

MATERIAL HANDLING

A. GENERAL

1. Material Safety Data Sheets (MSDS) must be obtained for any chemical used within the warehouse or field area. These sheets should be available from the chemical supplier. They must be kept in a well-marked location in the warehouse or office.
2. Avoid breathing dust, vapors or fumes. Stay upwind of escaping dust vapors or fumes and/or wear appropriate equipment.
3. Protective equipment must be worn when handling toxic chemicals or volatile products, which could cause severe burns. If these products come in contact with the skin, wash the affected area at once with water. Consult the MSDS for other first aid treatment. Seek medical attention, if necessary.
4. An employee exposed to acids, chemical inhibitors, ammonia, caustic soda, tetraethyl lead, hydrogen sulfide (H₂S), aluminum chloride, or other toxic substances, gas, or vapor should report the incident to the supervisor as soon as possible.
5. Toxic chemicals and other waste materials must be disposed of in an approved manner and in compliance with Eagle Industrial Instrumentation policies as well as all government rules and regulations.
6. All chemicals containers must be kept sealed and must be plainly marked. Empty containers must be disposed of in a manner that will not create a hazard. Corroded barrels shall be disposed of to prevent accidental spillage. Do not pressurize, cut, heat, weld, or expose empty containers to flame unless they have been thoroughly cleaned by a method approved by the supplier.
7. If a soil area is contaminated with acid or caustic, the soil shall be neutralized or removed and replaced.
8. Any area where large quantities and/or frequent usage of toxic chemicals are undertaken must be posted with warning signs identifying the chemicals and their use.
9. The MSDS shall be consulted for appropriate first aid procedures for emergency treatment of chemical injuries. Further treatment of chemical injuries and illnesses shall be left entirely to a physician.
10. Employees must not siphon fluids by mouth.
11. Employees involved in operations that required the handling of chemicals must know where safety showers and eyewash stations are located and how they are to be used.

B. HAND

1. Use gloves designed for the job whenever cuts, splinters or burrs are possible, or when handling chemicals or hot items.
2. Lift with the legs; keep back straight. Know the weight of any object to be handled.
3. If weight is excessive, get help.

C. MECHANICAL HANDLING

1. Know the weight of the object to be handled.
2. Know the capacity of the handling device (crane, forklift, chain fall, come-along) that you intend to use. Operator must not exceed capacity ratings.
3. Capacity charts or signs shall be placed in clear view of operator.
4. You must be properly trained in the use of the equipment.
5. Use tag lines to control loads.
6. Get rigging instructions from your supervisor before beginning.

D. MATERIAL PREPARATION

1. Clean up ragged metal edges.
2. Pull all protruding nails and wires or bend them flush.
3. Set on dunnage (2 x 4's or 4 x 4's) for ease of handling.

E. STABILITY CONTROL –EMPLOYEES, MATERIALS, AND EQUIPMENT

You must ensure that each person, the material, and the equipment are safe from such unexpected movement as falling, slipping, rolling, tipping, or any other uncontrolled motion.

1. Use safety harness as required.
2. Protect the area below you.
3. Salt or sand icy walk areas immediately.
4. Put absorbent pads on all grease and oil spills immediately, then clean up.
5. Check all material and equipment (such as pipe, drums, tanks, reels, trailers, and wagons) as necessary to prevent rolling.
6. Tie down all light, large-surface-area material that might be moved by the wind.
7. When working at heights, secure all tools, and equipment against falling.
8. Do not store materials or tools on grids, ducts, lighting fixtures, beam flanges, or similar elevated locations.

F. MISCELLANEOUS TOOLS AND EQUIPMENT

Hooks, Shackles, Beam Clamps, and Chokers

1. Only ONE eye in a hook. Use a shackle to hold two or more eyes.
2. All hooks must have a safety latch.
3. Always place a load in the center of a hook and never on the point.
4. Get approval from your supervisor before rigging from any structural member to ensure that it will support the load being raised.
5. Never use plate grips, tongs, pipe clamps, etc. as substitutes for beam clamps.
6. Hooks, shackles, and beam clamps shall be inspected before use. Do not exceed the capacity marked on the equipment.

