SAFETY DATA SHEET (SDS)

1 - IDENTIFICATION

25% Denatonium Benzoate in Ethanol

Chemical Family: Glycol, Quaternary Aromatic Amine Salt

Recommended use: Aversive Agent, Bittering Agent, Denaturant

Arcadia Corporation
2111 Albany Dr.
Franklin, TN 37067
phn: 865-719-2930
www.ArcadiaChemical.com

24 Hour HAZMAT Service Emergency Number - Contract #1099
Tel #: 1-800-373-7542 International: +1-484-951-2432

***All non-emergency questions should be directed to customer service @ (865) 719-2930 or sales@arcadiachemical.com ***

2 – HAZARDS IDENTIFICATION

Classification of Chemical:
Colorless/Pale yellow Liquid

This material is classified as hazardous under OSHA regulations (29CFR 1910.1200)(Hazcom 2012).

OSHA Hazards
Harmful if swallowed. May be harmful by inhalation. May be irritating to eyes.

Hazard classification:
Flammable Liquid – Category 2
Eye Irritation – Category 2B
Skin irritation – Category 2
Specific target organ toxicity - single exposure (Category 3)

Label elements:
Hazard pictogram:

Signal word:	Danger
Hazard statements:	
H226	Flammable liquid and vapor.
H315+H320	Causes skin and eye irritation.
H335	May cause respiratory irritation.
Precautionary statements:	
P240	Ground/bond Container and receiving equipment.
P337+ P313	If eye irritation persists: Get medical attention.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
P303+P361+P353	IF ON SKIN: Remove immediately all contaminated clothing. Rinse skin with water.
P370+P378	In case of fire: Use dry sand, dry chemical, or alcohol-resistant foam for extinction.
P210	Keep away from heat, sparks, open flames, and hot surfaces. No smoking.
P233	Keep container tightly closed.
P403+P235	Store in a well-ventilated place. Keep cool.
P243	Take precautionary measures against static discharge.
P241	Use explosion-proof electrical, ventilating, and lighting equipment.
P242	Use only non-sparking tools.
P264	Wash hands thoroughly after handling.
P280	Wear protective gloves and eye and face protection.

3 – COMPOSITION/INFORMATION ON INGREDIENTS

Chemical name	CAS #	Concentration (weight/volume)
Denatonium Benzoate	3734-33-6	25 %
Ethyl Alcohol	64-17-5	75 %

4 – FIRST AID MEASURES

Description of first aid measures:

Inhalation: Remove from exposure, get fresh air. If problems remain or occur later, get medical attention. Self-Contained Breathing Apparatus should be worn if exposed to large quantities.

*Skin Contact***:** Wash off skin thoroughly with water. Remove contaminated clothing and wash before reuse. Obtain medical attention if skin is irritated or any symptoms develop.

Eye Contact: For eye contact, flush eyes with water for 15 minutes. Get medical attention if irritation persists.

Ingestions: Wash out mouth thoroughly with water and give plenty of water to drink. DO NOT induce vomiting unless told by a medical professional. Obtain medical attention.

Symptoms and effects, both acute and delayed:

See Section 11

5 – FIRE-FIGHTING MEASURES

Extinguishing Media:

Suitable extinguishing media: Carbon dioxide, dry-chemical, water spray, or alcohol-resistant foam.

Special hazards arising from the substance: Carbon monoxide and oxides of nitrogen are expected to be the primary hazards.

Hazardous combustion products: FIRE: Nitrogen oxides, carbon monoxide, and carbon dioxide.

Unusual Fire and Explosion Hazards:
May produce a floating fire hazard.
Static ignition hazard can result from handling and use.
Vapors may travel to source of ignition and flash back.
Vapors may settle in low or confined spaces.
Alcohols burn with a pale blue flame which may be extremely hard to see under normal lighting conditions.
Personnel may only be able to feel the heat of the fire without seeing flames. Extreme caution must be exercised in fighting alcohol fires. Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Cool containers with flooding quantities of water until well after fire is out. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. Always stay away from tanks engulfed in fire.

Special protective equipment and precautions for firefighters: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes. Keep unopened containers cool by spraying with water.

6 – ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Do not inhale vapors, mist, or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.

Environmental precautions: Stop leak. Contain spill if possible and safe to do so. Prevent product from entering drains.

Methods and material for containment and cleaning up: Highly flammable liquid. Eliminate all sources of ignition. All equipment used when handling this product must be grounded. A vapor-suppressing foam may be used to reduce vapors. Do not touch or walk through spilled material. Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local/national regulations. Use clean non-sparking tools to collect absorbed material.

7 – HANDLING AND STORAGE

Precautions for safe handling: Do not get on skin or in eyes. Do not inhale vapor or mist. Keep away from sources of ignition – No smoking. Take measures to prevent the buildup of electrostatic charge. Open and handle container with care. Metal containers involved in the transfer of this material should be grounded and bonded.

