensity** (*so-lar ra-di-ant in-ten-si-ty*) the quotient of the radiant flux emitted by a source (or by an element of a source in an infinitesimal cone containing the given direction) by the solid angle of the cone.

**solar radiation flux** (*so-lar ra-di-a-tion flux*) power emitted, transferred or received in the form of electromagnetic waves or photons.

**solar selective surface** (*so-lar se-lec-tive sur-face*) a coating applied to a solar collector, or its absorber, having a high absorptance and a low emittance.

**solar system** (*so-lar sys-tem*) equipment and components arranged in a manner to collect, convey, store, and convert solar energy.

**solar system active** (*so-lar sys-tem ac-tive*) a solar system in which the incident solar radiation is absorbed by the solar collectors, transferred to an independent thermal storage unit and distributed to the point of ultimate use by means of mechanical devices powered by conventional fuels, i.e. pumps and fans.

**solar system, air** (*so-lar sys-tem, air*) a solar system which uses air as the primary heat transfer fluid.

**solar system, closed** (*so-lar sys-tem, closed*) a solar system which has a completely enclosed collector subsystem circulating the heat transfer fluid under pressure above atmospheric pressure, and shut-off from the atmosphere, except for an expansion tank.

**solar system, liquid** (*so-lar sys-tem, liq-uid*) a solar system which uses liquid as the primary heat transfer fluid.

**solar system, open** (*so-lar sys-tem, open*) a solar system which exchanges heat directly with the end use application.

**solar system passive** (*so-lar sys-tem pas-sive*) a solar system in which solar energy utilization becomes the prime objective of engineering architectural design. The flow of heat is achieved by natural convention, conduction, and radiation.

**solar system thermosiphon** (*so-lar sys-tem ther-mo-si-phon*) a solar system in which fluids circulate due to their temperature differentials, rather than under the influence of pumps or fans.

**solder** (*sol-der*) **1.** a metal, or metallic, alloy used when melted to join metallic surfaces and usually applied by means of a soldering iron, or a blowpipe, with a flux (as rosin, borax, or zinc chloride) to cleanse the surfaces; especially an alloy of tin and lead so used. **2.** the act of joining. See MEDIUM SOLDER; HARD SOLDER.

**soldered dot** (*sol-der-ed dot*) **1.** a device for fixing sheet lead to woodwork. **2.** a hollow formed in vertical boarding which is covered with sheet lead, secured in the hollow by splayed screws, the hollow being filled with solder.

**solder flange** (*sol-der flange*) usually a ring-shaped metal shape placed over the pipe, or fitting, which solder will adhere.

**solder flux** (*sol-der flux*) chloride of zinc, this flux may be used for brass, copper, gun metal, gold, silver, and tinned steel. Approximately three parts of hydrochloric acid, one part of water with zinc pieces added as long as the acid reacts on the zinc.

**solder flux, fluid** (*sol-der flux, flu-id*) liquid wetting agent used in soft soldering.

**soldering, autogenous** (*sol-der-ing, au-tog-e-nous*) uniting metal surfaces by fusion without hammering and without the addition of metal.

**soldering grease** (*sol-der-ing grease*) a mixture of olive oil, tallow, rosin, and sal ammoniac.

**soldering iron** (*sol-der-ing iron*) a tool used in the act, or process, of uniting, with a fusible metal alloy called solder, two metal surfaces or edges and for filling holes in metal objects. The act, or process, is commonly called soldering. The soldering iron is made of copper. See COPPER BIT; SOLDERING IRON, COPPER.

**soldering iron, copper** (*sol-der-ing iron, cop-per*) a piece of copper used to hold heat and/or transfer heat in soldering. See COPPER BIT; SOLDERING IRON.

**soldering paste** (*sol-der-ing paste*) in plumbing, a neutral soldering liquid thickened with starch paste.

**solder nipple** (*sol-der nip-ple*) a plumbing nipple with a pipe thread on one end and the other end plain for soldering into the end of a pipe.

**solder pot** (*sol-der pot*) a metal pot used for holding wiping solder and caulking lead, made in the following diameters: 5", 6", 7", 8", 9" and 12"; the smallest size is used principally for wiping solder, the 6" and 7" sizes for caulking lead on the smaller sizes of pipe and the larger sizes for lead used on larger sizes of pipe. See PLUMBER'S FURNACE.

**solenoid valve** (*so-le-noid valve*) a valve which is opened, or closed, by the action of an electrically excited coiled wire magnet upon a bar of steel attached to the valve disc (or seat).

**solid die stock** (*sol-id die stock*) a die stock which is usable for only one size of thread. See DIE STOCK.

**solubility** (*sol-u-bil-i-ty*) the amount of a substance which will dissolve in a given amount of another substance.

**soluble** (*sol-u-ble*) susceptible to being dissolved in a fluid; capable of solution.

**solute** (*sol-ute*) **1.** a dissolved substance. **2.** a solution made up of the solvent and solute.

**solvent** (*sol-vent*) **1.** a liquid that produces a homogeneous mixture. **2.** a solution able to dissolve another material. **3.** a substance capable of or used in dissolving or dispensing one or more substances.

**solvents, drain pipe** (*sol-vents, drain pipe*) See DRAINPIPE SOLVENT.

**solvent welding** (*sol-vent wel-ding*) the process of fusing the materials of plastic fittings together by dissolving the surfaces to be joined with a plasticizer or solvent and placing the softened surfaces together to cure. Compare with: fusion welding.

**source of water supply** (*source of wa-ter sup-ply*) rivers, lakes, streams, ponds, springs, wells, cisterns. In plumbing, the identification of the source of local origin of the water to be used in supply lines, (i.e.: rivers, lakes, streams, ponds, springs, wells, cisterns.)

**sovent building drain** (*so-vent build-ing drain*) that portion of the drainage system beginning at the base of the stack and ending at the point where the sovent pressure relief line connects with the building drain.

**sovent drainage system** (*so-vent drain-age sys-tem*) a term applied to a single stack drainage, waste and vent system that uses special fittings (aerator and deaerators) to maintain the differential pressure within the system near atmospheric, thereby protecting the trap seals of the connected fixtures. ASSE 1043.

**spaghetti** (*spa-ghet-ti*) in plumbing, a slang expression for small diameter soft annealed metal tubing, usually copper, which can be bent by hand as desired.

**spanner wrench** (*span-ner wrench*) **1.** one of various tools for tightening, or loosening, nuts and bolts. **2.** chiefly Brit.: wrench. A wrench that has a semicircular head with a hole, or projection, at one end for engaging with the opposite device on the object to which it is applied and is used especially on fire hose couplings.

**sparge pipe** (*sparge pipe*) a horizontal perforated water pipe for flushing a urinal. Also called a "weeper".

**sparkling water** (*sparkling wa-ter*) See SODA WATER.

**spatter stick** (*spat-ter stick*) a wooden spoon-like tool used in splashing molten metal (usually solder) onto pipes, or fittings, to join them by the soft soldering method. (e.g. lead art of joint wiping.) See SPIT STICK; SPLASH STICK.

**spec.** *Abbr.* for Specification.

**special waste** (*spe-cial waste*) waste pipes which are not permitted to connect directly to the soil, waste or vent stacks house drain or house sewer.

**special waste pipe** (*spe-cial waste pipe*) pipes which convey separate or special wastes.

**special wastes, piping or treatment** (*spe-cial wastes, pip-ing or treat-ment*) wastes which require special treatment before entry into the normal plumbing system.

**specification** (*spe-ci-fi-ca-tion*) a detailed statement of requirements. *Abbr.* spec.

**specific gravity** (*spe-cif-ic grav-i-ty*) as applied to gas, specific gravity is the ratio of the weight of a given volume to that of the same volume of air, both measured at the same temperature and pressure.

**specular iron** (*spec-u-lar iron*) hematite, especially in its brilliant crystalline form.

**spelter** (*spel-ter*) zinc cast in slabs for commercial use.

**spelter solder** (*spel-ter sol-der*) a zinc solder (as one of three parts of zinc to four of copper); used in soldering copper, iron and brass. See HARD SOLDER.

**spigot** (*spig-ot*) **1.** the end of a pipe that fits into a bell. **2.** a word used synonymously with faucet. **3.** a valve, or plug, in a faucet.

**spigot joint** (*spig-ot joint*) See BELL AND SPIGOT JOINT.

**spill-proof vacuum breaker** (*spill-proof vac-u-um break-er*) *Abbr.* SRPVB. See SPILL-RESISTANT PRESSURE TYPE VACUUM BREAKER.

**spill-resistant pressure vacuum breaker** (*spill-re-sis-tant pres-sure vac-u-um break-er*) an assembly containing an independently operating, internally loaded check valve and independently operating loaded air inlet valve located on the discharge side of the check valve. This assembly is to be equipped with a properly located resilient seated test

cock, a properly located bleed/vent valve, and tightly closing resilient seated shut-off valves attached at each end of the assembly. This assembly is designed to prevent water spillage at the air inlet valve, and to protect against a health hazard (i.e. contaminant) under a backsiphonage condition only. *Abbr.* SRPVB.

**spirit level** (*spir-it lev-el*) glass tube almost completely filled with spirit and used in surveying showing any deviation from the level.

**spit stick** (*spit stick*) a tool resembling a small paddle used in dispensing or directing small quantities of molten metal to a surface or space in which it might be impossible to pour the molten product. See SPATTER STICK; SPLASH STICK.

**splash stick** (*splash stick*) used to throw solder onto lead joint and usually necessary to wipe vertical joints. See SPATTER STICK; SPIT STICK.

**split-hanger, link** (*split-hang-er, link*) same as split pipe hanger. A pipe support consisting of two halves of a ring, and bracket. See SPLIT-HANGER, PIPE.

**split-hanger, pipe** (*split-hang-er, pipe*) a pipe support consisting of two halves of a ring and bracket. See SPLIT-HANGER, LINK.

**spout** (*spout*) **1.** the end of a tube through which liquid is expelled or flows into open space. **2.** a tube, pipe end or nozzle for the discharge of water, as a bathtub or sink filler fitting.

**spout, faucet** (*spout, fau-cet*) See FAUCET SPOUT.

**spray unit** (*spray u-nit*) an assembly of a flexible hose and spray head for attachment to a faucet with a built in diverter.

**spring cushion pipe hanger** (*spring cushion pipe hang-er*) a device for suspending pipe. Included in the device is a coil of steel or a rubber cushion to allow flexibility against vibrations and expansion and contraction of the pipe.

**springline** (*spring-line*) on an oval sewer the horizontal line where the invert ends and upper arch begins. On a circular sewer, the horizontal centerline.

**spring loaded relief valves** (*spring load-ed re-lief valves*) any of several types of relief valves which are kept closed by spring devices by which the operating pressure is controlled as required.

**sprinkle filter treatment plant** (*sprink-le fil-ter treat-ment plant*) a portion of the process of sewage treatment; a fixture or apparatus in a sewage treatment plant.

**sprinkler alarm, water supply** (*sprink-ler alarm, wa-ter sup-ply*) an electrically operated sound system which operates to alert occupants when a sprinkler system is actuated. Usually set to sound when the flow of water through the sprinkler system exceeds ten gallons per minute.

**sprinkler hanger** (*sprink-ler hang-er*) a ring-type hanger with threaded rod and flange support.

**sprinkler system, water** (*sprink-ler sys-tem, wa-ter*) may be used for irrigation or for fire prevention. See WATER.

**sprue** (*sprue*) **1.** the hole through which metal is poured into the gate and then into the mold. **2.** the waste piece cast in this hole; hence, dross.

**spud** (*spud*) **1.** a short connecting fitting between the supply line and a device (i.e. the fitting used for a meter connection). **2.** a fitting used to connect a steam valve or trap to a radiator. **3.** a fitting used to connect a pressurized flushing device to a water closet or urinal.

**spud wrench** (*spud wrench*) similar to monkey wrench, used primarily on large square nuts at plumbing fixtures.

**sq. ft.** *Abbr.* for Square Feet.

**square** (*square*) this tool is a 90° or right angle standard and is used for marking or testing work.

**square feet** (*square feet*) a unit of area given in feet. *Abbr.* Sq. Ft.

**square file** (*square file*) **1.** a square steel bar with fine chisel like surfaces. **2.** a form of fine rasp.

**SRVB** *Abbr.* for Spill Resistant Vacuum Breaker.

**S.S.** *Abbr.* for Service Sink. See SINK, SERVICE.

**S.St.** *Abbr.* for Stainless Steel.

**stack** (*stack*) a general term for any vertical line of soil, waste, vent or inside conductor piping.

**stack group** (*stack group*) a term applied to the location of fixtures in relation to the stack so, by means of proper fittings, vents may be reduced to a minimum.

**stack vent** (*stack vent*) the extension of a soil, or waste, stack above the highest horizontal drain connected to the stack terminating at a point above the roof level.

**stack venting** (*stack vent-ing*) **1.** stack venting consists of a continuous venting of a single fixture connected directly into a soil or waste stack. **2.** a method of venting a fixture, or fixtures, through the soil or waste stack.

**stainless steel** (*stain-less steel*) any of a large and complex group of corrosion-resistant iron-chromium alloys, sometimes containing other elements such as nickel, tungsten and molybdenum. *Abbr.* S.St.

**stall** (*stall*) a partition or compartment.

**stanch** (*stanch*) **1.** archaic English, a floodgate to accumulate water for slashing a boat over a shallow in a stream. **2.** in plumbing, the term stanking or stanching is used to describe a means of excavating or moving earth by alternately damming and flooding a stream. See STANK.

**standard** (*stan-dard*) **1.** an established measure of weights, lengths, quality. **2.** one serving as a model by which accuracy of others may be determined. **3.** any example or model generally accepted as correct. *Abbr.* Std.



**standard methods** (*stan-dard meth-ods*)

methods of analysis of water, sewage, and sludge.

**standard pressure** (*stan-dard pres-sure*)

term applied to valves and fittings suitable for a working steam pressure of 125 pounds per square inch.

**standard tools** (*stan-dard tools*)

portable tools, such as, but not limited to, a screwdriver, key wrench, flat jawed wrench, or pliers which are normally carried by mechanics/plumbers for the installation and maintenance of plumbing.

**standard weight pipe** (*stan-dard weight pipe*)

pipe weights are denoted by schedules which specify wall thicknesses (i.e.: Schedule 20, 30, 40, 80, 120.) Schedule 40 is considered standard weight. Schedule 80 is extra heavy weight, etc.

**standpipe, fire system** (*stand-pipe, fire sys-tem*)

a vertical pipe generally used for the storage and distribution of water for fire extinguishing.

**stank** (*stank*)

1. British dialect for a ditch containing water. 2. Connotes holding of water. See STANCH.

**star drill** (*star drill*)

a drill for stone, or masonry, that has a star-shaped point and that operates by being struck with a hammer and rotated.

**static line pressure** (*sta-tic line pres-sure*)

the pressure existence without any flow.

**static pressure** (*stat-ic pres-sure*)

the force per unit of an area that is exerted by a fluid upon a surface at rest relative to the fluid.

**static water level** (*sta-tic wa-ter lev-el*)

the height of a liquid measured within a vessel when the contained liquid is at rest.

**Std.** *Abbr.* for Standard.

**steam boiler** (*steam boil-er*) a boiler for producing steam.

**steam cock** (*steam cock*) ground cock shut-off valve.

**steam, three way cock** (*steam, three way cock*)

a ground key shut-off valve directing the flow of steam in one of two directions.

**steam trap** (*steam trap*)

a device used at the return end of a radiator or steam dip line, trapping the steam and allowing the condensate water to return to boiler.

**steel pipe** (*steel pipe*)

pipes made from steel.

**stench trap** (*stench trap*)

a flap in a frame which opens to admit cellar drainage to a sewer and then closes to prevent sewer air from entering.

**ster.** *Abbr.* for Sterilizer.

**sterilization** (*ster-i-li-za-tion*)

the act, or process, of killing all living cells, especially micro-organisms or the germ cells of higher plants and animals. *Abbr.* ster.