G. RIGGING

1. Know the proper use of chain falls, come-alongs, chain binders, chokers, shackles, and clamps.
2. Never raise a load over people.
3. Use tag lines to control the load.
4. Know the capacities of rigging equipment and weights of loads.

H. CHAIN FALLS AND HOISTS

1. A chain hoist must be used within its rated capacity. Chain hoists are designed so that one person can operate the hand chain to lift the maximum load for the chain hoist.
2. Do not leave an unsecured and unattended load hanging on a hoist or a chain fall.
3. Do not stand or have any part of the body below a load suspended on a chain hoist.
4. Do not wrap the load chain around the load to be lifted.
5. Every chain hoist shall be inspected before making a lift. Your visual check shall include the hooks for any irregularities, the chain for wear or damage, and the housing and sheaves for any signs of unusual wear or damage from abusive treatment.

I. ROPE

1. Wire: Inspect for frays, kinks, broken wires, and worn spots before using.
2. Fiber: Inspect for excessive broken fibers, wear, and deteriorated inner and outer strands before using.

J. MOBILE EQUIPMENT

1. You will be provided with equipment that is safe to use.
2. You will be responsible for inspecting your equipment before each work shift.
3. If the equipment becomes defective in any way, notify your supervisor at once and place a DEFECTIVE – DO NOT USE tag on it.
4. Know the limitations and specifications of the equipment you use. Do not exceed those limits.
5. Do not use the equipment for other than its intended purpose.
6. No work must be done on equipment, belts, drives, conveyors, or vehicles while they are in operation unless approved by project management. They must be shut down, locked and tagged, or otherwise immobilized.
7. All material handling machines must have backup alarms, horns, rollover protection structures and seat belts (when provided by manufacturer).
8. The operator shall be licensed/trained to operate each make and model machine.

K. MOTOR VEHICLES AND POWER EQUIPMENT

1. Vehicles and mobile equipment are to be operated by authorized personnel only.
2. The driver is responsible for the safety of all passengers and the stability of materials being hauled.
3. Wear seat belts.
4. Obey all speed limit and other regulatory signs. Give pedestrians the right-of-way.
5. Look to the rear and sound your horn before backing.
6. Shut off the motor to refuel.
7. Shut off the motor and set the brakes before leaving the vehicle.
8. Inspect the vehicle each day before use.
9. Mount or dismount only when the vehicle is stopped.
10. Keep arms, feet, and bodies inside. All personnel must be seated.
11. Personnel may not ride in the bed of any vehicle that is hauling equipment or material unless approved by the supervisor, and then only after supervisor checks the stability of the equipment or material.
12. A flagman should direct the backing of the vehicle in congested areas.
13. Personnel may not ride in the bed of a dump vehicle, unless approved by the supervisor, and then only after the bed is secured to the chassis frame to prevent accidental dumping.
14. No more than three persons may ride on the front seat of any vehicle.
15. Truck drivers must dismount and remain clear of the cab while the truck is being loaded by power equipment.

L. FORKLIFT SAFETY

1. General:
 - a. Safety is an important consideration in the daily operation of a forklift truck. By observing published guidelines, employees will be able to perform their work efficiently and safely.
 - b. As a forklift driver, employees should operate the forklift as if it were their own. Safe transport of cargo and ensuring the safety of fellow employees is the driver's responsibility.
 - c. The operator's manual is designed to help employees operate the forklift efficiently, effectively and safely. The procedures listed are general in nature and applied according to work conditions and job type.
 - d. If you are uncertain about operating procedures for a particular work condition, check with your supervisor.
 - e. Refer to the safe operating procedures frequently. Remember, these guidelines have been published to ensure safe execution of job tasks.

