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Material Safety Data Sheet

Acrolein

Section 1: Chemical Product and Company Identification

Molecular formula: C₃H₄O

CAS Nr: 107-02-8

Molecular weight: 56.06

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Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Acrolein	107-02-8	100

Toxicological Data on Ingredients:

Acrolein: ORAL (LD50): Acute: 26 mg/kg [Rat]. 13.9 mg/kg [Mouse]. 7 mg/kg [Rabbit]. DERMAL (LD50): Acute: 200 mg/kg [Rabbit]. VAPOR (LC50): Acute: 18 mg/m 4 hours [Rat]. 66 ppm 6 hours [Mouse].

Section 3: Hazards Identification

Potential Acute Health Effects:

Very hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation. Hazardous in case of skin contact (permeator). Slightly hazardous in case of skin contact (corrosive), of eye contact (corrosive). Liquid or spray mist may produce tissue damage particularly on mucous membranes of eyes, mouth and respiratory tract. Skin contact may produce burns. Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Severe over-exposure can result in death. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling,

reddening, or, occasionally, blistering.

Potential Chronic Health Effects:

CARCINOGENIC EFFECTS: 3 (Not classifiable for human.) by IARC. MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast. TERATOGENIC EFFECTS: Not available.

DEVELOPMENTAL TOXICITY:

Not available. The substance is toxic to lungs, upper respiratory tract. The substance may be toxic to skin, eyes. Repeated or prolonged exposure to the substance can produce target organs damage. Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

Section 4: First Aid Measures

Eye Contact:

Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Cold water may be used. Get medical attention immediately.

Skin Contact:

In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover the irritated skin with an emollient. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

Serious Skin Contact:

Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Inhalation:

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Serious Inhalation:

Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. **WARNING:** It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.

Ingestion:

If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Flammable.

Auto-Ignition Temperature: 220°C (428°F)

Flash Points: CLOSED CUP: -26°C (-14.8°F). OPEN CUP: -18°C (-0.4°F) (Cleveland).

Flammable Limits: LOWER: 2.8% UPPER: 31%

Products of Combustion: These products are carbon oxides (CO, CO₂).

Fire Hazards in Presence of Various Substances:

Highly flammable in presence of open flames and sparks, of heat. Flammable in presence of oxidizing materials.

Explosion Hazards in Presence of Various Substances:

Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available. Slightly explosive in presence of heat.

Fire Fighting Media and Instructions:

Flammable liquid, soluble or dispersed in water. SMALL FIRE: Use DRY chemical powder.

LARGE FIRE: Use alcohol foam, water spray or fog.

Special Remarks on Fire Hazards:

Vapors may form explosive mixtures with air. Vapor may travel considerable distance to source of ignition and flash back. When heated to decomposition it emits toxic fumes of carbon monoxide, peroxides

Special Remarks on Explosion Hazards: Vapors may form explosive mixtures with air.

Section 6: Accidental Release Measures

Small Spill:

Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container.

Large Spill:

Flammable liquid. Corrosive liquid. Poisonous liquid. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Do not touch spilled material. Use water spray curtain to divert vapor drift. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:

Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Never add water to this product. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, acids, alkalis.

Storage:

Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame). Do not store above 8°C (46.4°F). Refrigerate. Sensitive to light.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:

Face shield. Full suit. Vapor respirator. Be sure to use an approved/certified respirator or equivalent.

Gloves. Boots.

Personal Protection in Case of a Large Spill:

Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:

TWA: 0.1 STEL: 0.3 from ACGIH (TLV) [United States] TWA: 0.23 STEL: 0.69 from ACGIH (TLV) [United States]

Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid. (Liquid.)

Odor:

Disagreeable and choking. Piercing. Extremely sharp. Extremely acid, pungent, burnt sweet, hot fat

Taste: Not available.

Molecular Weight: 56.06 g/mole

Color: Colorless to light yellow.

pH (1% soln/water): 7 [Neutral.]

Boiling Point: 52.5°C (126.5°F)

Melting Point: -88°C (-126.4°F)

Critical Temperature: 254°C (489.2°F)

Specific Gravity: 0.8389 (Water = 1)

Vapor Pressure: 28 kPa (@ 20°C)

Vapor Density: 1.94 (Air = 1)

Volatility: Not available.

Odor Threshold: 0.21 ppm

Water/Oil Dist. Coeff.: The product is equally soluble in oil and water; log(oil/water) = 0

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water, diethyl ether.

Solubility:

Soluble in cold water, hot water, diethyl ether. Soluble in petroleum ether, alcohol, oxygenated solvents. Miscible with lower alcohols, ketones, benzene. Solubility in water: 208 g/kg @ 20 deg. C; 212,000 mg/l @ 25 deg. C

Section 10: Stability and Reactivity Data

Stability: The product is stabilized with Hydroquinone. However, it may form unstable peroxides over time.

Instability Temperature: Not available.

Conditions of Instability: Heat, ignition sources, incompatible materials, light.

Incompatibility with various substances: Reactive with oxidizing agents, acids, alkalis.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity:

Incompatible with amines. Incompatible with oxygen and peroxides. May polymerize on exposure to light, or in presence of alkali or strong acid forming disacryl. Incompatible with oleum, ethyleneimine, chlorosulfonic acid,

ammonium hydroxide, 2-aminoethanol, alkalis, strong acids, mineral acids, oxidizers, ammonia. May form shock sensitive peroxides overtime. Polymerizes readily unless inhibited (stabilized)

Special Remarks on Corrosivity: Non-corrosive to iron and steel at room temperature

Polymerization:

Will not occur with the product as is. This product is stabilized with Hydroquinone. However, it will polymerize if not stabilized, or in contact with acids (including sulfur dioxide), alkalis, volatile amines, salts, thiourea, oxidants (air), and on exposure to light and heat..

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Dermal contact. Eye contact. Inhalation. Ingestion.

Toxicity to Animals:

WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE.

Acute oral toxicity (LD50): 7 mg/kg [Rabbit]. Acute dermal toxicity (LD50): 200 mg/kg [Rabbit]. Acute toxicity of the vapor (LC50): 18 mg/ m³ 4 hours [Rat].

Chronic Effects on Humans:

CARCINOGENIC EFFECTS: 3 (Not classifiable for human.) by IARC. MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast. Causes damage to the following organs: lungs, upper respiratory tract. May cause damage to the following organs: skin, eyes.

Other Toxic Effects on Humans:

Very hazardous in case of skin contact (irritant), of ingestion, . Hazardous in case of skin contact (permeator), of inhalation (lung corrosive). Slightly hazardous in case of skin contact (corrosive), of eye contact (corrosive).

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans:

May cause adverse reproductive effects. May affect genetic material (mutagenic)

Special Remarks on other Toxic Effects on Humans:

Acute Potential Health Effects: Skin: Causes severe irritation. May cause skin burns. May be fatal if absorbed through skin.

Eyes: Causes severe irritation. May cause corneal burns. It is a lacrimating agent. Inhalation: May be fatal if inhaled. It causes respiratory tract irritation. It is a severe pulmonary irritant. Symptoms may include difficulty breathing (dyspnea), chest congestion, bronchospasm. Delayed or acute lung injury (acute pulmonary edema, emphysema), permanent lung damage may also occur. Nausea, vomiting, and CNS can also occur. Death may result from acute lung injury and/or respiratory failure. Ingestion: May be fatal if swallowed. May produce severe irritation of the mouth, and gastrointestinal tract. It may also affect behavior/central nervous system (general anesthetic, somolence). Other effects may include increase in blood pressure and heart rate. Chronic Potential Health Effects:

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:

Possibly hazardous short term degradation products are not likely.

However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:

Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification:

CLASS 3: Flammable liquid. CLASS 6.1: Poisonous material.

Identification: : Acrolein, stabilized UNNA: 1092 PG: I

Special Provisions for Transport:

Marine Pollutant. Inhalation Hazard Zone A

Section 15: Other Regulatory Information

Federal and State Regulations:

Connecticut hazardous material survey.: Acrolein Illinois toxic substances disclosure to employee act: Acrolein Illinois chemical safety act: Acrolein New York release reporting list: Acrolein Rhode Island RTK hazardous substances: Acrolein Pennsylvania RTK: Acrolein Florida: Acrolein Minnesota: Acrolein Massachusetts RTK: Acrolein Massachusetts spill list: Acrolein New Jersey: Acrolein New Jersey spill list: Acrolein Louisiana RTK reporting list: Acrolein Louisiana spill reporting: Acrolein TSCA 8(b) inventory: Acrolein TSCA 8(a) PAIR: Acrolein TSCA 8(d) H and S data reporting: Acrolein: Effective date: 9/30/91; Sunset date: 6/30/98 SARA 302/304/311/312 extremely hazardous substances: Acrolein SARA 313 toxic chemical notification and release reporting: Acrolein CERCLA: Hazardous substances.: Acrolein: 1 lbs. (0.4536 kg)

Other Regulations:

OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada):

CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F). CLASS D-1A: Material causing immediate and serious toxic effects (VERY TOXIC). CLASS D-2A: Material causing other toxic effects (VERY TOXIC). CLASS E: Corrosive liquid.

DSCL (EEC):

R11- Highly flammable. R24/25- Toxic in contact with skin and if swallowed. R26- Very toxic by inhalation. R34- Causes burns. R50- Very toxic to aquatic organisms. S23- Do not breathe gas/fumes/vapour/spray [***] S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S28- After contact with skin, wash immediately with plenty of [***] S36/37/39- Wear suitable protective clothing, gloves and eye/face protection. S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). S61- Avoid release to the environment. Refer to special instructions/Safety data sheets.

HMIS (U.S.A.):

Health Hazard: 3

Fire Hazard: 3

Reactivity: 0

Personal Protection:

National Fire Protection Association (U.S.A.):

Health: 4

Flammability: 3

Reactivity: 3

Specific hazard:

Protective Equipment:

Gloves. Full suit. Vapor respirator. Be sure to use an approved/certified respirator or equivalent.

Wear appropriate respirator when ventilation is inadequate. Face shield.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

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