**sterilizer, bed pan** (*ster-i-liz-er, bed pan*)

See BEDPAN.

**sterilizer, boiling type** (*ster-i-liz-er, boil-ing type*)

a fixture, non-pressure type, used for boiling instruments, utensils, and/or other equipment used for disinfection. May be portable or connected to the plumbing system. See STERILIZER, PRESSURE AUTOCLAVE.

**sterilizer, instrument washer-pressure**

(*ster-i-liz-er, in-stru-ment wash-er-pres-sure*) a pressure fixture designed to both wash and sterilize instruments during the operating cycle of the fixture. Temperature unlimited.

**sterilizer, pressure autoclave** (*ster-i-liz-er, pres-sure au-to-clave*)

a fixture; pressure vessel, designed to use steam under pressure for sterilization. See STERILIZER, BOILING TYPE.

**sterilizer vent** (*ster-i-liz-er vent*)

a separate pipe or stack, indirectly connected to the building drainage system at the lower terminal, which receives the vapors from nonpressure or the pressure sterilizers, and conducts the vapors directly to the outer air. Sometimes called vapor, steam, atmosphere or exhaust vent. See LOCAL VENT.

**sterilizer, water** (*ster-i-liz-er, wa-ter*) a device for sterilizing water and storing sterile water.

**stiffener** (*stif-fen-er*) **1.** a male ferrule, usually a tubular shaped member for supporting a plastic tube being clamped. **2.** a angle iron, channel or other shape to prevent buckling or increase rigidity of a plate or tube.

**still** (*still*) **1.** a device used in distilling liquids. **2.** an apparatus used in distillation, comprising sometimes only the chamber in which the vaporization is carried out; at other times other parts of the entire distillation equipment. **3.** a vessel, or boiler, together with a condenser for use in distilling alcoholic liquors or other liquids. **4.** a fractionating column or condensing equipment and receiver for use in distilling various substances sometimes with decomposition. **5.** equipment consisting essentially of an evaporator and a condenser for producing distilled water. **6.** a compact device for converting salt water to fresh water. **7.** a vessel in which manganese dioxide is treated with hydrochloric acid to form chlorine or a bleaching liquid.

**stillson wrench** (*still-son wrench*) a pipe wrench having an "L" shaped adjustable end which slides loosely on a sleeve so that increased pressure on the handle provides an increase in gripping power.

**stock** (*stock*) the tool that holds the dies in outside threading of pipes, rods, etc.

**stop** (*stop*) **1.** something that impedes, obstructs, or brings to a halt. **2.** a valve placed to be used as a shut-off.

**stop and waste cock** (*stop and waste cock*) a ground key stopcock or valve designed so that when the supply of water is shut off, a drain in the valve is opened through which water in the pipe downstream from the stopcock is allowed to escape.

**stop and waste valve** (*stop and waste valve*) a gate, or compression type, valve having a side opening or port to drain the liquid from up stream of the shut-off.

**stopcock** (*stop-cock*) a valve with a ground key or seat.

**stopper** (*stop-per*) **1.** a device or appliance to stop machinery. **2.** something (as a bung or cork) used to plug an opening.

**storage medium** (*stor-age me-di-um*) in the field of solar energy, the material in the storage device, independent of the containing structure, in which the collected energy is stored.

**storage vessel** (*stor-age ves-sel*) container provided for storage of hot water under pressure.

**storm drain** (*storm drain*) See BUILDING DRAIN, STORM.

**storm drainage system** (*storm drain-age sys-tem*) See DRAINAGE SYSTEM, STORM.

**storm sewer** (*storm sew-er*) a conduit (horizontal) which receives rain water, and ground and pavement overflow. A storm sewer does not receive sewerage. See BUILDING SEWER, STORM.

**storm water** (*storm wa-ter*) that portion of the rainfall, or other precipitation, which runs off over the ground surface, or other catchment, area during or following a storm.

**story pole** (*sto-ry pole*) a gauge. A stick equal in length to the floor to floor measurement in a building.

**stove bolt** (*stove bolt*) a bolt with a round, or flat, slotted head and a square nut, resembling a machine screw but usually having coarser threads and used for joining metal parts.

**straight edge** (*straight edge*) tool used to guide the pencil or scribe in marking a straight line, and in testing a faced surface as the edge of a board to determine if it is straight.

**straight pipe thread** (*straight pipe thread*) a continuous helical ridge or thread that has the same diameter over its entire length of effectiveness.

**strainer fitting** (*strain-er fit-ting*) the receptor fitting to receive drainage. Equipped with a bar perforated, or drilled, cover to prevent introduction of solids larger than the drainage system can carry.

**“S” trap** (*s trap*) an S-shaped trap used in plumbing.

**strap hanger** (*strap hang-er*) a hanger consisting of a metal strap, or band, nailed or screwed to the ceiling, or a rafter, and slung around the pipe. See PIPE HANGER.

**strap wrench, brass pipe wrench** (*strap wrench, brass pipe wrench*) a tool using a strap and a lever to create torque. Used when working with any polished pipe or fitting.

**stratification** (*strat-i-fi-ca-tion*) the formation of layers of different temperatures in bodies of water. Sometimes occurs in water heaters and hot water storage tanks.

**street ell** (*street ell*) a pipe elbow with a female thread on one end and a male thread on the other. See ELBOW; SERVICE ELL.

**street tee** (*street tee*) a three opening fitting, two of which are female threaded and one male threaded. Street “T”. See SERVICE TEE.

**stress, hoop (compression)** [*stress, hoop (com-pres-sion)*] the compression stress on the wall of a pipe due to external pressure or due to internal vacuum.

**stress, hoop (tensile)** [*stress, hoop (ten-sile)*] tensile stress on the wall of a pipe due to the internal positive pressure.

**striker plate** (*stri-ker plate*) a special type of shielding device used when concealed tubing is run through wall studs, floor or ceiling joists or other structural members where tubing movement is restricted.

**string fitting** (*string fit-ting*) See TUCKER FITTING.

**stub caulking iron** (*stub caulk-ing iron*) can be given almost a direct blow with less springing of the tool.

**stud bolt** (*stud bolt*) a bolt threaded on both ends. One end is screwed into something permanent to receive a part (such as a pipe hanger) and a nut on the other end.

**styrene** (*sty-rene*) a fragrant mobile liquid unsaturated hydrocarbon  $C_6H_5CH=CH_2$  that is obtained by the distillation of storox or the decomposition of cinnamic acid or more often from ethylbenzene caused by catalytic dehydrogenation or by oxidation to acetophenone followed by partial reduction and dehydration, that polymerizes in the presence and that is used chiefly in making synthetic rubber, resins, and plastics and in improving drying oils. Also called phenylethylene, vinylbenzene. See ACRYLONITRILE-BUTADIENE-STYRENE.

**sublimation** (*sub-li-ma-tion*) the phenomenon occurring when matter passes from a gaseous state to a solid state without liquefying or passing directly from a solid to a vapor state.

**submerged inlet** (*sub-merged in-let*) **1.** in water supply, the opening of an inlet pipe, faucet or valve below the flood level rim of a receptacle. **2.** in waste systems, the terminal end of the discharge pipe from a fixture to a device in a drainage system.

**subsoil drain** (*sub-soil drain*) a drain which collects subsurface or seepage water and conveys it to a place of disposal.

**suffocation** (*suf-fo-ca-tion*) See ASPHYXIA.

**sulfur, also sulphur** (*sul-fur, also sulphur*) a non-metallic element occurring naturally in large quantities. Its presence in iron and steel always has an undesirable effect. In very small quantities, it makes cast iron hard and white. In wrought iron, or steel, a mere trace will produce red shortness.

**sullage** (*sul-lage*) **1.** refuse. **2.** sewage. **3.** scoria on molten metal in the ladle.

**sump** (*sump*) a watertight pit, or receptacle, at a low elevation into which liquid wastes or liquid carried wastes are drained. A tank or pit which receives sewage or liquid waste, located below the normal grade of gravity system and which must be emptied by mechanical means. Sometimes called sump pit.

**sump pump** (*sump pump*) a mechanical device other than an ejector, or bucket, for removing sewage or liquid waste from a sump or pit.

**supernatant** (*su-per-na-tant*) See LIQUOR, SUPERNATANT.

**supply fixture unit** (*sup-ply fix-ture unit*) See FIXTURE UNIT, SUPPLY.

**supply or initial pressure** (*sup-ply or in-itial pres-sure*) the pressure supplied from street main or other main supply source.

**supply pipe** (*sup-ply pipe*) a branch pipe of the principal supply pipe. A pipe which supplies a service gas, water, etc., to one, or more, fixtures or stations.

**supply pressure** (*sup-ply pres-sure*) **1.** the pressure supplied from street main or other main supply source. **2.** the water distribution system pressure available at the utility service connection.

**supports** (*sup-ports*) devices for supporting and securing or holding pipe, fixtures and equipment to walls, ceilings, floors, or any other structural members. Also called anchors. See HANGER.

**surface water** (*sur-face wa-ter*) that portion of the rainfall or other precipitation, which is on or relatively near the ground surfaces.

**surge** (*surge*) the pressure increase in a branch line caused by water hammer.

**surge pressure** (*surge pres-sure*) the maximum pressure obtained in a branch line as caused by rapid valve closure.

**S.W.** *Abbr.* for Service Weight.

**swab** (*swab*) a rake-like tool to remove obstructions from inside plumbing pipes.

**swage** (*swage*) **1.** to change shape by forcing means. **2.** the tool used in swaging. **3.** any of several variously shaped or grooved tools. **4.** a tool used by metalworkers to shape material to a desired form. **5.** a tool used to set the teeth of a circular or band saw. **6.** a tool used to straighten damaged casing or pipe in a drilled oil well.

**sweating** (*sweat-ing*) **1.** the collection of condensed moisture from the air on the surface of a cool pipe or fixture. **2.** the term is used also to indicate joining by soldering or brazing of metals.

**sweat joint** (*sweat joint*) a heat soldered joint of two or more pieces of closely fitting surfaces.

**swedge** (*swedge*) See SWAGE.

**swedge joint, or swage joint** (*swedge joint, or swage joint*) the connection of pipe or fitting ends by expanding the bore of one so that the mating fitting may be telescoped into it and soldered or otherwise sealed.

**swedging tool** (*swedg-ing tool*) variation of swaging tool. See SWAGE.

**sweep fitting** (*sweep fit-ting*) a fitting with a long radius curve.

**sweet water** (*sweet wa-ter*) **1.** water drawn from a drinkable source used as a media of heat exchange, generally to a food product of liquid nature. (i.e.: a coolant media to a carbonated beverage from an ice bank.) **2.** a result of mechanical refrigeration.

**swimming pool** (*swim-ming pool*) any structure, basin, chamber, or tank containing an artificial body of water for swimming, diving, or recreational bathing and having a depth of two feet or more at any point. See POOL.

**swing** (*swing*) the term used to describe the capacity or diameter, of a lathe; usually referred to in inches.

**swing joint** (*swing joint*) a joint in a threaded pipe line permitting motion in the line in a plane normal to the direction of one part of the line. See SWIVEL JOINT.

**swivel joint** (*swiv-el joint*) a moveable water-tight connection: i.e.: the spout of a faucet. See SWING JOINT.

**syphon** (*sy-phon*) variation of siphon. See SIPHON.

**system hazard** (*sys-tem haz-ard*) **1.** refers to an actual, or potential, threat of severe danger to the physical properties of the public, or the consumer's, potable water system. **2.** a pollution, or contamination, which would have a protracted effect on the quality of the potable water in the system.

# Tt

**T.** the universal abbr. for temperature. Also in plumbing design, T. is sometimes used for abbr. for thermometer.

**tackle** (*tack-le*) See BLOCK AND TACKLE.

**tailpiece** (*tail-piece*) **1.** a short length of pipe extended from a sink, lavatory, vessel or tank. **2.** connection used from outlet of fixture to waste or trap connection.

**tailpipe** (*tail-pipe*) See TAILPIECE.

**tallow** (*tal-low*) sometimes used with rosin and small amount of sal ammoniac as a flux for tinned ware.

**tampion, turn pin** (*tam-pi-on, turn pin*) **1.** a leadworker's tool of boxwood, shaped like a toy top and used for swedging out the end of lead pipes. **2.** something that stops an opening; plug.

**tank** (*tank*) usually a large manufactured receptacle used for holding, transporting or storing liquids.

**tank ball** (*tank ball*) a moulded piece of rubber generally used in a toilet tank valve to control the flush of water.

**tank, closet** (*tank, clo-set*) See WATER CLOSET.

**tank, detritus** (*tank, de-tri-tus*) a chamber for removing the large, heavy, suspended, matter from sewage.

**tank, flocculating** (*tank, floc-cu-la-ting*) a chamber which aggregates a number of small suspended particles into small lumps.

**tank, Imhoff** (*tank, Im-hoff*) See IMHOFF TANK.

**tankless heater** (*tank-less heat-er*) a water heater involving no storage vessel other than the pipes, or tubes, in which water is confined. It can be heated by any source of heat energy.

**tank, septic** (*tank, sep-tic*) See SEPTIC TANK.

**tank shell** (*tank shell*) the outer lining of a tank. The outer lining of a glass-lined storage tank is made of steel. A steel tank shell can be lined with copper, plastic, etc.

**tank valve guide** (*tank valve guide*) a device which guides or restrains the rods of the mechanism in a closet tank (i.e.: the tank valve/flush valve) wire rod operating unit.

**tap** (*tap*) **1.** a tool for cutting the thread of an internal screw. **2.** a hole made in tapping as one in a fitting to furnish connection for a branch pipe. **3.** a faucet, valve, a hole. **4.** a hole drilled into a water main into which is inserted a corporation valve to receive water service pipe from building. See CORPORATION FERRULE; FAUCET; VALVE; PIPE TAP.

**tap bolt** (*tap bolt*) a headed bolt used without a nut for screwing into a hole. Also called cap screw and tap screw.

**tap borer** (*tap bor-er*) special kind of boring instrument used by plumbers for making, or enlarging, holes in lead pipes.

**tap screw** (*tap screw*) See TAP BOLT.

**tap wrench** (*tap wrench*) **1.** a tool to hold a tap and/or an "S" shaped wrench to fit the various sizes of corporation ferrule core cock stems and collars. **2.** a tool to hold another tool, or device, which grooves, or cuts, threads of an interior surface. **3.** a wrench of a special design to fit the parts of a corporation ferrule.

**tape** (*tape*) made of steel or cloth-like material, flexible, used in measuring. Electricians use tape for insulation; plumbers use tape made of fibrous materials for pipe thread sealant.

**tapeline** (*tape-line*) See TAPE MEASURE.

**tape measure** (*tape mea-sure*) a rule in the form of a narrow strip of a strong, but limp or flexible material (as cloth or steel) marked off in units of measure of length (as inches or centimeters) and usually contained on or in a reel for easy carrying.

**tapered pipe thread** (*ta-per-ed pipe thread*) a continuous helical ridge (thread) that is cut or rolled deeper at the end of a pipe than at any other portion, and gradually enlarges to a point of non-existence; in plumbing, the American standard taps for pipe threads yields a diameter increase of  $\frac{3}{4}$ " per foot of thread length.

**taper file** (*ta-per file*) used to denote the shape of a file as distinct from blunt. Custom has also established it as a short name for the triangular handsaw file.

**taper joint** (*ta-per joint*) See HARRINGTON (TAPERED SLEEVE) JOINT.

**tapped tee, soil pipe** (*tap-ped tee, soil pipe*) a cast iron bell end tee with the branch tapped to receive a threaded pipe or fitting.

**T.B.E.** *Abbr.* for Thread Both Ends.

**T.C.** *Abbr.* for Terra Cotta.

**tee** (*tee*) something shaped like a capital "T", a fitting that has one side opening set at 90° angle to the run. See INCREASER; REDUCER; WYE.