2. Supervisor responsibilities:
 - a. First line supervisors are the backbone of the organization. Their role in leadership, training and developing safe work procedures is extremely important.
 - b. KNOW THE EMPLOYEES – THEIR CAPABILITIES AND LIMITATIONS: One of the key criteria for a successful first line supervisor is knowing job requirements and matching each job with a properly trained, experienced forklift operator. Supervisors must know the capabilities and limitations of each employee. The supervisor must also know the equipment, how it works, why it works, and the proper methods for using the equipment in a safe and efficient manner.
 - c. ORGANIZE FOR EFFICIENCY AND SAFETY: First line supervisors must be able to organize, plan, schedule, assign, and control the resources available in their departments.
 - d. THE SUPERVISOR IS THE MOST IMPORTANT ELEMENT IN ESTABLISHING AND MAINTAINING A SUCCESSFUL FORKLIFT SAFETY PROGRAM: A properly trained and supervised forklift operator is less likely to have an accident.
 - e. THE SUPERVISOR LEADS THE SAFETY PROGRAM BY:
 - ≡ Analyzing forklift operations, identifying best practices/methods and selecting the most qualified operator.
 - ≡ Teaching the safest way to perform the forklift operation.
 - ≡ Knowing and enforcing the rules.
 - ≡ Inspecting for hazards and correcting unsafe conditions.

3. OPERATOR RESPONSIBILITIES:
 - a. Employees assigned to operate forklift equipment must be properly trained.
 - b. The forklift operator must become familiar with the equipment, engineering principles, safe operating rules, material handling procedures, routine maintenance procedures and any specialized requirements necessary for the safe and efficient operation of forklift equipment.
 - c. TRAINING: Proper training and supervision result in improved efficiency and safe operation of equipment by employees. OSHA mandates that forklift operators be trained and certified to operate this equipment. This is a MINIMUM requirement. Companies train and certify forklift operators because it produces professional, safe, efficient and productive employees.
 - d. RESPONSIBILITY: Forklift operators shall assume responsibility for the implementation of the Forklift Operator Safety Program. The forklift operator's attitude and training are extremely important and will create a positive attitude toward Eagle Industrial Instrumentation safety and job performance.

Forklift safety requires everyone – management, supervisors, material handlers and anyone working around forklift equipment to be personally responsible. Safety and efficiency are a team effort.

4. OPERATIONS:
 - a. There are a variety of OSHA requirements governing forklift operations. The following list has been developed under the guidance of The Technical Information Development Branch, National Institute for Occupational Safety and Health (NIOSH).
 - b. The explicit purpose of forklift safety is to eliminate:
 - ≡ Accidents and injuries
 - ≡ Property damage
 - ≡ Equipment abuses and damage
 - c. Forklift training shall be documented and kept on file. The forklift operator must sign an acknowledgment statement indicating completion of this training.
5. SAFE OPERATING RULES:
 - a. Only drivers trained in the safe operation of forklifts will be permitted to operate such vehicles.
 - b. Drivers will check the vehicle at least once per shift. Any unsafe condition shall be reported to a supervisor, foreman or mechanic, and the vehicle will be “tagged out of service” until corrective actions have been completed. Attention will be given to the condition of tires, operation of horn, lights, battery, brakes, steering

- mechanism, and the lift system (forks, chains, cable and limit switches).
- c. All yard policies and traffic regulations will be observed. Forklifts will not exceed posted speed limits, always maintains a safe distance from other vehicles and will be kept under positive control at all times.
 - d. **NO RIDERS WILL BE PERMITTED ON FORKLIFTS.** Employees will not be allowed to ride or be elevated without the use of a safety platform. A safety platform is defined as:
 - ≡ Having 42" high guard rails around all sides.
 - ≡ Having a mid-rail between the guardrails and platform.
 - ≡ Having 4" high toe boards around the platform.
 - ≡ Having chain, or other devices, securing the platform to the mast of the forklift.
 - ≡ Having a guard 7' high to protect personnel from the mast and backrest.
 - e. Employees will not place any part of their bodies outside the running lines of a forklift, between mast uprights or other parts of the forklift where shear or crushing hazards exist.
 - f. The engine must remain running and the operator at the controls, when a person is elevated in a safe platform. In case of hydraulic failure, the running pumps will afford some degree of protection in lowering the person safely to floor level.
 - g. When leaving a vehicle unattended, the engine will be shut off, brakes set, the mast brought to a vertical position, the forks lowered to ground level and the load-engaging mechanism left in the down position. When left on an incline, the wheels will be chocked.
 - h. Trucks will not be loaded in excess of their rated capacity.
 - i. A loaded forklift will not be moved until the load is safe and secure.
 - j. When traveling without a load, the forks will always be positioned, usually 6" – 12" off the floor.
 - k. Extreme care will be taken when tilting loads. Loads may shift and the forklift easily turned over.
 - l. The driver will slow down and sound the horn at cross aisles and other locations where vision is obstructed. If the load being carried obstructs forward view, the driver shall seek assistance from fellow employees.
 - m. Grades will be ascended or descended slowly.
 - n. No truck will be operated with a leak in the fuel, oil and/or hydraulic systems.
 - o. Stunt driving and horseplay are prohibited.
 - p. Spinner knobs or similar devices on the steering wheels are prohibited.

- q. Spinning tires, or causing tire skids on floors is prohibited. When changing directions, the forklift must be braked to a stop and gears changed before proceeding.
 - r. Every accident, injury, near miss or unsafe condition shall be reported immediately to your supervisor. Obey all safety rules and practices when operating forklifts.
6. OPERATOR MAINTENANCE:
- a. Operator maintenance will improve safety, increase productivity and cut maintenance costs.
 - b. Operators will be trained to perform routine forklift maintenance procedures.
 - c. The majority of operator maintenance programs are ineffective because supervisors do not follow up or control the program. It is not enough to train operators, follow up supervision is equally if not more important. Listed below are the items that should be inspected by operators before starting up a forklift. Noted deficiencies must be reported to the supervisor for correction.
7. CRITICAL MAINTENANCE ITEMS:
- a. Critical items are those that must be in good working order before the forklift can be safely operated. If any of these items are deficient, the forklift cannot be operated until the repairs have been made:
 - ≡ Brakes – Check the brakes to make sure they stop the forklift as intended. If the brake pedal has to be moved more than 2” before the brakes engage, the brakes need adjusting. If the brakes are defective, do not operate the forklift until repairs have been made.
 - ≡ Parking Brake – Engage the parking brake. Start the engine, move the accelerator forward while the forklift is in a forward gear. If the brake holds, then it is in good working order. If it doesn’t hold, don’t operate the forklift until it has been repaired.
 - ≡ Steering – Inspect the steering by turning the steering wheel and observing the tires. If there is play in the wheel (steering wheel turns a short distance before the tires start to turn) the steering could be defective. A mechanic or supervisor should inspect the forklift before it is operated.
 - ≡ Horn – If the horn doesn’t work, the forklift is unsafe to operate. Have it repaired.
 - ≡ Leaks – Inspect the fuel lines, hydraulic hoses and other parts of the forklift for leaks. Do not operate a forklift that has a leak in the fuel, oil, hydraulic or transmission systems.
 - b. Electric over hydraulic forklifts have a few more safety features considered critical safety items.

- c. The priority maintenance items are considered critical in determining the safe operating condition of forklift equipment. A deficiency in any of the mentioned categories requires the forklift be taken “out of service” until repaired.

NOTE: Eagle Industrial Instrumentation may include other items as critical, however, these items are minimum requirements.

- d. To place a forklift “out of service”, place a tag on the steering wheel and remove the key. Make sure the forklift is not creating a hazard. Park it away from aisles or other walkways and check for the following:
 - ≡ Mast is in vertical position.
 - ≡ Forks are lowered to ground level.
 - ≡ Parking brake engaged.
 - ≡ Engine is off and key removed.

M. CRANES

1. All crane operators must be licensed for each make and model crane operated.
2. The operator must inspect his/her assigned machine before each work shift.
3. The operator is solely responsible for the safe operation of his/her assigned machine.
4. The operator has full responsibility for the safety of a lift and may not make a lift until all unsafe conditions have been corrected.
5. A copy of the Manufacturer’s Operator’s Manual must be located on the project site. This manual shall be reviewed and understood by the operator before operating the crane.
6. The crane operator must understand and be able to determine the crane’s hoisting capacity at various boom angles.
7. The swing radius of the counterweight must be barricaded and cleared of all obstructions at all times.
8. The load shall not be swung over personnel and no individuals shall purposely position themselves under a load.
9. Crane outriggers must be leveled and fully extended when making a lift.
10. No part of the crane, load, hoist (load and boom) lines, boom and tag line shall come within 10’ of energized electrical lines 50KV or less. For each 1KV over 50KV, 4” must be added to the original 10’.
11. For pick and carry operations, consult the manufacturer’s operator manual and operating notes.

N. HELICOPTER OPERATIONS

1. Never board, depart or approach aircraft until signaled to do so.
2. Always approach helicopters from the front to avoid being struck by the tail rotor.
3. On fixed wing aircraft, always remain to the rear of the wing struts until the propeller(s) stop(s).
4. No running to or from the aircraft is allowed, nor is any type of horseplay.
5. Particular attention shall be given to carried objects around helicopters, taking care that they are not drawn or put into the path of moving rotor blade(s). All items over 4' must be carried horizontally.
6. Life vests are required to be worn in helicopters over water.
7. Smoking is not normally permitted in helicopters.

O. HAND AND PORTABLE POWER TOOLS

Hand and power tools cause many compensable injuries. Defective and misused tools cause loss of sight, puncture wounds, severed fingers, tendons and arteries, broken bones, contusions, infection, and the list goes on.

Most of these injuries can be avoided by following safe practices. A good safety program should include the following:

1. Employees should be trained in the proper method of handling the tool and/or tools to be used.
2. Each tool should be inspected on a regular basis and be repaired if necessary.
3. Establish a procedure for tool control, such as a check out system.
4. Provide proper storage facilities in the tool room and on the job.

The following general precautions should be observed by power tool users:

1. Never carry a tool by the cord.
2. Never yank the cord to disconnect from the receptacle.
3. Keep cords away from heat, oil and sharp objects.
4. Disconnect tools when not in use, before servicing, and when changing accessories such as blades, bits, grinding wheels, etc.
5. The proper type of work clothes shall be worn. Loose clothes, ties, or jewelry can become caught in moving parts.
6. Electric tools shall not have their triggers locked in the ON position.
7. Never stand in water while using an electric tool.
8. Electric tools must either have a three (3) wire cord with ground or be double insulated. Double insulation is more convenient. The user and the tools are protected in two (2) ways:
 - ≅ by normal insulation on the wires inside; and
 - ≅ by a housing that cannot conduct electricity to the operator.
9. Keep all tools in good condition. Never abuse tools.
10. If guards are removed for any reason, replace them prior to working.

P. HOISTS AND DERRICKS

1. Have static and performance tests been made for hoisting equipment?
2. Have derrick operators had an examination within one year to determine their physical fitness to safely operate equipment?
3. Are drums on derrick equipped with proper dogs, pawls, or otherwise positive locking devices?
4. Is braking equipment capable of effectively braking, lowering and safely holding at least the full rated load?
5. Is safe load capacity chart provided for hoisting equipment?
6. Is safe load for maximum and minimum positions of the boom and for at least two intermediate stations posted?
7. Is sufficient cable on drums of hoisting equipment to insure two full wraps at all times of operations?
8. Are "D" handles provided on block of derrick?
9. Are chains, slings, shackles, sheaves, and hooks in good operating condition?
10. Is adequate lighting in good operating condition provided for night operations?
11. If hoisting engine is gas driven, is it supplied with backfire trap or flame arrestor?
12. Are screened drip pans, emptied by suction, provided on updraft carburetors?
13. Are exhaust pipes or other hot lines which may be subject to contact by persons or which create a fire hazard suitably guarded or insulated?
14. Are stumbling hazards painted yellow or yellow trimmed?
15. Are anchor barge hoist booms provided with keeper cables?

Q. SPRAY PAINTING OPERATIONS (OUTSIDE)

1. Each person painting shall be familiar with the equipment and the safe operation of that equipment.
2. The proper personal protection equipment shall be worn during a spray painting operation.
3. Respiratory protective equipment, safety goggles and proper clothing that covers the skin areas shall be worn during spray painting operations.
4. It is advisable that WORK PERMITS be issued before spray-painting operations begin.
5. Paints and solvents shall be properly stored to prevent a fire hazard.
6. A proper amount of fire extinguishers shall be available in the event of a fire.