Conditions for safe storage: Store in cool, dry, ventilated area away from any heat source. Storage area should be clearly identified and free of obstruction. Keep containers tightly closed and in an upright position when not in use. Consult local fire codes for additional storage information.

Section 7 notes: Change contaminated clothing. Wash hands well after working with substance.

8 – EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters, e.g., occupational exposure limit values or biological limit values:

Occupational Exposure Limits
Component Source Type Value Note
Ethyl alcohol US (OSHA) TWA 1000 ppm / 1,900 mg/m3
29 CFR 1910.1000 Table Z-1 Limits for Air
Contaminants.
Ethyl alcohol US (OSHA) IDHL 3300 ppm--None
Ethyl alcohol US (ACGIH) STEL 1000 ppm--Upper Respiratory Tract irritation. Confirmed animal carcinogen with unknown relevance to humans.

Appropriate engineering controls: General room or local exhaust ventilation is usually required to meet exposure limit(s). Electrical equipment should be grounded and conform to applicable electrical code.
Individual protection measures, such as personal protective equipment:
Respiratory protection: Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection: Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Eye protection: Use chemical safety goggles and/or a full face shield where splashing is possible. Use equipment approved by appropriate government standards, such as NIOSH (US) or EN166 (EU). Maintain eye wash fountain and quick-drench facilities in work area.

Skin and body protection: Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Hygiene measures: Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

9 – PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Liquid. Clear Colorless to pale yellow liquid/ invisible vapor
Odor: Alcohol-like
Odor threshold: No data available
pH: No data available
Freezing point: -114°C (-173 °F)
Boiling point: 78°C (173 °F)
Vapor pressure (mmHg): 44.6 @ 20°C
Vapor density: 1.6
Evaporation rate: Specific Data not available – expected to be rapid.
Flash point: 14°C; 57°F – closed cup
Upper/lower flammability limit: Lower: 3.3% (V) Upper: 19%
Solubility in water: miscible
Other solubilities: No data available
Percent volatile: No data available
Log P (octanol – water): No data available
Relative density: 0.785 g/mL @ 25 °C
Autoignition temperature: 363 °C, (685 °F)
Viscosity (cSt @ 25°C): No data available
Gibbs energy: No data available

Spectral Properties: No data available

10 – STABILITY AND REACTIVITY

Reactivity: Vapors may form explosive mixture with air.

Stability: Stable under recommended storage conditions.

Conditions to avoid: Heat, flames, sparks, extreme temperatures, and direct sunlight.

Incompatible materials: Alkali Metals, Ammonia, Oxidizing Agents, Peroxide, Strong Inorganic Acids.

Hazardous decomposition products or by-products: Carbon and Nitrogen Oxides are expected to be, under fire conditions, the primary hazardous decomposition products.

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11 – TOXICOLOGICAL INFORMATION

Signs and Symptoms of Exposure
Central nervous system depression, narcosis, damage to the heart. To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

TOXICITY DATA Denatonium Benzoate
LD50 Oral- RAT 584 MG/KG
LD50 Dermal RBT >2000 MG/KG
LD50 Oral- RBT 508 MG/KG
Acute Toxicity Ethanol:
LC50 Inhalation Rat 20000 ppm 10 hrs.
LC50 Oral Rat 7060mg/Kg BWT
LDLo Oral Human 1400 mg/Kg BWT

Irritation:
Eyes (ETHANOL)
Eye exposure to Ethanol generally causes transient pain, irritation, and reflex lid closure. A foreign-body sensation may persist for one to two days. Vapors produce transient stinging and tearing, but no apparent adverse effects. Standard Draize eye test (rabbit) - Dose: 500 mg Reaction: Severe Dose: 500 mg/24 hrs Reaction: Mild

Respiratory or Skin Sensitization
No data available.

Skin
Standard Draize skin test (rabbit) - Dose: 20 mg/24 hrs Reaction: Moderate repeated exposure may cause skin dryness or cracking.

Reproductive Toxicity
Reproductive toxicity - Human - female - Oral. Effects on Newborns - measured low apgar scores and showed signs of alcohol dependence.

Specific target organ toxicity - single exposure (Globally Harmonized System)
Inhalation - May cause respiratory irritation. - Lungs

Carcinogenicity
IARC: Not classifiable as a human carcinogen.
ACGIH: Not classifiable as a human carcinogen.
NTP: Not classifiable as a human carcinogen.
OSHA: Not classifiable as a human carcinogen.
Carcinogenicity - Mouse - Oral. Tumorigenic. Tumors found in liver and formation of lymphomas in blood.

Other Hazards
Organ Description
Eyes
Causes irritation to the eyes. Can cause painful sensitization to light. Can cause a form of chemical conjunctivitis and cause corneal damage.
Ingestion can cause gastrointestinal irritation with nausea, vomiting, and diarrhea. Systemic toxicity and acidosis can occur. Advanced stages can lead to respiratory failure, kidney failure, coma, and death.