**tee handle air cock** (*tee han-dle air cock*) a valve in which the operating handle extends equal distance from the center of movable core.

**tee head** (*tee head*) See CURB COCK.

**tee, street** (*tee, street*) a tee fitting where the straight portion, or run, has one female and one male end, and the third opening is female.

**tell-tale** (*tell-tale*) an indicating device used to indicate the elevation of water surface in a tank.

**temp.** *Abbr.* for Temperature.

**temper** (*tem-per*) **1.** to bring to a specific consistency (e.g. to bring steel, glass or the like, to a proper degree of hardness and toughness.) **2.** steel that has been hardened by high heat and sudden cooling, as by plunging into water, usually required to be gently reheated to a degree depending on its proposed use, and it is this latter process that is tempering in the strict sense. The word is loosely applied to the combined hardening and reheating or the hardening alone.

**temperature actuated** (*tem-per-a-ture ac-tu-a-ted*) a device which derives its energy for operation from water or other fluid temperature changes.

**temperature, ambient** (*tem-per-a-ture, am-bi-ent*) See AMBIENT TEMPERATURE.

**temperature and pressure relief valve** (*tem-per-a-ture and pres-sure re-lief valve*) a device designed to control both temperature and pressure by releasing the water to atmosphere at a predetermined settings. See SAFETY VALVE; RELIEF VALVE, HOT WATER BOILER.

**temperature, initial outlet set** (*tem-per-a-ture, i-ni-tial out-let set*) See INITIAL OUTLET SET TEMPERATURE.

**temperature limiting device** (*tem-per-a-ture lim-it-ing de-vice*) (water heater) the following devices are considered limiting devices: (a) automatic gas shut-off system, (b) temperature relief valves or (c) combination temperature and pressure relief valves.

**temperature limit setting** (*tem-per-a-ture lim-it set-ting*) an adjustable means to limit the maximum setting of the device towards the hot position, limiting the maximum discharge temperature.

**temperature regulator** (*tem-per-a-ture reg-u-la-tor*) a device which opens, or closes, at a set temperature and used to control temperature of fluid. See SAFETY VALVE.

**temperature valve** (*tem-per-a-ture valve*) a device to control the temperature or to discharge at a given temperature. See RELIEF VALVE, HOT WATER BOILER.

**tempered water** (*tem-pered wa-ter*) a mixture of hot and cold water to produce warm water suitable for use.

**terminal fitting** (*ter-mi-nal fit-ting*) a fitting which is the last valve for shut-off on a line.

**terminal length** (*ter-mi-nal length*) the vertical distance that water in a stack travels to reach the terminal velocity (about fifteen feet of vertical distance).

**terminal outlet** (*ter-min-al out-let*) a physical part of the disposer construction or a fitting supplied with a disposer to permit connection to the household plumbing drainage system.

**terminal velocity** (*ter-mi-nal ve-loc-ity*) the fastest rate at which water falls in a vertical pipe (stack) by gravity. (Usually about ten to fifteen feet per second).

**terne** (*terne*) sheet iron or steel coated with an alloy of about four parts of lead and one part of tin.

**terne plate** (*terne plate*) See TERNE.

**terra cotta** (*ter-ra cot-ta*) a brownish orange clay used in the production of vitrified clay pipe. *Abbr.* T.C.

**test ball** (*test ball*) a ball used to test the internal diameter such as the waterway of a trap.

**test cock** (*test cock*) an appurtenance on an assembly, or valve, which is used when testing the assembly.

**test plug** (*test plug*) used for blocking openings in piping systems during test procedure.

**tetrafluoroethylene** (*tet-ra-fluo-ro-eth-yl-ene*) a colorless, nonflammable gas used in making heat resistant and acid resistant plastics such as teflon. *Abbr.* T.F.E.

T.F.E. *Abbr.* for Tetrafluoroethylene.

**thawing machine** (*thaw-ing ma-chine*) electrode device connected by cables to frozen piping which regulates passage of an electric current through the pipe creating heat sufficient to thaw the contents of the pipe.

**thawing steamer** (*thaw-ing steam-er*) for thawing pipes, is usually made to carry sufficient water to make steam for about two hours continual use.

**therm** (*therm*) a measurement of heat equivalent to 100,000 B.T.U.

**thermal capacity** (*ther-mal ca-pa-ci-ty*) in a solar energy field, the quantity of heat needed to warm a collector to its operating temperatures.

**thermocouple** (*ther-mal coup-le*) an electric generating heat sensor that is used to verify the operating pilot light and to maintain the main gas valve in an open position.

**thermal element** (*ther-mal el-e-ment*) a temperature responsive component unit which acts with the hot and/or cold water inlet control ports, in a mixing valve, activating them as necessary to maintain a desired discharge water temperature.



**thermal expansion (water)** [*ther-mal ex-pan-sion (wa-ter)*] **1.** the increase in volume of water when its temperature is increased, or decreased, from 39.1°F or 3.8°C. **2.** the increase of pressure in a closed system due to the heating and expanding of water.

**thermal expansion relief valve** (*ther-mal ex-pan-sion re-lief valve*) a check valve member which isolates the pressure associated with thermal expansion from other parts of the plumbing system.

**thermal shock** (*ther-mal shock*) **1.** a large and rapid change of temperature. **2.** the sensation felt by the body due to a sudden change in temperature.

**thermal storage device** (*ther-mal stor-age de-vice*) in solar energy, the containers including all the contents used for storing thermal energy. The transfer fluid and accessories such as heat exchangers, flow switching devices, valves and baffles which are integral with the thermal storage containers and are considered part of a thermal storage device.

**thermometer** (*ther-mom-et-er*) an instrument for determining temperature usually by means of a scale graduated directly in temperature units and consisting typically of: **a.** a valve having a bimetallic element whose expansion, or contraction, indicates a change in temperature. **b.** a glass bulb attached to a fine tube of glass with a numbered scale etched on, or fastened, to it and containing a liquid, as mercury or colored alcohol, is scaled in and rises and falls with changes of temperature and that indicates the temperature by the number corresponding to the top of the column of liquid.

**thermoplastic** (*ther-mo-plas-tic*) having the property of softening or fusing when heated and of hardening again when cooled.

**thermosetting** (*ther-mo-set-ting*) having the property of becoming permanently rigid when heated or cured.

**thermostat** (*ther-mo-stat*) **1.** an automatic device for regulating temperature by opening, or closing, the damper of a heating furnace, regulating supply of gas, or the like. Also for actuating fire or low temperature alarms, for controlling automatic sprinklers or fire doors, etc. Thermostats utilize either the differential expansion of solids, liquids, or gases subjected to heat or else the principle of the thermopile.

**thermostatic radiator trap** (*ther-mo-stat-ic ra-di-a-tor trap*) a device to receive condensate and drain off. Contains thermostatic expansion element to open and close.

**thermostat, integral gas valve type** (*ther-mo-stat, in-te-gral gas valve type*) (water heater) **1.** an automatic device actuated by temperature changes designed to control the gas supply to the burner(s), in order to maintain temperatures between pre-determined limits, and in which the thermal actuating element is an integral part of the device. **2.** graduating thermostat: a thermostat in which the motion of the valve is approximately in direct proportion to the effective motion of the thermal element induced by a temperature change. **3.** snap-acting thermostat: a thermostat in which the thermostatic valve travels instantly from the closed to an open position, and vice versa.

**thickener tank** (*thick-en-er tank*) an apparatus for the sedimentation and collection of suspended solids in industrial liquids.

**thimble** (*thim-ble*) a sleeve, or short tube, through which a bolt passes, or unites two rods or tubes. A bushing or coupling. See THIMBLE COUPLING.

**thimble coupling** (*thim-ble coup-ling*) a permanent coupling in which two shafts are connected by placing their ends together in a common thimble. See THIMBLE.

**thread dope** (*thread dope*) See PIPE THREAD DOPE.

**threaded and coupled pipe** (*thread-ed and cou-pled pipe*) a term used to denote merchant pipe which is furnished from the pipe mill with threaded ends and a coupling attached. *Abbr.* T & C

**threaded bushing** (*thread-ed bush-ing*) **1.** a fitting. **2.** an annulus walled short pipe threaded internally and externally on the cylinder so same can be screwed into and also receive pipe.

**threader** (*thread-er*) a device for cutting a screw thread.

**threading machine** (*thread-ing ma-chine*) See THREADER.

**thread lubricant** (*thread lub-ri-cant*) any of a number of lubricating materials which are applied on threads to prevent corrosion and to provide an aid to make-up or tightening. See PIPE THREAD DOPE.

**thread make up** (*thread make up*) a term used to denote the amount of engagement or penetration of one thread within another. Usually refers to the number of threads which are in contact in a threaded assembly.

**threads** (*threads*) continuous, regularly spaced grooves and ribs around a material which form a definite helix. There are many types of threads in either taper or straight varieties. May vary in forms, materials, and length. When these threads are disposed on the external surface of a pipe or fitting, they are called outside or male threads. Threads located on internal surfaces of pipe, tube, or fitting are called inside or female threads. See INSIDE THREAD; OUTSIDE THREAD.

**three way cock** (*three way cock*) a ground key valve with three openings in the valve body and core. The core, when turned, directs flow to a matched opening.

**throat iron** (*throat iron*) useful for caulking such fittings as bends where there is little room for a direct blow.

**throne** (*throne*) (slang) See WATER CLOSET.

**thunder mug** (*thun-der mug*) (slang) fixture. See WATER CLOSET.

**tide valve** (*tide valve*) a device installed in sewer systems to prevent backflow. Acts as dam obstruction in pipe to water flooding backwards. See BACKWATER VALVE.

**tin foil** (*tin foil*) a thin sheet of tin, alloy of tin or lead.

**tinned** (*tinned*) covered or coated with tin.

**tin plate** (*tin plate*) **1.** thin sheets of iron or steel coated with tin. **2.** to plate or coat with tin.

**T.O.E.** *Abbr.* for Thread One End.

**toggle bolt** (*tog-gle bolt*) a bolt that has a nut with pivoted flanged wings that close against a spring when passed through a constricted passage and open after emerging and that is used to fasten objects to thin or hollow walls.

**toilet** (*toi-let*) See WATER CLOSET.

**toilet seat** (*toi-let seat*) See CLOSET SEAT.

**tolerance** (*tol-er-ance*) **1.** leeway for variation from a standard. **2.** the permissible deviation from a specified value of a structural dimension.

**tongs** (*tongs*) forceps; one of various kinds of objects, mostly consisting of two legs of metal joined by a pivot or by a spring. Used for gripping, lifting, or twisting.

**tool box** (*tool box*) box especially designed and used for keeping tools.

**tools, standard** (*tools, stan-dard*) See STANDARD TOOLS.

**torch** (*torch*) piece of inflammable wood or wood soaked in inflammable substance such as resin, pitch, etc, which flares when kindled and is used to give light. In plumbing, any of various portable devices for emitting an unusually hot flame which can be useful in melting, or heating, of metal, soldering, etc.

**torpedo level** (*tor-pe-do lev-el*) a spirit level with a plan view shape of a torpedo. See LEVEL.

**torque** (*torque*) **1.** a measurement, usually stated in foot pounds, of the tightness of a connector. In plumbing, usually the tightness of a fitting. **2.** term meaning twist. When used in this sense means measurable tightness.

**torque wrench** (*torque wrench*) a wrench that measures and indicates the amount of turning and twisting force applied in tightening a nut or bolt.

**toxic** (*tox-ic*) **1.** a substance which is poisonous and capable of causing injury or death. A toxin may be ingested, inhaled or absorbed through the skin. **2.** a substance which has not been approved for human consumption by the health agency having jurisdiction.

**trade union** (*trade un-ion*) an organization of workers, all of whom are engaged in the same trade or occupation, formed for the purpose of advancing its members' interests in respect to wages and working conditions. See LABOR UNION.

**trail water** (*trail wa-ter*) the residue of water in a tub, or other flat bottom fixture, that drains from the fixture after the main body of water has drained.

**transition fitting** (*tran-si-tion fit-ting*) a fitting that has different types of connections on each outlet, one of which is a push-fit.

**trap** (*trap*) **1.** a "U" shaped fitting constructed to prevent the passage of air, or gas, through a pipe without materially affecting the flow of sewage or liquid waste. **2.** a device for drains; sewers; etc. consisting of a bend or partitioned chamber in which the liquid forms a seal to prevent the passage of sewer gas, etc., as a stench trap. **3.** a fitting, or device, which provides a liquid seal to prevent the emission of sewer gases without materially affecting the flow of sewage or waste water through it.

**trap arm** (*trap arm*) the horizontal portion of the fixture waste between the trap and the vent connection.

**trap, flame** (*trap, flame*) **1.** a device, as a wire gauze across a nozzle inlet, for preventing the flame of burning gas from backing up into the supply pipe and causing an explosion. **2.** a device containing a fine metal gauze placed in a gas pipe, which prevents a flame from traveling back in the pipe.

**trap seal** (*trap seal*) **1.** the vertical distance between the crown weir and the top of the dip of the trap. **2.** the water in the trap between the dip and the crown weir.

**trap seal primer valve** (*trap seal prim-er valve*) a device connected to a water line that is automatically activated by a faucet opening to deliver a metered amount of water to a seldom used trap.

**travel (of an offset)** (*trav-el (of an off-set)*) **1.** measurement along the angular section of a piping offset. **2.** the hypotenuse of the triangle created by a piping offset.

**tray, laundry** (*tray, laun-dry*) a fixture used in a laundry for washing, usually set permanently, and sewer and water connected.

**tray, plug** (*tray, plug*) tapered cylinder-like device that can be inserted into the drain outlet of a laundry tub, tray or similar fixture to hold liquids from draining.

**trench brace** (*trench brace*) **1.** a jackscrew device. **2.** a jack placed horizontally to exert energy horizontally.

**triangle** (*tri-an-gle*) a flat triangular piece of wood, vulcanite, plastic or the like, with straight edges, used in connection with a T-square for drawing perpendicular lines.

**tributary sewer** (*trib-u-tary sew-er*) a small sewer, a waste carrying conduit which empties into an intercepting sewer.

**trickle solar collector panel** (*tri-ckle so-lar col-lec-tor pa-nel*) a flat plate over which unpressured heat transfer liquid flows or "trickles".

**trim** (*trim*) parts, regularly supplied with fixtures, as for example, closet spuds, wall hangers and tank trim; does not include fittings.

**trough** (*trough*) See EAVE.

**trough urinal** (*trough uri-nal*) trough designates design of the fixture. Usually long and narrow shaped receptacle. Accommodates more than one person.

**trunk sewer** (*trunk sew-er*) See INTERCEPTING SEWER.

**try square** (*try square*) a device which has two straight edges secured at a right angle. Used to lay off right angles and for testing whether work is square. Also called right angle gauge and trying square.

**tube** (*tube*) conduit or conductor of cylindrical shape, the wall thickness of which is less than that needed to receive a standard pipe thread conforming to national standards for United States standard tapered pipe thread. Compare with pipe.

**tube cutters** (*tube cut-ters*) works the same as a pipe cutter but is smaller. See PIPE CUTTER.

**tube-in-plate absorber** (*tube-in-plate ab-sorb-er*) in the field of solar energy equipment, a sheet metal absorber, usually copper or aluminum, in which the heat transfer fluid flows through passages formed in the plate itself.

**tube liner** (*tube lin-er*) a cylindrical device, having one flanged end, that is inserted into the end of PEX tubing to accommodate assembly within a fitting; also referred to as a tube stiffener.

**tube stiffener** (*tube stif-fe-ner*) See TUBE LINER.

**tubercle** (*tu-ber-cle*) an attached deposit of products of corrosion of metal in iron pipe; formed by botryoidal crystallization.

**tuberculation** (*tu-ber-cu-la-tion*) a condition which develops on the interior of pipe lines due to corrosive materials present in the water passing through the pipe and results in the creation of small, hemispherical lumps (tubercles) on the walls of the pipe.

**tubing** (*tub-ing*) **1.** a material in form, or shape, of pipe, usually of thin wall structure and joined by fittings of its design. **2.** a conduit. **3.** an assembly of tubes formed together by fittings of compatible design to serve in a plumbing system. See TUBE.

**tubing, brass fine thread** (*tub-ing, brass fine thread*) tubing of brass equipped with fine threads for assembly.

**tubing, chromed** (*tub-ing, chrom-ed*) thin wall brass conduit, coated or plated with chrome.

**tubing, copper** (*tub-ing, cop-per*) thin wall pipe made of copper metal.

**tubing, plastic** (*tub-ing, plas-tic*) conduit made of non-metal. Conduit made of resinous material.

**tucker fitting** (*tuck-er fit-ting*) an adapter from iron pipe to cast iron pipe. This fitting has a cast iron hub and a female iron pipe thread.

**turbid** (*tur-bid*) in water, this term refers to clear water that is suspected as polluted. May also refer to "muddy" or "stirred-up" water resulting in suspension of mud or bottom sand.

**turbidity** (*tur-bid-i-ty*) **1.** in water, cloudiness caused by suspended solids. **2.** in meteorology, any condition of the atmosphere which reduces transmittance, especially to visible radiation.

**turbulence** (*tur-bu-lence*) **1.** a fluid flow in which the velocity varies erratically in magnitude and direction. **2.** an essentially variable and disturbed flow of liquid or air.

**turbulent flow** (*tur-bu-lent flow*) disturbed movement of fluid in a container or confined area.

**turn pin** (*turn pin*) wooden lead working tool used to flare the ends of lead pipe when making all kinds of joints; should be made of boxwood, dogwood or lignum vitae.

**T.W.** *Abbr.* for Tempered Water.

**twist drills** (*twist drills*) for drilling small holes where the ordinary auger, or gimlet, would split the wood. See GIMLETS.

**typ** *Abbr.* for Typical.

**typical** (*ty-pi-cal*) symbolic, representative of a class. Like others of its kind. *Abbr.* Typ.

# Uu

**"U" bolt** (*u bolt*) a "U" shaped bolt with threads and a nut at each end.

**unapproved water supply** (*un-ap-proved wa-ter sup-ply*) a water supply which has not been approved for human consumption by the health agency having jurisdiction.

**unglazed collector** (*un-glazed col-lector*) in the field of solar energy collection systems, a collector with no transparent cover plate.

**union** (*un-ion*) 1. a coupling device to join or disconnect pipes. 2. an association of people. See CONNECTORS; TRADE UNION.

**union coupling, right and left threaded** (*un-ion cou-pling, right and left thread-ed*) a right and left threaded sleeve coupling used to join pipe together with matched right and left hand threaded ends.

**union ferrule** (*un-ion fer-rule*) joining by thread one side of pipe. The other joining side telescopes into fitting and is sealed by tapered ferrule compressed with collar.

**union, fine thread** (*un-ion, fine thread*) same as union, receiving ends for tubing; threaded fine thread size.

**union, I. P. S.** (*un-ion, ips*) same as union, receiving ends for pipe; threaded iron pipe size.

**unions** (*un-ions*) See CONNECTORS.

**union vent** (*un-ion vent*) a dual vent or a unit vent.

**union washer** (*un-ion wash-er*) 1. a resilient disc with a hole in the center. 2. a gasket used in the mechanical joint known as a union.

**unions, dielectric** (*un-ion, di-e-lec-tric*) See DIELECTRIC UNIONS.

**unit, food waste disposer (batch feed type)** [*u-nit, food waste dis-po-ser (batch feed type)*] See FOOD WASTE GRINDER UNIT, BATCH FEED TYPE.

**unit, food waste disposer (continuous feed type)** [*u-nit, food waste dis-po-ser (con-ti-nu-ous feed type)*] See FOOD GRINDER WASTE UNIT, CONTINUOUS FEED TYPE.

**unit heater** (*u-nit heat-er*) a heater consisting of a fan, or blower, and an indirect radiator enclosed in a common casing and designed to circulate and warm the air that passes through the radiator or heat exchanger.

**unit heater control** (*u-nit heat-er con-trol*) a device used to operate the flow of gas, steam, or liquid to a unit heater.

**unit heater, gas fired** (*u-nit heat-er, gas fired*) a space heater, fan operated, to move heated air in a given space or room. The unit is heated by gas.

**unit heater valve** (*u-nit heat-er valve*) a shut off valve to control the supply of fuel or other source of heat. The operation of the valve could be manual or automatic.

**unit system** (*u-nit sys-tem*) a complete part of a total plumbing system, such as a bathroom piping system as a part of the piping system of a building.

**unit vent** (*u-nit vent*) one vent pipe which serves two traps. See COMMON VENT; DUAL VENT.

**universal drive shaft** (*u-ni-ver-sal drive shaft*) a joined shaft allowing free movement in all directions within certain limits between pipe machine and pipe cutting equipment.

**unprotected cross connection** (*un-pro-tect-ed cross con-nec-tion*) a cross connection between a potable and non-potable system where inadequate methods are provided to prevent backflow.

**unstable ground** (*un-stable ground*) earth that does not provide a uniform bearing for the barrel of the drain or sewer pipe between the joints at the bottom of the pipe trench.

**upfeed system** (*up-feed sys-tem*) the supply from the bottom of piping or vessels.

**urinal** (*uri-nal*) a water flushed plumbing fixture designed to receive human urine and discharge the waste materials safely into the sanitary system.

**urinal, pedestal blow-out** (*uri-nal, ped-es-tal blow-out*) receiving bowl of a fixture supported by a pedestal from the floor and not connected to a wall or support. Blow-out designates the flushing action of the trap of fixture by inducing large amounts of water in trap seal of fixture.

**urinal, pedestal, siphon-jet** (*uri-nal, ped-es-tal, si-phon-jet*) receiving bowl of fixture supported by a pedestal from the floor; siphon jet designates the flushing action of trap of fixture by inducing jet stream of water in trap seal of fixture.

**urinal, stall, wash out** (*uri-nal, stall, wash-out*) stall in the style of fixture where the base and sides are molded in one piece and rests on floor. Washout is cleansing action of trap of fixture.

**urinal, wall hung** (*uri-nal, wall hung*) the design of the fixture fastened to the wall, no part touches the floor.

**urinal, women's** (*uri-nal, wom-en's*) a fixture so designed for use by women that it can be straddled.

**used water** (*used wa-ter*) any water supply by a water purveyor from a public potable water system to a consumer's water system after it has passed through the service connection and/or a fixture outlet and is no longer under the control of the water purveyor.

**utility vent** (*u-til-i-ty vent*) a vent in which the vent pipe rises well above the highest water level in the fixture vented and then turns down before connecting to the stack or main vent. See CIRCUIT VENT; LOOP VENT.



**V.** *Abbr.* for Vent.

**vac.** *Abbr.* for Vacuum.

**vac. br.** *Abbr.* for Vacuum Breaker.

**vacuum** (*vac-u-um*) **1.** pressure below atmospheric. **2.** a space absolutely devoid of matter; it is usually measured by the number of inches of mercury below atmospheric pressure, such as ten or twenty inches of mercury. *Abbr.* vac.

**vacuum breaker** (*vac-u-um break-er*) a device to prevent the creation, or formation, of a vacuum by admitting air at atmospheric pressure and used to prevent backsiphonage. *Abbr.* vac. br.

**vacuum breaker, atmospheric or non-pressure type** (*vac-u-um break-er, at-mos-pher-ic or non-pres-sure type*) an assembly containing a float-check, a check seat and an air inlet port. The flow of water into the body causes the float to close the air inlet port. When the flow of water stops, the float falls and forms a check valve against backsiphonage and at the same time opens the air inlet port to allow air to enter and satisfy the vacuum. A shutoff valve immediately upstream may be an integral part of the assembly. An atmospheric vacuum breaker is designed to protect against a health hazard (contaminant) under a backsiphonage condition only. *Abbr.* AVB. See ATMOSPHERIC VACUUM BREAKER.

**vacuum breaker - pressure type** (*vac-u-um breaker - pres-sure type*) an assembly containing an independently operating, internally loaded check valve and an independently operating, loaded air inlet

valve located on the discharge side of the check valve. The assembly shall be equipped with the properly located test cocks and tightly closing shutoff valves attached at each end of the assembly. This assembly is designed to protect against a health hazard (contaminant) under a backsiphonage condition only. *Abbr.* PVB. See PRESSURE TYPE VACUUM BREAKER.

**vacuum breaker, spill resistant type** (*vac-u-um break-er, spill re-sis-tant type*) a device to prevent backflow of non-potable material into the potable water supply caused by backsiphonage only.

**vacuum cleaner** (*vac-u-um clean-er*) an electrical appliance for cleaning, floors, carpets, tapestry or upholstered work, by suction. Also called vacuum sweeper.

**vacuum relief valve** (*vac-u-um re-lief valve*) **1.** a device which admits air to the system if and when the system is attempting to reduce its pressure to less than atmospheric. **2.** a device to prevent excessive vacuum in a water storage tank or heater.

**vacuum sweeper** (*vac-u-um sweep-er*) See VACUUM CLEANER.

**vacuum system** (*vac-u-um sys-tem*) a piping system in which the pressure is drawn below atmosphere.

**valve** (*valve*) **1.** a device by which the flow may be started, stopped, or regulated by a moveable part which opens, or obstructs, the passage. **2.** a type of lawn faucet. See TAP; FAUCET.



**valve, backwater** (*valve, back-wa-ter*) See BACKWATER VALVE.

**valve box** (*valve box*) an enclosure extended to grade to protect the valve stem of a buried valve and to give access to the operating unit. *Abbr.* V.B.

**valve, control** (*valve, con-trol*) See CONTROL VALVE.

**valve, disc** (*valve, disc*) a disc, or circular member, of a valve or faucet which affects the control of flow when motivated.

**valve, flushometer** (*valve, flush-o-me-ter*) See FLUSHOMETER VALVE.

**valve flush, automatic** (*valve flush, au-to-mat-ic*) a device to start suddenly the free flow of water, or other liquid, under pressure, by release of pilot valve causing main valve seat to rise and water to flood through, until pilot valve is reseated and valve is pressurized through bypass jet above flow, causing main valve to seat.

**valve pump** (*valve pump*) a device held closed by spiral spring tension. Can be used to admit or discharge. Usually used for air or gas.

**valve, safety** (*valve, safe-ty*) an automatic escape, or relief, valve to vent excessive build-up of pressure.

**valve seat** (*valve seat*) the port/s against, or into a disc or tapered stem is pressed, or inserted, to stop the flow of fluid or gas.

**valve, tide** (*valve, tide*) See TIDE VALVE.

**valve wheel** (*valve wheel*) outer disc-like member used to twist or torque the valve stem to operate (i.e.: turn on or off by a twisting motion.)

**vanity** (*van-i-ty*) a bathroom fixture consisting of a lavatory set into top of dressing table or cupboard.

**vapor** (*va-por*) **1.** diffused matter suspended in the air and impairing its transparency. **2.** a substance in a gaseous state as distinguished from a liquid or solid state. **3.** a gaseous substance that is at a temperature below its critical temperature and therefore liquifiable by pressure alone.

**vapor heating** (*va-por heat-ing*) steam heating at approximately atmospheric temperature (usually one to five ounces).

**vapor lock** (*va-por lock*) partial or complete interruption of fuel flow in an internal combustion engine caused by the formation vapor bubbles, or gas, in the fuel feeding system. See AIR LOCK.

**V. B.** *Abbr.* for Valve Box.

**velocity meter** (*vel-o-city me-ter*) in plumbing, a device for observing the velocity of flow of water through a transverse cross section of known area. The rate of flow is the product of the velocity and the area of the cross section.

**vent or venting** (*vent or vent-ing*) an opening. See BACK VENT.

**vent cap** (*vent cap*) a fitting used on the terminal of the vent, waste or soil stacks to guard against falling objects and vandalism.

**vented sewer or drain** (*vent-ed sew-er or drain*) a sewer, or drain, that is designed to be flowing at, or less than, half full during the peak period of use.

**vent pipe, plumbing** (*vent pipe, plumbing*) a part of the plumbing system used to equalize pressures and ventilate system. Part of the vent system.

**vent ports** (*vent ports*) the openings from the inside of a device or assembly to the outside for allowing air to enter the device or assembly under backsiphonage conditions, or water to drain from the device or assembly under backpressure backflow conditions.

**vent stack** (*vent stack*) a vertical vent pipe installed to provide circulation of air to and from the drainage system.

**vent system** (*vent sys-tem*) a pipe, or pipes, installed to provide a flow of air to, or from, a drainage system or to provide a circulation of air within such system to equalize pressures and ventilate the system, and to protect trap seals from siphonage and back pressure.

**vent tee** (*vent tee*) a drainage fitting of any of several materials used for venting purposes only. The side opening may be the same size, or reduced, and does not have the sanitary throat as the regular sanitary drainage tee.

**vertical configuration, double check (vertical con-fig-ur-a-tion, dou-ble check)** a backflow preventer is considered to be in the vertical configuration when all the components of the device are in the vertical position; the check valves shall be installed in the vertical or a maximum of 45° from the vertical; the two shut-off valves can be installed either horizontally or vertically.

**vertical configuration, reduced pressure (vertical con-fig-ur-a-tion, re-duced pres-sure)** a backflow preventer is considered to be in the vertical configuration when all the components of the device are in the vertical position; the relief valve or vent shall be situated above the first check valve and have a means of completely evacuating the water from the second check valve chamber; the check valves shall be installed in the vertical or maximum of 45° from the vertical; the two shut-off valves can be installed either horizontally or vertically.

**venturi or venturi tube (ven-tu-ri or ven-tu-ri tube)** a short tube that is inserted in a pipeline, that has flaring ends connected by a constricted middle section forming a throat that depends for operation upon the fact that as the velocity of flow of a liquid increases in the throat the pressure decreases. Used for measuring the quantity. Devices for measuring airspeed, and for producing suction.

**venturi effect (ven-tu-ri ef-fect)** as the velocity (speed) of water increases, the pressure decreases. The venturi effect can create a vacuum (sub-atmospheric pressure condition) in a distribution system. Also known as the Bernoulli's Principle.

**vertical caulked joint (ver-ti-cal caulked joint)** a bell and spigot connection in a vertical position.

**vertical pipe (ver-ti-cal pipe)** a pipe or fitting that is installed in a vertical position and makes an angle of not more than 45° with the vertical.

**vestibule (ves-ti-bule)** a cavity, passage, hall or tube between floors or buildings in which the piping is made available for inspection or servicing.

**vice (vice)** chiefly British for vise. See VISE.

**vinyl benzene (vi-nyl ben-zene)** See STYRENE.

**vinyl cyanide (vi-nyl cy-a-nide)** See ACRYLONITRILE.

**virus (vi-rus)** the causative agent of an infectious disease.

**vise (vise)** any of various devices usually having two jaws, which may be brought together, or separated, by means of a screw, lever, etc. Used to hold an object firmly while work is being done.

**vise grips (vise grips)** common name for special pliers which can be locked after gripping an object. See PLIERS.

**vitreous (vit-re-ous)** 1. of, relating to, derived from, or consisting of glass. 2. resembling glass. 3. fired clay.

**vitreous enamel (vit-re-ous e-na-mel)**

1. a fired-on opaque glassy coating on steel or other metals. Sometimes called porcelain enamel. 2. silicate opaque glass fired onto metal. 3. a glass-like surface on a plumbing fixture formed by melting of glass due to high temperature to cause bonding. Provides a durable decorative surface on plumbing fixtures. Sometimes called enamelled iron when found on metal fixtures.

**vitriified sewer pipe (vit-ri-fied sew-er pipe)** conduit made of fired and glazed earthenware intended to be installed to receive waste or sewage.

**vol.** *Abbr.* for Volume.

**voltage meter** (*volt-age me-ter*) an instrument that measures the voltage difference (potential) between two points of an electric current. Also known as voltammeter.

**voltammeter** (*volt-am-me-ter*) an instrument designed to measure current.

**voltampere** (*volt-am-pere*) a unit of electric measurement that is equal to the product of a volt and an ampere and that for direct current constitutes a measure of power equivalent to a watt and for alternating current a measure of apparent power.

**volume** (*vol-ume*) a measure of the size of a body, or definite region, in three dimensional space. The amount of space filled. *Abbr.* Vol.

**volumeter** (*vol-u-me-ter*) a type of flushometer valve.

**V.T.R.** *Abbr.* for Vent Through Roof.



**W.** *Abbr.* for Waste.

**wall cleanout** (*wall clean-out*) a cleanout of a drainage system installed in a wall or partition. *Abbr.* WCO

**wall-hung water closet** (*wall-hung wa-ter clo-set*) See WATER CLOSET, WALL-HUNG.

**wall hydrant** (*wall hy-drant*) an assembly of pipes and valves generally used to bring water through the wall from the inside of building to outside. See HYDRANT.

**wall hydrant freeze resistant vacuum breaker type** (*wall hy-drant freeze res-ist-ant vac-u-um break-er type*) a device to supply potable water without danger of damage to the device due to freezing, and to provide protection of the potable water supply from contamination due to backsiphonage or backpressure. *Abbr.* WH

**wash basin** (*wash ba-sin*) See LAVATORY.

**wash fountain** (*wash foun-tain*) a plumbing fixture usually circular or semicircular, designed so that more than one person may have access to the fixture for hand-washing. Usually installed in schools and industrial plants.

**washed metal** (*wash-ed met-al*) iron treated by the Bell-Krupp process so as to remove most of the silicon and phosphorus and not too much of the carbon.

**washer** (*wash-er*) **1.** a power driven machine for washing fabrics in water. **2.** a device for removing dirt and soluble impurities from pulp and paper stock. **3.** any of various flat, thin, smooth, annual rings or perforated plates (as of metal

or leather) used in joints or assemblies to insure tightness, prevent leakage or relieve friction.

**washer cutter** (*wash-er cut-ter*) See GASKET TOOL.

**wash out** (*wash out*) **1.** the act, or process, of washing or flushing out a container or pipe. **2.** a plumbing device for such a process.

**wash out closet** (*wash out clos-et*) a toilet bowl which is emptied or flushed out by discharging into it a large volume of water in a relatively short period of time. No assist by siphons, etc.

**waste** (*waste*) unwanted liquid and industrial by-products. In plumbing, material excreted from the body as useless or superfluous material as feces or urine. *Abbr.* W. See LIQUID WASTE.

**waste hammer** (*waste ham-mer*) the term used to identify the hammering noises and severe shocks that may occur in a pressurized water supply system when flow is halted abruptly by the rapid closure of a valve or faucet.

**waste, lead materials** (*waste, lead ma-te-ri-als*) lead waste pipes should be of the best quality of drawn lead having a recommended minimum weight per foot as indicated below: inside diameter: inches  $1\frac{1}{4}$ ,  $1\frac{1}{2}$ , 2, 3, 4; weight per foot: (pounds)  $2\frac{1}{2}$ ,  $3\frac{1}{2}$ ,  $4\frac{3}{4}$ , 6, 8.

**waste line interceptor** (*waste line in-ter-cep-tor*) a basin, or structure, installed to prevent the passage of liquids, or semi-liquids, such as oil, gasoline and grease, and such solids as sand, large or small objects, precious metals, etc. from passing through the drainage or sewer system. Shall provide a means for the removal or clean-out of the collected liquids, semi-liquids and solids.

**waste pipe** (*waste pipe*) a drain line that carries the discharge from any fixture that does not contain human or animal waste matter.

**waste stack** (*waste stack*) a vertical pipe receiving the discharge of waste only.

**waste vent** (*waste vent*) that portion of the waste stack above the highest fixture or waste connection into it.

**wastewater** (*waste-wa-ter*) the spent water of a community. A combination of the liquid and the liquid carried waste matter from residences, factories, together with any surface water and storm water which may be present. See SEWAGE; CONDENSATE WATER; IRRIGATION WATER; RIVER WATER; SPRINKLER SYSTEM, WATER.

**water** (*wa-ter*) the liquid that descends from the clouds as rain; forms streams, lakes and seas; issues from the ground in springs, and is a major constituent of all living matter and, when pure, consists of an oxide of hydrogen  $H_2O$ , in the proportion of two atoms of hydrogen to one atom of oxygen. It is an odorless, tasteless, very slightly compressible liquid which appears bluish in thick layers. Freezes at 32°F (0°C), and boils at 212°F (100°C). Has a maximum density at 39.2°F (4°C), and a high specific heat, contains very small equal concentrations of hydrogen ions and hydroxide ions, reacts neutrally and constitutes a poor conductor of electricity, a good ionizing agent.

**water back or/front water** (*wa-ter back or/front wa-ter*) 1. a reservoir at the back of a wood, or coal, range for heating and storing water. 2. a system of tubes often enclosed in a solid casting, placed in the firebox of a wood, or oval, range on the side opposite the oven for heating water, and connected with a storage tank separate from the range. See WATERFRONT.

**water closet** (*wa-ter clos-et*) a water flushed plumbing fixture designed to receive human excrement directly from the user of the fixture. The term is sometimes used to indicate the room or compartment in which the fixture is located. See LATRINE; RANGE CLOSET; CLOSET BOWL; EARTHENWARE CLOSET COMBINATION; HOPPER. *Abbr.* WC.

**water closet, back outlet closet combination** (*wa-ter clos-et, back out-let clos-et com-bin-a-tion*) a trap from the bowl flushes into connection in wall. Bowl molded so base rests on floor.

**water closet, blow-out closet bowl** (*wa-ter clos-et blow-out clos-et bowl*) blow-out denotes flushing action of bowl trap by inducing large amounts of water through jet in trap seal.

**water closet, close-coupled tank** (*wa-ter clos-et, close coup-led tank*) tank bolted to bowl; no interconnections such as a flush pipe or ell.

**water closet, corner installation reverse trap closet** (*wa-ter clos-et, cor-ner in-stall-a-tion re-verse trap clos-et*) corner-triangular shape of flushing tank. Reverse-way trap of bowl washes.

**water closet, floor-mounted** (*wa-ter clos-et, floor moun-ted*) outlet of bowl trap empties downward through base.

**water closet flushing valve** (*wa-ter clos-et flush-ing valve*) commonly called "ball cock". Used to control water level in flush tank by the action of rise or fall of float ball, attached to fulcrum arm to open and close valve.

**water closet, flush valve** (*wa-ter clos-et, flush valve*) a flushing device used in toilet tanks to actuate the motion of flushing water.

**water closet, frostproof** (*wa-ter clos-et, frost-proof*) pressurized tank and hopper type bowl. Trap installed below frost line. Water to fill tank for flushing actuated by movement of hopper seat.

**water closet nipple** (*wa-ter clos-et nip-ple*) the nipple which carries the effluent from a water closet into the waste line. Usually threaded on one end, plain on the other. Water closet nipple for a wall hung closet is usually threaded on both ends.

**water closet, one-piece closet combination** (*wa-ter clos-et, one-piece clos-et combination*) tank and bowl molded as one unit; the flushing device of special construction.

**water closet, range** (*wa-ter clos-et, range*) a battery of seats placed close together or one continuous opening in a seat with all placed above a single water bearing trough, or receptacle, designed to receive human excrement.

**water closet, reverse trap combination** (*wa-ter clos-et, re-ver-se trap combination*) tank and bowl referred to as combination. Reverse way trap of bowl washes.

**water closet, seat bumpers** (*wa-ter clos-et, seat bump-ers*) spacers made of rubber, or plastic, used on toilet (water closet) seats to act as shock absorbers between the seat and toilet.

**water closet, siphon jet closet combination** (*wa-ter clos-et, si-phon jet clos-et combination*) tank and bowl referred to as combination. Siphon action of trap created by water jet in trap of bowl.

**water closet, siphon jet elongated closet bowl** (*wa-ter clos-et, si-phon jet elongated clos-et bowl*) elongated pattern of mold of top part of bowl. Siphon action of trap created by jet in trap of bowl.

**water closet, wall-hung** (*wa-ter clos-et, wall hung*) 1. trap of bowl flushes into connection in wall with special support to fasten toilet, as no part rests on floor. 2. a wall-mounted water closet installed in such a way that no part of the water closet touches the floor.

**water closet, washdown** (*wa-ter clos-et, wash-down*) washdown-trap in bowl washed by flooding trap from flushing rim.

**water-coil heater** (*wa-ter-coil heat-er*) a series of pipes conveying water to which heat is applied.

**water, cold** (*wa-ter, cold*) See COLD WATER.

**water cooler** (*wa-ter cool-er*) 1. a tank or container in which water is cooled, stored and dispensed through the necessary heat transfer equipment. 2. a tank containing artificially cooled drinking water.

**water distributing pipe** (*wa-ter distributing pipe*) a pipe within the building or on the premises which conveys water from the water service pipe to the point of usage.

**waterfront** (*wa-ter-front*) a portion of a stove used to heat water; either a gravity vessel, or a cored-out casting with the water under pressure. See WATER-BACK.

**water gas, carbureted or enriched** (*wa-ter gas, car-bu-ret-ted or en-riched*) blue water gas which has been enriched by passing it through a carburetor into which gas oil is sprayed. Usually mixed with coal gas to form town gas.

**water gauge cock** (*wa-ter gauge cock*) angle-type valve with a opening in the vertical to receive glass tube in which the level of liquid may be observed.

**water gauge column** (*wa-ter gauge column*) the vertical, transparent member of a water gauge in which the fluid level may be observed.

**water hammer** (*wa-ter ham-mer*) **1.** a concussion, or sound of concussion, of moving water against the sides of a containing pipe or vessel on a sudden stoppage of flow. **2.** a pressure that results from a sudden deceleration of flow of water in a closed pipe. **3.** the term used to identify the hammering noises and severe shocks that may occur in a pressurized water supply system when flow is halted abruptly by the rapid closure of a valve or faucet.

**water hammer arrester** (*wa-ter ham-mer ar-rest-er*) **1.** a device to absorb hydraulic shock. **2.** a device other than an air chamber or calculated air chamber designed to provide continuous protection against excessive surge pressure without maintenance. Also called a shock arrester.

**water heater** (*wa-ter heat-er*) an appliance for supplying hot water for domestic or commercial purposes other than for space heating. A domestic storage heater is a water heater that heats and stores water at a thermostatically controlled temperature for delivery on demand.

**water heater drain valve** (*wa-ter heat-er drain valve*) a valve through which water stored in a water heater may be drained from the tank or by which water may be held within the tank as desired. See BOILER DRAIN.

**water inch** (*wa-ter inch*) the discharge from a circular orifice one inch in diameter which is commonly estimated at fourteen pints per minute and constitutes an old hydraulic measure.

**water lifts** (*wa-ter lifts*) See SEWAGE EJECTOR.

**waterlogged** (*wat-er logged*) the condition of an air chamber when all, or part, of its normal air content has been replaced by water.

**water main** (*wa-ter main*) **1.** a principal water supply pipe to one, or more, buildings including water for fire protection. **2.** a pipe used to convey public water supply.

**water meter** (*wa-ter me-ter*) a mechanical device to measure volume of water.

**water meter riser** (*wa-ter me-ter ris-er*) a pipe to, or from, a meter; vertical position.

**water outlet** (*wa-ter out-let*) a water outlet, as used in connection with the water distributing system, is the discharge opening for the water. a) to a fixture; b) to atmospheric pressure (except into an open tank which is part of the water supply system); c) to a boiler or heating system; d) to any water-operated device or equipment requiring water to operate, but not a part of the plumbing system.

**water, potable** (*wa-ter, po-ta-ble*) See POTABLE WATER.

**water purveyor** (*wa-ter pur-ve-yor*) **1.** any agency charged with the delivery, distribution and protection of potable water to the consumer. **2.** the municipal water department, water board, public service district or other administrative authority invested with the authority and responsibility for the implementation of a cross connection control program and for the enforcement of the provisions of the ordinance.

**water rise** (*wa-ter rise*) the maximum rise of water in inches (mm) observed in a transparent tube attached to the outlet end of a vacuum breaker, measured with reference to the water level in a receptacle in which the transparent tube is submerged in water open to atmospheric pressure, while specific conditions of a vacuum exist on the supply or inlet side of the device during test proceedings.

**water riser pipe** (*wa-ter ris-er pipe*) a principal, vertical water supply pipe, hot or cold, supplied from the bottom or from the top.

**water service pipe** (*wa-ter ser-vice pipe*) the pipe from the water main or principal source of water supply to the water distributing system of the building.

**water softener** (*wa-ter soft-en-er*) a tank containing zeolite, or strontium, mineral used to remove the hardness from water.

**water supervisor** (*wa-ter su-per-vi-sor*)

the consumer or person on the premises appointed by the consumer, charged with the responsibility of maintaining the consumer's water system(s) free from cross-connections and other sanitary defects, as required by regulations and laws.

**water supplier** (*wa-ter sup-plier*) **1.**

the public/private owner or operator of a potable water distribution system that supplies water to consumers in compliance with the requirements of the Safe Drinking Water Act (SDWA). **2.** an organization that is engaged in producing and/or distributing potable water.

**water supply** (*wa-ter sup-ply*) **1.** the

sources of water for public, or private, use. **2.** the furnishing of a good, potable water under pressure for domestic, commercial, industrial and public service and an adequate quantity of water under pressure for fire fighting.

**water supply plaster stub opening** (*wa-ter sup-ply plas-ter stub open-ing*) See  
FIXTURE OPENING.**water supply system** (*wa-ter sup-ply sys-*

*tem*) the water service pipe, the water distributing pipes, and the necessary connecting pipes, fittings, control valves, and all appurtenances in, or adjacent to, the building or premises.

**water test** (*wa-ter test*) a testing procedure using water to locate potential leaks, or defects, and to determine the soundness of a system.**waterborne disease** (*wa-ter-borne*

*dis-ease*) any disease that is primarily transmitted through water, for example typhoid, cholera, giardiasis.

**watertight joint** (*wa-ter-tight joint*) See  
SEALING RING.**water way** (*wa-ter way*) **1.** the aperture, or passageway, through which water flows. **2.** water way of a closet. **3.** the passage way for waste through the water closet.**water well casing** (*wa-ter well cas-ing*)

the tube which is used to line or encase a drilled well.

**W.C.** *Abbr.* for Water Closet.**W.C.O.** *Abbr.* for Wall Clean Out.

**wedge** (*wedge*) **1.** a piece of material (as wood or metal) tapering to a thin edge used for splitting wood, rocks, for raising heavy bodies and by being driven into a space between objects for tightening. **2.** a lump, or mass, of something solid. **3.** the type of cutting and piercing machinery formerly classed as a mechanical power.

**wedge gate valve** (*wedge gate valve*) a gate valve in which the sliding disc which shuts off the flow of water is in the shape of a triangular wedge or spade. See GATE VALVE.

**weeper** (*weeper*) See SPARGE PIPE.

**weir** (*weir*) **1.** a dam in a stream to raise the water level or direct its flow. **2.** a notch in a levee, or other barrier, across or bordering a stream to regulate the flow of water (as in time of flood). **3.** a device for determining the quantity of the depth of water over the crest, or sill, of known dimensions of the device.

**weld** (*weld*) the joint formed by welding.

**welded joint** (**burned**) [*weld-ed joint (burned)*] shall be uniformly fused together into one continuous piece. The thickness of the joint shall be at least as thick as the lead being used. The filler metal shall be of the same material as the pipe.

**welding** (*weld-ing*) the art of joining metals by heating to a plastic, or fluid, state and/or pounding while in contact until they flow together and adhere with. Without the addition of other molten metals by hammering or compressing with, or without, previous softening by heat.

**welding cap** (*weld-ing cap*) a closure over the outside end of a pipe, or tube, to seal same; held in place by welding.



**weld iron** (*weld i-ron*) iron made without complete fusion.

**well casing** (*well cas-ing*) the tubular lining of a bored, or drilled, well. Usually a light wall steel tube.

**well, drilled** (*well, drilled*) a well constructed by making a hole in the ground with a drilling machine of any type and installing metal casing.

**well, driven** (*well, driv-en*) a well constructed by driving a pipe into the ground. The drive pipe is usually fitted with a well point and screen on bottom section.

**well, dug** (*well, dug*) a well constructed by excavating a large diameter shaft to the water table in the ground and lining walls with a casing of metal or masonry.

**well water** (*well wa-ter*) water produced from a well. *Abbr.* WW.

**wet column** (*wet col-umn*) a structural building column beside or within which water, waste, and vent piping is located.

**wet standpipe** (*wet stand-pipe*) a vertical pipe that is part of a fire extinguishing, or fire fighting, system containing either chemicals or water and kept filled at all times.

**wet vent** (*wet vent*) a pipe vented and serving as a waste for a fixture at a higher elevation and connected into the drain of a lower fixture. Any waste pipe which also serves as a vent, on the same floor level.

**W.F.** *Abbr.* for Wash Fountain.

**W.H.** *Abbr.* for Wall Hydrant.

**whirlpool bath** (*whirl-pool bath*) a hospital plumbing fixture for immersion of the extremities, or entire body, in a bath of water in rapid motion by use of water jets. *Abbr.* WPB.

**whirlpool bathtub** (*whirl-pool bath-tub*) a plumbing appliance consisting of a bathtub fixture which is equipped and fitted with a circular piping system, pump, and other appurtenances and is so

designed to accept, circulate and discharge the water from the bathtub after each use.

**whiskey stick** (*whis-key stick*) a spirit level usually with an alcohol filled levelling tube.

**white metal** (*white met-al*) **1.** any of several lead or tin-base bearing metals. **2.** any of several white alloys. See BRITANIA METAL; PEWTER.

**Whitworth thread form** (*whit-worth thread form*) a "V" thread form developed in Britain by Sir Joseph Whitworth in the 19th century. Used for pipe and fittings in England. See BRITISH STANDARD TAPER PIPE THREADS.

**wicking** (*wick-ing*) **1.** material made especially for wicks. **2.** a loosely braided, or woven, cord, tape or tube of cotton. Used for making joints tight.

**wicking asbestos** (*wick-ing as-bes-tos*) See ASBESTOS PACKING.

**wiped joint** (*wip-ed joint*) a water and/or gas tight joint between the ends of two pipes, formed manually by forming and fusing a ball of molten solder about the ends of the two pipes.

**wiping cloth** (*wip-ing cloth*) a fabric pad used in forming molten solder joints.

**wiping ferrule** (*wip-ing fer-rule*) a tube with one end equipped with a raised edge. The other end is plain. Sometimes called a wiping sleeve.

**wiping sleeve** (*wip-ing sleeve*) See WIPING FERRULE.

**wiping solder** (*wip-ing sol-der*) a lead and block tin alloy of 60% lead and 40% block tin.

**wiping thimble** (*wip-ing thim-ble*) See WIPING FERRULE.

**wire brush** (*wire brush*) a hand operated, or power-driven, tool composed of wire bristles set into a back, handle, or attached to a roller and designed, or adapted, for uses as scrubbing, smoothing, etc.

**wire hook** (*wire hook*) a holding device made of wire in a return bend shape with each end bent at 90° and as sharpened as a nail.

**wood chisel** (*wood chisel*) a tool; a stiff bar of metal sharpened at one end. It has a handle so that it may be pushed or hammered on the other end to cut, shape or sever wood.

**wool, lead** (*wool, lead*) See LEAD WOOL.

**wool, rock** (*wool, rock*) See ROCK WOOL.

**working pressure** (*work-ing pres-sure*) the maximum pressure in a water piping system or its appurtenances allowable under normal working conditions (i.e.: the maximum pressure a storage tank can be subjected to under normal working conditions).

**workmanship** (*work-man-ship*) work of such character that will fully secure the desired or needed results.

**W.P.** a notation which could mean: water pipe, working pressure, water pressure, depending on context depending on association with other sections of the sentence structure plans or print.

**WPB** *Abbr.* for Whirlpool Bath.

**wrench** (*wrench*) **1.** an implement with a vise, socket or opening adapted to turn, or twist, mechanical parts. **2.** a hand tool that usually consists of a bar, or lever, with adjustable jaws, lugs or socket either at the ends or between the ends used for holding, twisting, or turning a bolt, nut, screwhead, pipe, or other object. **3.** a power tool for similar purposes. See BASIN WRENCH; END WRENCH.

**wrought copper fittings** (*wrought cop-per fit-tings*) copper pipe fittings formed by applying pressure in a die on a tube or a flat strip of copper metal. Compare with “cast copper fittings”. Sometimes spelled “Wrot”.

**wrought iron** (*wrought i-ron*) a commercial form of iron that is rough, malleable, and relatively soft and contains less than 0.3% of slag mechanically mixed with it. See MALLEABLE IRON.

**wrought iron nipple** (*wrought iron nip-ple*) a malleable, steel material cut in short lengths (under 1 foot in length) and threaded.

**wrought iron pipe** (*wrought i-ron pipe*) form of iron, tough, malleable, soft. Contains a very small percentage of carbon and has slag mixed with it.

**wrought steel nipple** (*wrought steel nip-ple*) ordinary carbon steel pipe cut in short lengths (under 1 foot in length) and threaded.

**W.W.** *Abbr.* for Well Water.

**wye** (*wye*) a fitting that has one side opening set at less than 90° angle. See INCREASER; REDUCER; TEE.



**X.H.** *Abbr.* for Extra Heavy.

**x-ray developing tank** (*x-ray de-velop-ing tank*) a container made of acid resisting materials with sectional dividers that contain chemical agents to sensitize surface of film and bring out image.

# Yy

**yard catch basin** (*yard catch ba-sin*) an interceptor of stone, block, brick or clay tile construction to gather and prevent large objects from entering the sewerage system.

**yard hydrant** (*yard hy-drant*) a type of lawn faucet. See HYDRANT.

**yarn** (*yarn*) the thread in the form of a loosely twisted aggregate of fibers (e.g. as of hemp, of which rope is made.)

**yarning iron** (*yarn-ing iron*) **1.** a blunt caulking iron usually with a thin offset blade. **2.** an offset handle tool for inserting and packing yarn, jute, etc., in the annulus of fittings, etc.

**yellow flame burner** (*yel-low flame burner*) (water heater) a burner in which secondary air only is depended on for the combustion of the gas.

**yoke** (*yolk*) **1.** the collar by which a lead pipe is secured to its support. **2.** a pipe with two branches uniting them to form on stem. **3.** a vertical connection between a branch waste line or wet vent and a continuous vent stack.

**yoke vent** (*yolk vent*) **1.** a vertical, or 45°, relief vent of the continuous waste-and-vent type formed by the extension of an upright wye-branch inlet of the horizontal branch to the stack. It becomes a dual yoke vent when two horizontal branches are vented by the same relief vent. Its purpose is to prevent pressure changes in the stacks. **2.** a pipe connecting upward from a soil, or waste stack, to a vent stack for the purpose of preventing pressure changes in the stack. Same as yoke as applied to vent piping.

# Zz

**zeolite** (*ze-o-lite*) a chemical compound so imperfectly bound together that its composition will change in accordance with the concentration of chemicals in the solution in its presence. See GLAUCONITE; GREEN SAND.

**zone** (*zone*) **1.** any division of a planetary surface bounded by two encircling parallels. **2.** a region, or area, set off, or characterized, as distinct from surrounding or adjoining parts. **3.** one of the sections, or divisions, of an area created for a particular purpose. **4.** to surround with, or include within, a zone or band. **5.** to arrange in, or mark off, into zones.

**zone tank** (*zone tank*) a tank connected or intended to serve or service a specific section or circuit.

**zone valve** (*zone valve*) a device by which the flow of liquids, air and gas may be started, stopped or regulated by a movable part which opens, or obstructs, passage to a specific section or circuit.

**zooglea/zoogloea** (*zo-o-gle-a/ zo-o-gloe-a*) a jelly like matrix developed by bacteria. Usually associated with activated sludge growths in biological beds.

**"z" wrench** (*z wrench*) a tool in the form of a letter z. Common use is for a household food waste disposer, unjammer.

# About ASSE International

ASSE International is an ANSI accredited standards developer and product certification body comprised of individual and sustaining members who represent all disciplines of the plumbing and mechanical industries. Its mission is to continually improve the performance, reliability and safety of plumbing and mechanical systems. ASSE's product performance standards, professional qualifications standards, professional certification and product listing programs are developed in the interest of public health and safety. ASSE's motto, "Prevention Rather than Cure," has guided the organization for over 100 years.

ASSE International maintains more than 50 product performance standards, ranging from double check and reduced pressure backflow preventers to dielectric pipe unions, with many more in the development stages. ASSE's product standards are minimum performance requirements for component parts of the plumbing system. These standards detail how a product is intended to function under normal operating conditions, not how it is designed or manufactured. ASSE also has multiple professional qualifications standards, jointly developed with the International Association of Plumbing and Mechanical Officials (IAPMO), including the ASSE/IAPMO/ANSI Series 5000, Cross-Connection Control Professional Qualifications Standard, and the ASSE/IAPMO/ANSI Series 6000, Professional Qualifications Standards for Medical Gas Systems Personnel.

ASSE standards are developed and revised under the ANSI accredited standards development process.

The ASSE Product Listing Program is an ANSI accredited third party certification body which operates in accordance with ISO Guide 65. With more than 1,000 product listings, this program is continually evolving and growing to meet the needs of the plumbing industry. ASSE's directory of listings is available free of charge and updated online daily. This permits both members and nonmembers to reference ASSE's Product Listing Directory during the design, installation or inspection process. The ASSE Seal gives inspectors, code officials, customers and users confidence of the product's performance within the plumbing system

In addition to certifying plumbing and mechanical products, ASSE International is also a third party certifier for professionals in the plumbing and mechanical industries. Cross-connection control professionals, medical gas personnel and installers/inspectors of residential potable water fire protection systems may be certified to one or more of the standards within the ASSE/IAPMO/ANSI professional qualification standards. Each individual must pass both a written and a practical examination on the criteria established in the course outline.

ASSE International's membership is a cross-section of the plumbing and mechanical industries, including contractors, engineers, inspectors, journeymen, apprentices, manufacturers and many others. This unique composition gives members the opportunity to exchange ideas and provides a forum where all sides can express their views. No other industry group provides such a wide range of information. Benefits of ASSE membership include the monthly eNewsletter and Backflow Prevent & Plumbing Standards (BPPS) magazine, discounts on all publication orders, voting rights at Annual Meetings and networking opportunities in all segments of the plumbing and mechanical industries.

Since 1906, the motto, "Prevention Rather Than Cure," has guided ASSE's activities in a wide range of programs designed to educate the industry and the public on the necessity of correct plumbing installations.

# Appendix A

## Temperature Conversion Table – Fahrenheit to Celsius

°F	°C	°F	°C	°F	°C	°F	°C	°F	°C	°F	°C
-60.0	-51.1	40.0	4.4	86.0	30.0	132	55.6	178	81.1	300	148.9
-50.0	-46.6	41.0	5.0	87.0	30.6	133	56.1	179	81.7	310	154.4
-40.0	-40.0	42.0	5.6	88.0	31.1	134	56.7	180	82.2	320	160.0
-30.0	-34.4	43.0	6.1	89.0	31.7	135	57.2	181	82.8	330	165.6
-20.0	-28.9	44.0	3.7	90.0	32.2	136	57.8	182	83.3	340	171.1
-10.0	-23.3	45.0	7.2	91.0	32.8	137	58.3	183	83.9	350	176.7
0	-17.8	46.0	7.8	92.0	33.3	138	58.9	184	84.4	360	182.2
1.0	-17.2	47.0	8.3	93.0	33.9	139	59.4	185	85.0	370	187.8
2.0	-16.7	48.0	8.9	94.0	34.4	140	60.0	186	85.6	380	193.3
3.0	-16.1	49.0	9.4	95.0	35.0	141	60.6	187	86.1	390	198.9
4.0	-15.6	50.0	10.0	96.0	35.6	142	61.1	188	86.7	400	204.4
5.0	-15.0	51.0	10.6	97.0	36.1	143	61.7	189	87.2	410	210.0
6.0	-14.4	52.0	11.1	98.0	36.7	144	62.2	190	87.8	420	215.6
7.0	-13.9	53.0	11.7	99.0	37.2	145	62.8	191	88.3	430	221.1
8.0	-13.3	54.0	12.2	100	37.8	146	63.3	192	88.9	440	226.7
9.0	-12.8	55.0	12.8	101	38.3	147	63.9	193	89.4	450	232.2
10.0	-12.2	56.0	13.3	102	38.9	148	64.4	194	90.0	460	237.8
11.0	-11.7	57.0	13.9	103	39.4	149	65.0	195	90.6	470	243.3
12.0	-11.1	58.0	14.4	104	40.0	150	65.6	196	91.1	480	248.9
13.0	-10.6	59.0	15.0	105	40.6	151	66.1	197	91.7	490	254.4
14.0	-10.0	60.0	15.6	106	41.1	152	66.7	198	92.2	500	260.0
15.0	-9.4	61.0	16.1	107	41.7	153	67.2	199	92.8	525	273.9
16.0	-8.9	62.0	16.7	108	42.2	154	67.8	200	93.3	550	287.8
17.0	-8.3	63.0	17.2	109	42.8	155	68.3	201	93.9	575	301.7
18.0	-7.8	64.0	17.8	110	43.3	156	68.9	202	94.4	600	315.6
19.0	-7.2	65.0	18.3	111	43.9	157	69.4	203	95.0	625	329.4
20.0	-6.7	66.0	18.9	112	44.4	158	70.0	204	95.6	650	334.3
21.0	-6.1	67.0	19.4	113	45.0	159	70.6	205	96.1	675	357.2
22.0	-5.6	68.0	20.0	114	45.6	160	71.1	206	96.7	700	371.1
23.0	-5.0	69.0	20.6	115	46.1	161	71.7	207	97.2	725	385.0
24.0	-4.4	70.0	21.1	116	46.7	162	72.2	208	97.8	750	398.9
25.0	-3.9	71.0	21.7	117	47.2	163	72.8	209	98.3	775	412.8
26.0	-3.3	72.0	22.2	118	47.8	164	73.3	210	98.9	800	426.7
27.0	-2.8	73.0	22.8	119	48.3	165	73.9	211	99.4	825	441.0
28.0	-2.2	74.0	23.3	120	48.9	166	74.4	212	100	850	454.4
29.0	-1.7	75.0	23.9	121	49.4	167	75.0	213	100.6	875	468.3
30.0	-1.1	76.0	24.4	122	50.0	168	75.6	214	101.1	900	482.2
31.0	-0.6	77.0	25.0	123	50.6	169	76.1	215	101.7	925	496.1
32.0	0	78.0	25.6	124	51.1	170	76.7	220	104.4	950	510.0
33.0	0.6	79.0	26.1	125	51.7	171	77.2	230	110.0	975	523.9
34.0	1.1	80.0	26.7	126	52.2	172	77.8	240	115.6	1000	537.8
35.0	1.7	81.0	27.2	127	52.8	173	78.3	250	121.1		
36.0	2.2	82.0	27.8	128	53.3	174	78.9	260	126.7		
37.0	2.8	83.0	28.3	129	53.9	175	79.4	270	132.2		
38.0	3.3	84.0	28.9	130	54.4	176	80.0	280	137.8		
39.0	3.9	85.0	29.4	131	55.0	177	80.6	290	143.3		



# Appendix B

## General Conversion Factors

<b>MULTIPLY</b>	<b>BY</b>	<b>TO OBTAIN</b>
Feet/min.	0.01136	Miles/hr.
Feet/min	0.00508	Meter/sec.
Feet/sec.	0.6818	Miles/hr.
Feet/sec.	0.01136	Miles/min.
Feet/sec.	0.3048	Meter/sec.
Fluid ounces	29.57	milliliter
Gallons	0.3785	Cubic centimeters
Gallons	0.1337	Cubic feet
Gallons	231	Cubic inches
Gallons	4	Quarts (liq.)
Gallons	3.785	Liter
Gallons water	8.33	Pounds of water
Gallons/min.	0.002228	Cubic feet/sec.
Gallons/min.	8.0208	Cu. ft./hr.
Gallons/min. (GPM)	3.785	Liters/min.
Gallons/min. (GPM)	0.063	Liters/sec.
Gallons water/min.	6.0086	Tons water/24 hours
Inches	2.540	Centimeters
Inches	25.4	Millimeters
Inches of mercury	0.03342	Atmospheres
Inches of mercury	1.133	Feet of water
Inches of mercury	0.4912	Lbs./sq. inch
Inches of water	0.002458	Atmospheres
Inches of water	0.07355	Inches of mercury
Inches of water	5.202	Lbs./sq. ft.
Inches of water	0.03613	Lbs./sq. inch
Kilogram force	9.807	Newton
Liters	1000	Cubic centimeters
Liters	61.02	Cubic inches
Liters	0.2642	Gallons
Meters	3.281	Feet

<b>MULTIPLY</b>	<b>BY</b>	<b>TO OBTAIN</b>
Acres	43,560	Square feet
Acre-feet	43,560	Cubic feet
Acre-feet	325,851	Gallons
Atmospheres	76.0	Cms. of mercury
Atmospheres	29.92	Inches of mercury
Atmospheres	33.90	Feet of water
Atmospheres	14.70	Lbs./sq. inch
B.T.U./min.	12.96	Foot-lbs./sec.
B.T.U./min.	0.02356	Horse-power
Celsius	$9/5 \times ^\circ\text{C} + 32$	Fahrenheit
Centimeters	0.3937	Inches
Centimeters of mercury	0.01316	Atmospheres
Centimeters of mercury	0.4461	Feet of water
Centimeters of mercury	27.85	Lbs./sq. ft.
Centimeters of mercury	0.1934	Lbs./sq. inch
Cubic inches	16.387	Cubic centimeters
Cubic feet	1728	Cubic inches
Cubic feet	0.03704	Cubic yards
Cubic feet	7.48052	Gallons
Cubic feet	29.92	Quarts (liq.)
Cubic feet/minute	472.0	Cubic cms./sec.
Cubic feet/minute	0.1247	Gallons/sec.
Cubic feet/minute	62.43	Pounds of water/min.
Cubic feet/second	0.646317	Million gals./day
Cubic feet/second	448.831	Gallons/min.
Cubic yards	27	Cubic feet
Cubic yards	202.0	Gallons
Fahrenheit	$5/9 (\times ^\circ\text{F} - 32)$	Celsius
Feet	0.3048	Meters
Feet of water	0.02950	Atmospheres
Feet of water	0.8826	Inches of mercury
Feet of water	62.43	Lbs./sq. ft.
Feet of water	0.4335	Lbs./sq. inch
Feet/min.	0.01667	Feet/sec.

<b>MULTIPLY</b>	<b>BY</b>	<b>TO OBTAIN</b>
Miles	5280	Feet
Miles/hr.	88	Feet/min.
Miles/hr.	1.467	Feet/sec.
Millimeters	0.1	Centimeters
Millimeters	0.03937	Inches
Million gal./day	1.54723	Cubic ft./sec.
Pound force	4.448	Newton
Pounds	0.45359	Kilograms
Pounds of water	0.01602	Cubic feet
Pounds of water	27.68	Cubic inches
Pounds of water	0.1198	Gallons
Pounds/cubic inch	1728	Lbs./cubic foot
Pounds/sq. foot	0.01602	Feet of water
Pounds/sq. inch	0.06804	Atmospheres
Pounds/sq. inch	2.307	Feet of water
Pounds/sq. inch	2.036	Inches of mercury
Pounds/sq. inch	6.895	Kilopascal
Quarts (dry)	67.20	Cubic inches
Quarts (liq.)	57.75	Cubic inches
Quarts	0.9464	Liters
Square inches	645.2	Square millimeters
Square inches	6.452	Square centimeters
Square feet	144	Square inches
Square feet	0.09290	Square meters
Square miles	640	Acres
Square yards	9	Square feet
Temp. (°C.) + 273	1	Abs. Temp. (°C.)
Temp. (°C.) + 17.28	1.8	Temp. (°F.)
Temp. (°F.) + 460	1	Abs. Temp. (°F.)
Temp. (°F.) - 32	5.9	Temp. (°C.)
Tons (short)	2000	Pounds
Tons of water/24 hours	83.333	Pounds water/hour
Tons of water/24 hours	0.16643	Gallons/min.
Tons of water/24 hours	1.3349	Cu. ft./hr.

# Appendix C

## Inches and Fractions Expressed in Decimals of a Foot

Inches	0	1/8	1/4	3/8
0	0.0000	0.0104	0.0208	0.0313
1	0.0833	0.0937	0.1042	0.1146
2	0.1667	0.1771	0.1875	0.1979
3	0.2500	0.2604	0.2708	0.2813
4	0.3333	0.3438	0.3542	0.2646
5	0.4167	0.4271	0.4375	0.4479
6	0.5000	0.5104	0.5208	0.5313
7	0.5833	0.5938	0.6042	0.6146
8	0.6667	0.6771	0.6875	0.6979
9	0.7500	0.7604	0.7708	0.7813
10	0.8333	0.8438	0.8542	0.8646
11	0.9167	0.9271	0.9375	0.9479
12	1.0000	---	---	---

Inches	1/2	5/8	3/4	7/8
0	0.0417	0.0521	0.0625	0.0729
1	0.1250	0.1354	0.1458	0.1563
2	0.2083	0.2188	0.2292	0.2396
3	0.2917	0.3021	0.3125	0.3229
4	0.3750	0.3854	0.3958	0.4063
5	0.4583	0.4688	0.4792	0.4896
6	0.5417	0.5521	0.5625	0.5729
7	0.6250	0.6354	0.6458	0.6563
8	0.7083	0.7188	0.7292	0.7396
9	0.7917	0.8021	0.8125	0.8229
10	0.8750	0.8854	0.8958	0.9063
11	0.9583	0.9688	0.9792	0.9896
12	---	---	---	---

To convert to feet (or decimal of a foot) do the following:

$$\frac{(\text{inches} + \text{decimal fraction})}{12} = \text{decimal equivalent of a foot}$$

# Appendix D

## Decimal Equivalents

$1/64 = 0.015625$	$25/64 = 0.390625$	$49/64 = 0.765625$
$1/32 = 0.03125$	$13/32 = 0.40625$	$25/32 = 0.78125$
$3/64 = 0.046875$	$27/64 = 0.421875$	$51/64 = 0.796875$
$1/16 = 0.0625$	$7/16 = 0.4375$	$13/16 = 0.8125$
$5/64 = 0.078125$	$29/64 = 0.453125$	$53/64 = 0.828125$
$3/32 = 0.09375$	$15/32 = 0.46875$	$27/32 = 0.84375$
$7/64 = 0.109375$	$31/64 = 0.484375$	$55/64 = 0.859375$
$1/8 = 0.125$	$1/2 = 0.5$	$7/8 = 0.875$
$9/64 = 0.140625$	$33/64 = 0.515625$	$57/64 = 0.890625$
$5/32 = 0.15625$	$17/32 = 0.53125$	$29/32 = 0.90625$
$11/64 = 0.171875$	$35/64 = 0.546875$	$59/64 = 0.921875$
$3/16 = 0.1875$	$9/16 = 0.5625$	$15/16 = 0.9375$
$13/64 = 0.203125$	$37/64 = 0.578125$	$61/64 = 0.953125$
$7/32 = 0.21875$	$19/32 = 0.59375$	$31/32 = 0.96875$
$15/64 = 0.234375$	$39/64 = 0.609375$	$63/64 = 0.984375$
$1/4 = 0.25$	$5/8 = 0.625$	
$17/64 = 0.265625$	$41/64 = 0.640625$	
$9/32 = 0.28125$	$21/32 = 0.65625$	
$19/64 = 0.296875$	$43/64 = 0.671875$	
$5/16 = 0.3125$	$11/16 = 0.6875$	
$21/64 = 0.328125$	$45/64 = 0.703125$	
$11/32 = 0.34375$	$23/32 = 0.71875$	
$23/64 = 0.359375$	$47/64 = 0.734375$	
$3/8 = 0.375$	$3/4 = 0.75$	

# Appendix E

## Equivalents of Liquid Measures and Weights

<b>Liquid Measure or Weight</b>	<b>U.S. Gallon</b>	<b>Imperial Gallon</b>	<b>U.S. Pint</b>	<b>U.S. Pound Water*</b>
U.S. Gallon	1.0	0.833	8.0	8.337
Imperial Gallon	1.2009	1.0	9.60752	10.0
U.S. Pint	0.125	0.1041	1.0	1.042
U.S. Pound Water *	0.11995	0.1	0.9596	1.0
U.S. Cubic Foot	7.48052	6.22888	59.8442	62.365
U.S. Cubic Inch	0.004329	0.00361	0.034632	0.03609
Liter	0.2641779	0.2199756	2.113423	2.202
Cubic Meter	264.170	219.969	2113.34	2202.0

<b>Liquid Measure or Weight</b>	<b>U.S. Cubic Foot</b>	<b>U.S. Cubic Inch</b>	<b>Liter</b>	<b>Cubic Meter</b>
U.S. Gallon	0.13368	231.0	3.78533	0.003785
Imperial Gallon	0.16054	277.42	4.54596	0.004546
U.S. Pint	0.01671	28.875	0.473166	0.000473
U.S. Pound Water *	0.016035	27.708	0.45405	0.000454
U.S. Cubic Foot	1.0	1728.0	28.31702	0.028317
U.S. Cubic Inch	0.0005787	1.0	0.016387	0.0000164
Liter	0.0353154	61.02509	1.0	0.001000
Cubic Meter	35.31446	61023.38	999.972	1.0

\*Water at 60.0 °F

1 Barrel = 42 gallons (petroleum measure)

**Problem:**

10 U.S. Gallons equals how many Imperial Gallons?

**Solution:**

The Imperial Gallon equivalent of 1 U.S. Gallon is 0.833.

Then,  $10 \times 0.833 = 8.33$  Imperial Gallons.

# Appendix F

## Equivalents of Pressure and Head

Pressure or Head	lb./in. <sup>2</sup>	lb./ft. <sup>2</sup>	Atmospheres	kg/cm <sup>2</sup>	kg/m <sup>2</sup>
lb./in. <sup>2</sup>	1.0	144.0	0.68046	0.070307	703.067
lb./ft. <sup>2</sup>	0.0069445	1.0	0.000473	0.000488	4.88241
Atmospheres	14.696	2116.22	1.0	1.0332	10332.27
kg/cm <sup>2</sup>	14.2234	2048.17	0.96784	1.0	10000.0
kg/m <sup>2</sup>	0.001422	0.204817	0.0000968	0.0001	1.0
in water*	0.036092	5.1972	0.002456	0.00253	25.375
ft. water*	0.433103	62.3668	0.029471	0.03045	304.50
in mercury**	0.491157	70.7266	0.033421	0.03453	345.316
mm mercury **	0.0193368	2.78450	0.0013158		13.59509

Pressure or Head	in. water (60.0 °F)	ft. water (60.0 °F)	in. mercury (32.0 °F)	mm mercury (32.0 °F)
lb./in. <sup>2</sup>	27.707	2.3039	2.03601	51.7148
lb./ft. <sup>2</sup>	0.19241	0.01603	0.014139	0.35913
Atmospheres	407.17	33.931	29.921	760.0
kg/cm <sup>2</sup>	394.08	32.840	28.959	735.559
kg/m <sup>2</sup>	0.03941	0.003284	0.002896	0.073556
in water*	1.0	0.08333	0.073483	1.8665
ft. water*	12.0	1.0	0.88180	22.3980
in mercury**	13.608	1.1340	1.0	25.40005
mm mercury **	0.535764	0.044647	0.03937	1.0

\*Water at 60.0 °F    \*\* Mercury at 32.0 °F

### Problem:

10 inches of water equals how many inches of mercury?

### Solution:

1 inch of water is equal to 0.073483 inch mercury.

Then,  $10 \times 0.073483 = 0.73483$  inch mercury.

Tons of water/24 hours ..... 1.3349 ..... Cu. ft./hr.

**To convert from one set of units to another, locate the given unit in the left hand column, and multiply the numerical value by the factor shown horizontally to the right, under the set of units desired.**

# Appendix G

## Useful Information

A gallon (U.S. Standard) of water contains 231 cubic inches and weighs 8.345 pounds (avoirdupois) at maximum density and at normal temperatures.

A gallon (British Imperial) of water contains 277.418 cubic inches and weighs 10.022 pounds (avoirdupois) at maximum density.

To find British Imperial gallons, multiply the U.S. gallons by 0.833.

To find U.S. gallons, multiply the British Imperial gallons by 1.201.

A cubic foot of water contains 7.482 gallons or approximately  $7\frac{1}{2}$  gallons, 1728 cubic inches, and weighs 62.428 pounds (avoirdupois) at maximum density and at 39.2 degrees Fahrenheit.

The height of a column of water necessary to produce a pressure of one pound per square inch is 2.309 feet.

To find the pressure in pounds per square inch of a column of fresh water, multiply the height in feet by 0.433.

1,000,000 U. S. gallons per day - 695 U. S. gallons per minute.

<b>Gallons per Minute (GPM)</b>	{	$\frac{\text{Pounds per hour}}{500 \times \text{Specific gravity}}$	{	$\frac{\text{Pressure in Pounds Per Sq. In.} \times 2.31}{\text{Specific Gravity}}$			
		$\frac{\text{Pounds per minute}}{8.33 \times \text{Specific gravity}}$		$\frac{1.13 \times \text{Inches of Mercury}}{\text{Specific Gravity}}$			
		$0.069 \times \text{Boiler horsepower (approx.)}$		<b>Pressure in Pounds Per Sq. In. =</b>	$\frac{\text{Head in Feet} \times \text{Sp. Gr.}}{2.31}$		
		$\frac{\text{cubic feet per minute}}{7.5}$			<b>Brake Horse- power (BHP)</b>	{	$\frac{\text{GPM} \times \text{Head in Feet} \times \text{Sp. Gr.}}{3960 \times \text{Pump Efficiency}}$
		$449 \times \text{Cubic feet per second}$					$\frac{\text{GPM} \times \text{Pounds Per Sq. In.}}{1715 \times \text{Pump Efficiency}}$
		$0.0292 \times \text{Bbl. per day}$		$\frac{\text{Theoretical Horsepower}}{\text{Pump Efficiency}}$			
		$0.7 \times \text{Bbl. per hour}$					

One horsepower = 33,000 ft. pounds per minute

Cubic Feet per Second =  $\text{GPM} / 449$

$$\text{Velocity in Feet per Second} = \frac{\text{U.S. GPM} \times .408}{(\text{Diameter of Pipe in Inches})^2} = \frac{\text{GPM} \times 0.32}{\text{Area of Pipe in Sq. Inches}}$$

$$\text{Velocity in Feet per Minute Necessary to Discharge a Given Volume of Water in a Given Time} = \frac{\text{Cu. Ft.} \times 144}{\text{Area of Pipe in Sq. Inches}}$$

$$\text{Area of Required Pipe, Volume and Velocity of Water Being Given} = \frac{\text{Cu. Ft.} \times 144}{\text{Vel. in Ft. Per Minute}}$$

$$\text{Velocity Head (or head due to velocity)} \quad H = \frac{V^2}{2G} \quad V = \sqrt{2GH}$$

G = Acceleration Due to Gravity or 32.16 Feet per Second per Second.



# Appendix H

## Tables and Rules

### General Data – Weight and Measures

#### Linear Measure

12 inches (in)	=	1 foot	ft
3 feet	=	1 yard	yd
5.5 yards	=	1 rod	rd
10 rods	=	1 furlong	fur
8 furlongs	=	1 mile	mi

#### Square Measure

144 square inches (sq in)	=	1 square foot	sq ft
9 square feet	=	1 square yard	sq yd
30¼ square yards	=	1 square rod	sq rd
160 square rods	=	1 acre	A.
640 acres	=	1 square mile	sq mi

#### Cubic Measure

1.728 cubic inches	=	1 cubic foot	cu ft
27 cubic feet	=	1 cubic yard	cu yd
128 cubic feet	=	1 cord	cd
24½ cubic feet	=	1 perch	P

#### Measures of Angles or Area

60 seconds	=	1 minute	
60 minutes	=	1 degree	
90 degrees	=	1 rt. angle or quadrant	
360 degrees	=	1 circle	cir
360 degrees	=	2 pi radians	

#### Avoirdupois Weight

537.5 grains (gr)	=	1 ounce	oz
16 ounces	=	1 pound	lb
100 pounds	=	1 hundredweight	cwt
20 cwt., or 2,000 lbs.	=	1 ton	T

#### Long Ton Table

16 ounces	=	1 pound	lb
112 pounds	=	1 hundredweight	cwt
20 cwt., or 2,240 lbs.	=	1 ton	T

#### Troy Weight

24 grains (gr.)	=	1 pennyweight	
pwt.			
20 pennyweights	=	1 ounce	oz.
12 ounces	=	1 pound	lb.

#### Dry Measure

2 pints (pt.)	=	1 quart	qt.
8 quarts	=	1 peck	pk.
4 pecks	=	1 bushel	bu.

#### Liquid Measure

4 gills (gi.)	=	1 pint	pt
2 pints	=	1 quart	qt.
4 quarts	=	1 gallon	gal.
31½ gallons	=	1 barrel	bbl.
2 barrels, or 63 gallons	=	1 hogshead	hhd.
42 gallons	=	1 barrel	bbl.

1 hhd. = 2 bbl. = 63 gal. = 252 qt. = 504 pt. = 2,016 gi.

The U. S. gallon contains 231 cu. in. = .134 cu. ft. nearly; or 1 cu. ft. contains 7.480 gal. The following cylinders contain the given measures very closely.

	Diameter (in)	Height (in)
Gill	1¾	3
Pint	3½	3
Quart	3½	6
Gallon	7	14
8 gallons	14	12
10 gallons	14	15

With water at its maximum density (weighing 62.425 lb per cu ft), a gallon of pure water weighs 8.345 lbs.

For approximations, 1 cu ft of water is considered equal to 7½ gal, and 1 gal as weighing 8⅓ lbs.

#### Miscellaneous Table

12 articles	=	1 dozen
12 dozen	=	1 gross
12 gross	=	1 great gross
2 articles	=	1 pair
20 articles	=	1 score
24 sheets	=	1 quire
20 quires	=	1 ream
1 league	=	3 miles
1 fathom	=	6 feet
1 hand	=	4 inches
1 palm	=	3 inches
1 span	=	9 inches

# Metric and English Measures

## Measures of Length

Metric	English
1.0 meter	= 39.37 inches
1.0 meter	= 3.28 feet
0.3048 meter	= 1 foot
1.0 centimeter	= 0.3937 inch
2.54 centimeters	= 1.0 inch
1.0 millimeter	= 0.03937 inch (~1/25")
25.4 millimeters	= 1.0 inch
1.0 kilometer	= 1093.61 yards

## Measures of Volume

Metric	English
1.0 cubic meter	= 35.314 cubic feet
0.02832 cubic meter	= 1.0 cubic feet
10. cubic decimeter	= 61.023 cubic inches
1.0 cubic decimeter	= 0.0353 cubic foot
28.32 cubic decimeter	= 1.0 cubic foot
16.387 cubic decimeter	= 1.0 cubic inch
1.0 cubic centimeter	= 0.061 cubic inch

## Measures of Surface

Metric	English
1.0 square meter	= 10.764 square feet
0.0929 square meter	= 1 square foot
1.0 square centimeter	= 0.155 square inch
6.452 square centimeters	= 1.0 square inch
1.0 square millimeter	= 0.00155 square inch
645.2 square millimeters	= .0 square inch

## Measures of Weight

Metric	English
28.35 grams	= 1.0 ounce avoirdupois
1.0 kilogram	= 2.2046 pounds
0.4536 kilogram	= 1.0 pound
1.0 metric ton (1000 kg)	= 0.9842 ton of 2240 lbs
1.0 metric ton (1000 kg)	= 19.68 cwt, or 2204.6 lbs
1016 kilograms	= 1 ton or 2240 pounds (1.016 metric tons)

## Measures of Capacity

1 liter = 1 cubic decimeter	= 61.023 cubic inches
1 liter = 1 cubic decimeter	= 0.0353 cubic foot
1 liter = 1 cubic decimeter	= 0.2202 gallon - Imperial
1 liter = 1 cubic decimeter	= 2.202 pounds of water at 62.0 °F
28.317 liters	= 1 cubic foot (6.25 Imperial gallons)

4.543 liters	= 1 gallon - Imperial
3.785 liters	= 1 gallon - American

## Miscellaneous

Metric	English
1.0 gram per square millimeter	= 1.422 Pounds per square inch
1.0 kilograms per square millimeter	= 1422.32 Pounds per square inch
1.0 kilogram per square centimeter	= 14.233 Pounds per square inch
1.0335 kilogram per square centimeter	= 14.7 Pounds per square inch
1.0 atmosphere	= 14.7 Pounds per square inch
0.070308 kilogram per square centimeter	= 1.0 Pound per square inch

## Weight of One Cubic Foot of Pure Water

At 32.0 °F (freezing point)	62.418 lbs.
At 39.1 °F (maximum density)	62.425 lbs.
At 62.0 °F (standard temperature)	62.355 lbs.
At 212.0 °F (boiling point, under 1 atmosphere)	59.76 lbs.
Imperial gallon =	277.274 cubic inches
of water at 62.0 °F =	10 lbs.
American gallon =	231 cubic inches of water
at 62 °F =	8.3356 lbs.

## General Data

1 Calorie	= 3.968 Btu
1 Btu	= 0.252 Calorie
1 lb per sq. in2	= 703.08 kilograms / m <sup>2</sup>
1 Kilogram per m2	= .00142 lb per sq in
1 Calorie per m2	= .3687 Btu per sq ft
1 Btu per sq ft	= 2.712 calories per m <sup>2</sup>
1 Calorie per m2 per degree difference Cent.	= .2048 Btu per sq ft per degree difference Fahr
1 Btu per sq ft. per degree difference Fahr.	= 4.882 Calories per m <sup>2</sup> per degree difference Cent.
1 Btu per lb	= 0.556 Calorie per kilog.
1 Calorie per kilog	= 1.8 Btu per lb.
Water expands in bulk from 40 °F to 212 °F	= One twenty-third

A cubic inch of water evaporated under ordinary atmospheric pressure is converted into 1 cubic foot of steam (approximately).

## Metric and English Measures

### Measure of Pressure and Weight

1 lb. per square inch	=	144 lbs. per square foot
1 lb. per square inch	=	2.0355 inches of mercury at 32.0 °F
1 lb. per square inch	=	2.0416 inches of mercury at 62.0 °F
1 lb. per square inch	=	2.309 ft. of water at 62.0 °F
1 lb. per square inch	=	27.71 inches of water at 62.0 °F
1 Atmosphere (14.7 lbs. per sq in.)	=	2116.3 lbs. per square foot
1 Atmosphere (14.7 lbs per sq in.)	=	33.947 ft. of water at 62.0 °F
1 Atmosphere (14.7 lbs per sq in.)	=	30 inches of mercury at 62.0 °F
1 Atmosphere (14.7 lbs per sq in.)	=	29.929 inches of mercury at 32.0 °F
1 Atmosphere (14.7 lbs per sq in.)	=	760 millimeters of mercury at 32.0 °F
1 Foot of Water at 62.0 °F	=	0.433 lb. per square inch
1 Foot of Water at 62.0 °F	=	62.355 lbs. per square foot
1 Inch of Mercury at 62.0 °F	=	491 lbs. or 7.86 oz. per sq. in.
1 Inch of Mercury at 62.0 °F	=	1.132 ft. of water at 62.0 °F
1 Inch of Mercury at 62.0 °F	=	13.58 inches of water at 62.0 °F

# Appendix I

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# Appendix J

## Contributing Authorities

Editor	I. D. Jacobson
Water Supply and Plumbing Fixtures	James T. McNeive <i>Chief Plumbing Inspector</i> <i>St. Louis, MO</i>
Drainage and Waste Systems	James E. Lewis <i>Chief Plumbing Inspector</i> <i>Beloit, WI</i>
Tools of the Trade	Tom Devereaux <i>Plumbing Supervisor</i> <i>Minneapolis, MN</i>
Chemistry of Plumbing	Stan Groenier <i>Wisconsin State Bd. of Health</i> <i>Madison, WI</i>
Plumbing Specialties and Parts	Bob Lebowitz <i>Vice President, ASSE</i> <i>Lawrence, MA</i>
Abbreviations	George Smart <i>Chief Plumbing Inspector</i> <i>Montgomery, AL</i>
Technical Consultant	E.J. Zimmer <i>Director, Plumbing Testing Lab.</i> <i>Chicago, IL</i>
Technical Consultant	Morris Weinberg <i>Plumbing Engineer</i> <i>Philadelphia, PA</i>
Technical Consultant	Dominic Soffietto <i>Secretary, Joint Apprentice and</i> <i>Training Committee</i> <i>Burbank, CA</i>
Technical Consultant	William Koenig <i>Past President, ASSE</i>
Lexicographer and Researcher	Amy L. Jacobson, B.A., M.A. <i>American University</i> <i>Washington, DC</i>
Cross References and Consulting	Amy Ruth Isaacs, B.S., M.S. in L.S. <i>School of Library Science</i> <i>Case Western Reserve University</i> <i>Cleveland, OH</i>
Librarian	George Macy <i>Former Chief Plumbing Inspector</i> <i>Cudahy, WI</i>
Critical Assistance	Frances Knerem <i>Madison, OH</i>
Associate Librarian	

# Appendix K

## Industry Associations and Government Agencies

ABPA	American Backflow Prevention Association <a href="http://www.abpa.org">www.abpa.org</a>
AGA	American Gas Association <a href="http://www.aga.org">www.aga.org</a>
ANSI	American National Standards Institute <a href="http://www.ansi.org">www.ansi.org</a>
ASCE	American Society of Civil Engineers <a href="http://www.asce.org">www.asce.org</a>
ASHRAE	American Society of Heating, Refrigerating and Air-conditioning Engineers, Inc. <a href="http://www.ashrae.org">www.ashrae.org</a>
ASME	American Society of Mechanical Engineers <a href="http://www.asme.org">www.asme.org</a>
ASPE	American Society of Plumbing Engineers <a href="http://www.aspe.org">www.aspe.org</a>
ASSE	ASSE International <a href="http://www.asse-plumbing.org">www.asse-plumbing.org</a>
ASTM	American Society for Testing and Materials <a href="http://www.astm.org">www.astm.org</a>
ASA	American Supply Association <a href="http://www.asa.net">www.asa.net</a>
AWWA	American Water Works Association <a href="http://www.awwa.org">www.awwa.org</a>
AWS	American Welding Society <a href="http://www.aws.org">www.aws.org</a>
AHAM	Association of Home Appliance Manufacturers <a href="http://www.aham.org">www.aham.org</a>
CISPI	Cast Iron Soil Pipe Institute <a href="http://www.cispi.org">www.cispi.org</a>
CDA	Copper Development Association, Inc. <a href="http://www.copper.org">www.copper.org</a>
CGA	Compressed Gas Association <a href="http://www.cganet.com">www.cganet.com</a>
CSA	CSA International <a href="http://www.csa-international.org">www.csa-international.org</a>
EPA	Environmental Protection Agency <a href="http://www.epa.gov">www.epa.gov</a>

<b>FDA</b>	Food & Drug Administration <a href="http://www.fda.gov">www.fda.gov</a>
<b>IAPMO</b>	International Association of Plumbing & Mechanical Officials <a href="http://www.iapmo.org">www.iapmo.org</a>
<b>ICC</b>	International Code Council <a href="http://www.iccsafe.org">www.iccsafe.org</a>
<b>ISEA</b>	International Safety Equipment Association <a href="http://www.safetyequipment.org">www.safetyequipment.org</a>
<b>ISH-NA</b>	ISH-North America <a href="http://www.ish-na.com">www.ish-na.com</a>
<b>MSS</b>	Manufacturers Standardization Society <a href="http://www.mss-hq.com">www.mss-hq.com</a>
<b>MCAA</b>	Mechanical Contractors Association of America, Inc. <a href="http://www.mcaa.org">www.mcaa.org</a>
<b>NACE</b>	National Association of Corrosion Engineers <a href="http://www.nace.org">www.nace.org</a>
<b>NFPA</b>	National Fire Protection Association <a href="http://www.nfpa.org">www.nfpa.org</a>
<b>NFSA</b>	National Fire Sprinkler Association <a href="http://www.nfsa.org">www.nfsa.org</a>
<b>NIST</b>	National Institute of Standards and Technology <a href="http://www.nist.gov">www.nist.gov</a>
<b>NITC</b>	National Inspection, Testing and Certification <a href="http://www.nationalitc.com">www.nationalitc.com</a>
<b>NSF</b>	NSF International <a href="http://www.nsf.org">www.nsf.org</a>
<b>PCA</b>	Plumbing Contractors of America <a href="http://www.mcaa.org/pca">www.mcaa.org/pca</a>
<b>PDI</b>	Plumbing & Drainage Institute <a href="http://www.pdionline.org">www.pdionline.org</a>
<b>PHCC</b>	Plumbing, Heating, Cooling Contractors <a href="http://www.phccweb.org">www.phccweb.org</a>
<b>PMI</b>	Plumbing Manufacturers Institute <a href="http://www.pmihome.org">www.pmihome.org</a>
<b>PPFA</b>	Plastic Pipe and Fittings Association <a href="http://www.ppfahome.org">www.ppfahome.org</a>
<b>PPI</b>	Plastics Pipe Institute <a href="http://www.plasticpipe.org">www.plasticpipe.org</a>



<b>UA</b>	United Association of Journeymen & Apprentices of the Plumbing & Pipe Fitting Industry of the United States & Canada <a href="http://www.ua.org">www.ua.org</a>
<b>UAC</b>	Union Affiliated Contractors <a href="http://www.naphcc.org">www.naphcc.org</a>
<b>UL</b>	Underwriters Laboratory <a href="http://www.ul.com">www.ul.com</a>
<b>USC-FCCC&amp;HR</b>	University of Southern California Foundation for Cross Connection Control & Hydraulic Research <a href="http://www.usc.edu/fccchr">www.usc.edu/fccchr</a>
<b>WQA</b>	Water Quality Association <a href="http://www.wqa.org">www.wqa.org</a>
<b>WPC</b>	World Plumbing Council <a href="http://www.worldplumbing.org">www.worldplumbing.org</a>

# ASSE International

18927 Hickory Creek Drive, Suite 220  
Mokena, Illinois 60448  
(708) 995-3019

[www.asse-plumbing.org](http://www.asse-plumbing.org)  
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