R. SAFE ATTITUDE SANDBLASTING

1. While sandblasting operations are being performed, all personnel must wear approved abrasive-blasting respirators and personal protective equipment.
2. Personnel working in the general area of sandblasting operations must wear dust respirators and other personal protective equipment.
3. Approved first aid and fire equipment must be on hand and crews must be familiar with the proper use of this equipment.
4. Do not sandblast steel surfaces in the vicinity of flammable or explosive mixtures without proper procedures to eliminate the buildup of static electricity.
5. Shut down and adequately protect equipment in the vicinity of sandblasting operations, whenever possible.
6. Buildings, equipment, electrical fixtures, and wiring shall be adequately protected before sandblasting begins.
7. All sandblasting equipment must be inspected and properly assembled, have approved safety devices and gauges, and be properly used.
8. Sandblast hoses must be of the static-dissipating type. Both the couplings and the nozzle holder shall have no leaks. The sandblast nozzle must be equipped with a dead man operating valve. The manual control must not be tied down or secured in any way that could prevent automatic cutoff.
9. The air compressor, hose nozzle, sand hopper and the surface to be blasted must be properly grounded.
10. The air compressor must be operated below 220°F and be equipped with spark arrestors.
11. Blast hoods shall always be OSHA approved, air fed, hard hats that give maximum protection from silica dust and paint particles. NO EXCEPTIONS – fasten cap properly and always wear inner lens. Any person in area not blasting shall always wear approved type dust filter respirator for their protection, with approved eye protection.

S. FORKLIFTS AND PALLET STORAGE

1. General Requirements
 - a. The operator must be fully qualified and become thoroughly familiar with the forklift before using it and must read the operator's manual carefully.
 - b. Forklifts shall be visually inspected daily for conditions adversely affecting the safety of the vehicle. If the forklift is used around the clock, it shall be inspected after each use.
 - c. Each forklift shall carry a nameplate showing its weight and rated capacity.
 - d. Each forklift shall have a horn or other warning device loud enough to be heard above other local noise. This horn shall be sounded when leaving or entering a building or when approaching

blind corners. Forklifts shall be equipped with a back up warning signal.

2. Loading

- a. Never overload the forklift.
- b. Material must be piled securely on the pallet at all times. Round objects such as drums must be blocked or secured so they cannot roll.
- c. A red flag must be placed on material that projects over the side of the pallet.
- d. Before lifting, be sure that the load is stable and properly balanced.

3. Unloading

- a. Always lower the load slowly; a sudden stop may cause the forklift to tilt forward.
- b. Be sure stacked materials are not top heavy. When placing or picking up pallets, do not unbalance the stack.
- c. Never stack material in roadways or aisles.
- d. Employees other than the operator must stand clear of the forklift while it is being used to stack or remove material.
- e. Do not pile material too high for safe lifting and handling.

4. Operation

- a. The operator must not permit anyone to ride on any part of the forklift.
- b. Do not use gasoline or diesel powered forklifts in small buildings without proper ventilation.
- c. Park with forks under a flat pallet or bench to prevent tripping.
- d. When a forklift is left unattended, the fork shall be fully lowered, controls in neutral, power shut off and brakes set. If parked on an incline, wheels shall be locked.
- e. Never drive over objects lying on floors. Such material may cause damage to the forklift and may shift or topple the load.
- f. When driving with or without a load, keep the forks four to six inches above the ground.
- g. When following another forklift, keep at least 10' behind. Do not travel abreast of another forklift.
- h. Avoid sudden stops and starts as this may cause skidding or topple the load.
- i. If the load obstructs forward view, the operator must travel with the load trailing.
- j. Avoid carrying loose material on forks. Use pallets whenever possible.
- k. Never stand under elevated loads.
- l. Gasoline or diesel powered forklifts must be refueled outside buildings with the engine shut off and brakes set.