Inhalation
Causes respiratory tract irritation. Can cause narcotic effects in high concentration. Vapors may cause dizziness or suffocation. Systemic toxicity and acidosis can occur. Advanced stages can lead to respiratory failure, kidney failure, coma, and death.

Skin
Causes moderate skin irritation. Can cause dermatitis by de-fatting the skin from prolonged or repeated contact.
Chronic prolonged exposure can cause liver, kidney, and heart damage. Long term exposure can cause loss of appetite, weight loss, nervousness, memory loss, mental retardation.

12 – ECOLOGICAL INFORMATION

Ethyl Alcohol 64-17-5
Ecotoxicity (aquatic and terrestrial, where available):
Acute Fish toxicity (ETHANOL)
LC50 / 96 HOUR Oncorhynchus mykiss (rainbow trout) > 10,000 mg/l
LC50 / 96 HOUR Pimephales promelas (fathead minnow) > 13,400 mg/l

Toxicity to aquatic plants (ETHANOL)
Growth inhibition / 96 HOURS Chlorella vulgaris (Fresh water algae) 1,000 mg/l

Toxicity to microorganisms (ETHANOL)
Toxicity Threshold / Pseudomonas putida 6,500 mg/l
Summary: Inhibition of cell multiplication begins.

Persistence and degradability:
Biodegradation is expected.

Bioaccumulative potential:
Biaccumulation is unlikely.

Other adverse effects:
No data available.

13 – DISPOSAL CONSIDERATIONS

Waste disposal method: Dispose of in accordance with federal, state, and local regulations.

14 – TRANSPORTATION INFORMATION

Description of waste residues and information on their safe handling and methods of disposal: UN number 1170
UN proper shipping name Ethyl alcohol solutions (Ethanol/Denatonium Benzoate)
Transport hazard class(es) 3 Flammable Liquid
Packing group *(if applicable)* II

IMDG UN-Number: 1170 Class: 3 Packing Group: II
Proper shipping name: Ethyl alcohol solutions (Ethanol/Denatonium Benzoate) Marine pollutant: No

IATA UN-Number: 1170 Class: 3 Packing Group: II
Proper shipping name: Ethyl alcohol solutions (Ethanol/Denatonium Benzoate)

For Pint and Smaller Packages Domestic Shipments Only UN-Number: 1170 Class: 3 Packing Group: II Proper shipping name: Ethyl alcohol solutions (Ethanol/Denatonium Benzoate) Consumer Commodity ORM-D Emergency

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15 – REGULATORY INFORMATION

Safety, health, and environmental regulations specific for the product in question:
OSHA Hazards
Flammable Liquid, Target Organ Effect, Irritant
All ingredients are on the following inventories or are exempted from listing
Country Notification
Australia AICS
Canada DSL
China IECS
European Union EINECS
Japan ENCS/ISHL
Korea ECL
New Zealand NZIoC
Philippines PICCS
United States of America TSCA
SARA 302 Components
No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.
SARA 313 Components
This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.
SARA 311/312 Hazards
Acute Health Hazard
Chronic Health Hazard
Fire Hazard
CERCLA
No chemicals in this material with known CAS numbers are subject to the reporting requirements of CERCLA.
Massachusetts Right To Know Components
Ethanol CAS-No.64-17-5 Revision Date 2007-03-01
Pennsylvania Right To Know Components
Ethanol CAS-No.64-17-5 Revision Date 2007-03-01
New Jersey Right To Know Components
Ethanol CAS-No.64-17-5 Revision Date 2007-03-01
California Prop 65 Components
WARNING! This product contains a chemical known to the State of California to cause birth defects or other reproductive harm. (ETHYL ALCOHOL) CAS No. 64-17-5 Revision Date: December 11, 2009

HMIS Hazard Classification

HEALTH: 2	**FLAMMABILITY: 3**	**PHYSICAL HAZARD: 0**	**PROTECTION: X**

16 – OTHER INFORMATION

Preparation information: Updated on the 14th of August, 2017

Legend: ACGIH: American Conference of Governmental Industrial Hygienists
CAS: Chemical Abstract Service
CFR: Code of Federal Regulations
DOT: Department of Transportation
DSL: Domestic Substance List (Canada)
EC: Effective Concentration
EINECS: European Inventory of Existing Commercial Chemical Substances
EPA: Environmental Protection Agency
HMIS: Hazardous Material Identification System
IARC: International Agency for Research on Cancer
LC: Lethal Concentration
LD: Lethal Dose
NIOSH: National Institute of Occupational Safety and Health

NTP: National Toxicology Program
OSHA: Occupational Safety and Health Administration
RTECS: Registry of Toxic Effects of Chemical Substances
SCBA: Self Contained Breathing Apparatus
SDS: Safety Data Sheet/Material Safety Data Sheet

DISCLAIMER: