

Safety Data Sheet

Propionic Acid

SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

1.1 Product identifier

Product name: Propionic Acid

Synonym(s): Propanoic Acid; Ethylformic Acid; Methylacetic Acid

1.2 Relevant identified uses of the substance or mixture and uses advised against

General use: Industrial applications

Uses advised against: None known

1.3 Details of the supplier and of the safety data sheet

Manufacturer/Distributor

Silver Fern Chemical, Inc.

121 W. De La Guerra Street, Suite B

Santa Barbara, CA 93101 USA

1-866-282-3384

Website - www.silverfernchemical.com; email address - info@silverfernchemical.com

1.4 Emergency telephone number

+1-800-535-5053; Outside USA & Canada +1-352-323-3500

SECTION 2 - HAZARDS IDENTIFICATION

2.1 Classification of substance or mixture

Product definition: Substance

Classification in accordance with 29 CFR 1910 (OSHA HCS) and Regulation EC No. 1272/2008

Flammable Liquid - Category 3 [H226]

Skin Corrosion - Category 1A [H314]

Specific target organ toxicity - single exposure - Category 3; STOT SE 3 [H335]

2.2 Label elements

Hazard symbol(s):



GHS02



GHS05



GHS07

Signal word:

Danger

Hazard statement(s):

H226 - Flammable liquid and vapor

H314 - Causes severe skin burns and eye damage

H335 - May cause respiratory irritation

Precautionary statements:

[Prevention]

P210 - Keep away from heat, open flames and hot surface. No smoking.

P233 - Keep container tightly closed.

P240 - Ground and bond container and receiving equipment.

P241 + P242 - Use explosion proof electrical, ventilating and lighting equipment. Use only non-sparking tools.

P243 - Take precautionary measures against static discharge.

P260 - Do not breathe mist and vapor.

P264 - Wash hands and other exposed skin areas thoroughly after handling.

P261 - Avoid breathing fumes, mist and vapor.

P271 - Use only outdoors or in a well-ventilated area.

P280 - Wear protective gloves, protective clothing and eye protection.

[Response]

P301 + P330 + P331 + P310 - IF SWALLOWED: Rinse mouth. DO NOT induce vomiting. Immediately call a POISON CENTER or doctor.

P303 + P361 + P353 - IF ON SKIN (or hair): Remove immediately all contaminated clothing. Rinse skin with water or shower.

P304 + P340 + P310 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or doctor.

P305 + P351 + P338 + P310 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor.

P321 - Specific treatment: Immediately contact a POISON CENTER or doctor. Refer to Section 4 of this SDS.

P363 - Wash contaminated clothing before reuse.

P370 + P378 - In case of fire: Use water fog, foam, dry chemical or carbon dioxide for extinction.

[Storage]

P405 + P403 + P233 + P235 - Store locked up in a well-ventilated place. Keep container tightly closed. Keep cool.

[Disposal]

P501 - Dispose of contents and containers in accordance with national and local regulations.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS

May be corrosive to metals.

SECTION 3 - COMPOSITION/INFORMATION ON INGREDIENTS**3.1 Substances**

% by Weight	Ingredient	CAS Number	EC Number	Index Number	GHS Classification
>99	Propionic Acid	79-09-4	201-176-3	607-089-00-0	H226, H314, H335

There are no additional ingredients present in this product which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

3.2 Mixtures

Not applicable

SECTION 4 – FIRST AID MEASURES**4.1 Description of first aid measures**

Inhalation: If breathing is difficult or irregular, administer oxygen; if respiratory arrest occurs, start artificial respiration by trained personnel. Do not use mouth-to-mouth method if victim inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. If unconscious, maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. Seek immediate medical attention.

Eyes: Immediately flush eyes with large amounts of water or saline solution for at least 15 minutes, occasionally lifting the upper and lower lids. Remove contact lenses, if present and easy to do, after first 2 minutes and continue rinsing. Seek immediate medical attention, preferably from an ophthalmologist.

Skin: Flush skin with large amounts of water while removing contaminated clothing and continue rinsing for at least 15 minutes. Wash contaminated clothing thoroughly before reuse. Discard contaminated shoes. Seek immediate medical attention for chemical burns.

Ingestion: Rinse mouth with water if the victim is conscious. Remove dentures if present. Give 2 glasses of water or milk to drink if the victim is conscious, alert and able to swallow. DO NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious or convulsing person. Do not leave the victim unattended. Seek immediate medical attention.

4.2 Most important symptoms and effects, both acute and delayed**Potential health symptoms and effects**

Eyes: Causes severe burns and serious damage to eyes. Symptoms may include redness, swelling, pain, tearing, burns, blurred vision, corneal clouding, permanent eye damage and blindness. May cause irreversible eye injury. Mist or vapor can cause eye irritation.

Skin: Causes skin burns and tissue damage. Symptoms include localized redness, blistering, itching, pain and tissue damage. Harmful if absorbed through the skin.

Inhalation: Harmful if inhaled. Causes chemical burns to the respiratory tract with mucosal irritation, cough and shortness of breath. Prolonged exposure to mist or vapor may lead to lung edema. May cause an asthmatic-like bronchitis.

Ingestion: Harmful if swallowed. Causes burns to the lips, mouth, throat and gastrointestinal tract. May cause severe and permanent damage to the digestive tract. Causes severe pain, nausea, vomiting, diarrhea, unconsciousness and shock. May cause damage to the liver.

Chronic: Persons with pre-existing skin disorders or impaired respiratory or pulmonary function may be at increased risk to the effects of this material. Chronic exposure may cause asthma-like bronchitis, eye irritation, blood disorders and chronic inflammation of the respiratory tract.

4.3 Indication of any immediate medical attention and special treatment needed**Advice to doctor and hospital personnel**

Treat symptomatically and supportively.

SECTION 5 – FIRE FIGHTING MEASURES**5.1 Extinguishing media**

Suitable methods of extinction: Use extinguishing media such as water fog or spray, dry chemical, carbon dioxide or foam.

Unsuitable methods of extinction: Water jets or streams may spread the fire.

5.2 Special hazards arising from the substance or mixture

Flammable liquid and vapor. Vapors are heavier than air and can travel along the ground to a source of ignition and flash back. Vapors can spread along the ground and collect in low or confined areas. Exposure to ignition sources (e.g. cell phones) can ignite vapors, causing a flash fire. Closed containers may explode due to the buildup of pressure when exposed to extreme heat. During emergency conditions overexposure to decomposition products may cause a health hazard. Symptoms may not be immediately apparent or may be delayed. Obtain medical attention.

Explosion hazards: Vapors may form an explosive mixture with air at high temperatures, especially in confined spaces.

5.3 Advice to firefighters

Full protective equipment including self-contained breathing apparatus should be used. Water may be used to cool closed containers to prevent

pressure buildup and possible autoignition or explosion when exposed to extreme heat. Water contaminated by this material must be contained from being discharged to any waterway, sewer or drain to prevent environmental contamination.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Evacuate non-essential personnel. Wear appropriate protective clothing and equipment designated in Section 8.2. Ventilate the area. Remove all sources of ignition. NO SMOKING. Clean up spills immediately. Spills create a slip hazard.

6.2 Environmental precautions

Avoid dispersal of spilled material or runoff and prevent contact with soil and entry into drains, sewers or waterways. Use water sparingly to minimize environmental contamination and reduce disposal requirements.

6.3 Methods and materials for containment and cleaning up

Approach spill from upwind direction. Cover drains and contain spill. Carefully neutralize the spill with soda ash (sodium carbonate) or calcium carbonate. Cover spill with a large quantity of inert absorbent. Do not use combustible material such as sawdust. Collect product using non-sparking tools and place into an approved container for proper disposal. Do not use a metal container for disposal. Observe possible material restrictions (Sections 7.2 and 10.5). Contaminated absorbent may pose the same hazard as the spilled product. Dispose of via a licensed waste disposal contractor.

US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

6.4 Reference to other sections

For indications about waste treatment, see Section 13.

SECTION 7 – STORAGE AND HANDLING

7.1 Precautions for safe handling

Wear all appropriate personal protective equipment specified in Section 8.2. Do not get in eyes or on skin or clothing. Do not inhale mist or vapor. NO SMOKING. If normal use of material presents a respiratory hazard, use only adequate ventilation or wear an appropriate respirator. Wash contaminated clothing before reuse. Discard contaminated shoes.

Advice on protection against fire and explosion

Keep away from heat and incompatible materials.

7.2 Conditions for safe storage, including any incompatibilities

Store in the original container in dry, cool, well-ventilated areas away from incompatible materials (see Section 10.5), food and drink. Ground and bond containers when transferring material. Transfer only to approved containers having correct labeling. Stainless steel is the preferred material of construction for storage of propionic acid. Protect container from physical damage. Keep containers tightly closed when not in use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not pressurize, cut, weld, braze, solder, drill, grind or expose empty containers to heat or ignition sources. Containers are hazardous when empty as they contain product residue. Use appropriate containment to avoid environmental contamination. Ventilate closed areas. Keep locked up and out of reach of children.

7.3 Specific end uses

Apart from the uses mentioned in Section 1.2, no other specific uses are stipulated.

SECTION 8 – EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Occupational exposure limit values

CAS Number	Ingredient	OSHA PEL	ACGIH TLV	NIOSH
79-09-4	Propionic Acid	-----	10 ppm; 30 mg/m ³ TWA 15 ppm; 37 mg/m ³ STEL	10 ppm; 30 mg/m ³ TWA 15 ppm; 45 mg/m ³ STEL

8.2 Exposure controls

Engineering measures: Technical measures and appropriate working operations should be given priority over the use of personal protective equipment. Use adequate ventilation. Local exhaust is preferable. Material should be used under a hood in the laboratory. Refer to Section 7.1.

Individual protection measures: Wear protective clothing to prevent repeated or prolonged contact with product. Protective clothing needs to be selected specifically for the workplace, depending on concentrations and quantities of hazardous substances handled. The chemical resistance of the protective equipment should be enquired at the representative supplier.

Hygiene measures: Facilities storing or using this material should be equipped with an eyewash station and safety shower. Change contaminated clothing. Preventive skin protection is recommended. Wash hands thoroughly after use, before eating, drinking, smoking or using the lavatory.

Eye/face protection: Wear protective splash goggles or safety glasses with unperforated side shields and a face shield during use.

Hand protection: Wear gloves made of Neoprene, chlorinated polyethylene or those recommended by glove supplier for protection against materials in Section 3. Gloves should be impermeable to chemicals and oil. Breakthrough time of selected gloves must be greater than the intended use period.

Skin protection: Wear protective clothing. Wear protective boots if the situation requires.

Respiratory protection: Always use an approved respirator when vapor/aerosols exceed permissible exposure limits. Where risk assessment shows air-purifying respirators are appropriate use a half-mask 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). Follow OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149.

Environmental exposure controls: Do not empty into drains.

PPE must not be considered a long-term solution to exposure control. PPE usage must be accompanied by employer programs to properly select, maintain, clean fit and use. Consult a competent industrial hygiene resource to determine hazard potential and/or the PPE manufacturers to ensure adequate protection



* It is recommended that a face shield be worn with splash goggles when handling this product.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	Clear, colorless liquid
Odor	Pungent
Odor Threshold	0.03 ppm
Molecular Weight	78.08 g/mol
Chemical Formula	C ₃ H ₆ O ₂
pH	2.5 (100 g/l @ 20 °C)
Freezing/Melting Point	< - 22 °C (< - 7.6 °F)
Boiling Point	141 °C (286 °F) @ 760 mm Hg
Evaporation Rate	0.24 [n-BuOAc = 1]
Flammability (solid, gas)	Not applicable
Flash Point	54 °C (129 °F), closed cup
Autoignition Temperature	440 °C (824 °F)
Decomposition Temperature	No data available
Lower Explosive Limit (LEL)	2.9% (v)
Upper Explosive Limit (UEL)	12.1% (v)
Vapor Pressure	2.4 mm Hg @ 25 °C
Vapor Density	2.56 [Air = 1]
Specific Gravity	0.995 @ 20 °C
Viscosity	1.02 cPs @ 20 °C
Solubility in Water	Soluble
Partition Coefficient (n-octanol/water)	log P _{ow} = 0.25 - 0.33
Oxidizing Properties	Not applicable
Explosive Properties	Not applicable
Volatiles by Weight @ 21 °C	> 99%

9.2 Other Data

May be corrosive to metals

SECTION 10 – STABILITY AND REACTIVITY

10.1 Reactivity

This material is stable under normal handling conditions and use.

10.2 Chemical Stability

This material is stable under recommended storage and handling conditions.

10.3 Possibility of hazardous reactions

Generates hydrogen gas on contact with metals. Hazardous polymerization will not occur.

10.4 Conditions to avoid

Heat, sources of ignition, temperature extremes, contact with incompatible materials, contact with metals

10.5 Incompatible materials

Strong oxidizing agents, strong bases

10.6 Hazardous decomposition products

Thermal decomposition products include oxides of carbon.

SECTION 11 – TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute oral toxicity

LD₅₀, rat: 3,445 mg/kg (male and female) *OECD 401 or equivalent*

Acute inhalation toxicity

LC₅₀, rat: > 20 mg/m³, 4 h (male and female) *OECD Test Guideline 403*

Acute dermal toxicity

LC₅₀, rabbit: > 2,000 g/kg [*estimated*]

Skin irritation

Causes serious skin burns and severe skin irritation.

Eye irritation

Causes burns and serious eye damage. Risk of blindness!

Sensitization

No data available

Genotoxicity in vitro

No data available

Mutagenicity

No data available

Specific organ toxicity - single exposure

May cause respiratory irritation.

Specific organ toxicity - repeated exposure

No data available

Aspiration hazard

No data available

11.2 Further information

This product contains no substances present at levels greater than or equal to the 0.1% threshold (de minimis) that are identified as probable, possible, potential or confirmed carcinogens by ACGIH, IARC, NTP or OSHA. No data is available regarding the mutagenicity or teratogenicity of this product, nor is there any available data that indicates it causes adverse developmental or fertility effects.

Handle in accordance with good industrial hygiene and safety practice.

SECTION 12 - ECOLOGICAL INFORMATION

12.1 Toxicity

Material is slightly toxic to aquatic organisms on an acute basis (LC50/EC50 between 10 and 100 mg/l in the most sensitive species tested). Large discharges of this substance to the environment may decrease the pH of aquatic systems to a value < 3, which may be fatal to aquatic organisms to aquatic life and soil microorganisms.

Toxicity to fish:

LC₅₀ - *Leuciscus idus* (Golden orfe), static test, 96 h: > 1,000 mg/l

Toxicity to aquatic invertebrates:

LC₅₀ - *Daphnia magna* (Water flea), 48 h: > 500 mg/l

Toxicity to aquatic plants:

EC₅₀ - *Desmodesmus subspicatus* (green algae), static test, 72 h: > 500 mg/l (biomass)

ErC₅₀ - *Desmodesmus subspicatus* (green algae), static test, 72 h: 4,807 mg/l (growth inhibition)

12.2 Persistence and degradability

This material is readily biodegradable.

12.3 Bioaccumulation potential

This material will not bioaccumulate.

12.4 Mobility in soil

This material has high mobility in soil.

12.5 Results of PBT and vPvB assessment

This material does not meet the criteria for PBT or vPvB according to Regulation (EC) No 1907/2006, Annex XIII.

12.6 Other effects

Additional ecological information

Do not allow material to run into surface waters, wastewater or soil.

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

SECTION 13 – DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Methods of disposal: The generation of waste should be avoided or minimized whenever possible. Empty containers or liners may retain some

product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

RCRA F-Series: No listings above the reportable threshold (de minimis)

RCRA U-Series: No listings above the reportable threshold (de minimis)

SECTION 14 – TRANSPORTATION INFORMATION

Note: Transportation information provided is for reference only. Customer is urged to consult 49 CFR 100 - 177, IMDG, IATA, EC, United Nations TDG and WHMIS (Canada) TDG information manuals for detailed regulations and exceptions covering specific container sizes, packaging materials and methods of shipping.

Limited quantity for corrosive liquids Packing Group II when inner packagings are not over 1.0 liter (0.3 gallon) net capacity each, packed in a strong outer packaging.

USA DOT (Ground Transportation) - Bulk and Non-bulk

Proper Shipping Name	Propionic Acid with not less than 90% acid by mass
Hazard Class	8 (3)
UN/NA	UN3463
Packing Group	II
NEAREG	Guide #135
Packaging Authorization	Non-Bulk: 49 CFR 173.202; Bulk: 173.243
Packaging Exceptions	49 CFR 173.154

Drum Label(s)



IMO/IMDG (Water Transportation)

Proper Shipping Name	Propionic Acid with not less than 90% acid by mass
Hazard Class	8 (3)
UN/NA	UN3463
Packing Group	II
Marine Pollutant	No
EMS Number	F-E, S-C



ICAO/IATA (Air Transportation)

Proper Shipping Name	Propionic Acid with not less than 90% acid by mass
Hazard Class	8 (3)
UN/NA	UN3463
Packing Group	II
Quantity Limitations	49 CFR 175.27 and 175.75 - Cargo Aircraft Only: 30 l; Passenger Aircraft: 1 l

RID/ADR (Rail Transportation)

Proper Shipping Name	Propionic Acid with not less than 90% acid by mass
Hazard Class	8 (3)
UN/NA	UN3463
Packing Group	II

SECTION 15 - REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for substance or mixture

U. S. Federal Regulations

OSHA Hazard Communication Standard: This material is classified as hazardous in accordance with OSHA 29 CFR 1910-1200.

OSHA Process Safety Management Standard: This product is not regulated under OSHA PSM Standard 29 CFR 1910.119.

EPA Risk Management Planning Standard: This product is not regulated under EPA RMP Standard (RMP) 40 CFR Part 68.

EPA Federal Insecticide, Fungicide and Rodenticide Act: This product is not a registered Pesticide under the FIFRA, 40 CFR Part 150.

Toxic Substance Control Act (TSCA) Inventory: All substances in this product are listed on the TSCA Inventory. This product is not subject to TSCA 12(b) Export Notification.

Drug Enforcement Administration (DEA) List 2, Essential Chemicals (21 CFR 1310.02(b)) and 1310.4(f)(2)) and Chemical Code Number: Not listed

Drug Enforcement Administration (DEA) Lists 1 & 2, Exempt Chemical Mixtures (21 CFR 1310.12(c)) and Code Number: Not listed

Department of Homeland Security (DHS) Chemical Facility Anti-Terrorism Standards (CFATS) Chemicals: Not listed

Superfund Amendments and Reauthorization Act (SARA)

SARA Section 311/312 Hazard Categories

Flammable liquid and vapor	Causes severe skin burns and eye damage	May cause respiratory irritation
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SARA 313 Information: None of the components of the product exceed the threshold (de minimis) reporting requirements of Section 313 of the Emergency Planning and Community Right-to Know Act of 1986.

SARA 302/304 Extremely Hazardous Substance: None of the components of the product exceed the threshold (de minimis) reporting levels of established by these sections of Title III of SARA.

SARA 302/304 Emergency Planning & Notification: None of the components of the product exceed the threshold (de minimis) reporting levels established by of these sections of Title III of SARA.

Comprehensive Response Compensation and Liability Act (CERCLA): This product contains the following CERCLA reportable substance: Propionic Acid (CAS #79-09-4): RQ = 2,267.96 kg (5,000 lbs)

Clean Air Act (CAA)

This product does not contain Hazardous Air Pollutants (HAPs) designated in CAA Section 112 (b).

This product does not contain Class 1 Ozone depleters.

This product does not contain Class 2 Ozone depleters.

Clean Water Act (CWA)

Propionic Acid (CAS #79-09-4) is a Hazardous Substance under the CWA.

This product does not contain Priority Pollutants.

This product does not contain Toxic Pollutants.

U.S. State Regulations

California Prop 65, Safe Drinking Water and Toxic Enforcement Act of 1986

This product contains no chemical(s) known to the state of California to cause cancer birth defects or reproductive harm in concentrations that exceed the threshold (de minimis) reporting levels established under Proposition 65.

Other U.S. State Inventories

Propionic Acid (CAS #79-09-4) is listed on the following State Hazardous Substance Inventories, Right-to-Know lists and/or Air Quality/Air Pollutants lists: CA, DE, NJ, NY, PA, RI, WI.

Canada

WHMIS Hazard Classification

Flammable liquid and vapor

Toxic in contact with skin

Causes severe skin burns and eye damage

Causes severe damage to the respiratory tract

Canadian National Pollutant Release Inventory (NPRI): None of the components of this material are listed on the NPRI.

European Economic Community

WGK, Germany (Water danger/protection): 1 (low hazard to waters)

Global Chemical Inventory Lists

Country	Inventory Name	Listed
Canada	Domestic Substance List (DSL)	Yes
Canada	Non-Domestic Substance List (NDSL)	No
Europe	Inventory of New and Existing Chemicals (EINECS)	Yes
United States	Toxic Substance Control Act (TSCA)	Yes
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
New Zealand	New Zealand Inventory of Chemicals (NZIoC)	Yes
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (KECI)	Yes
Philippines	Philippines Inventory of Chemicals and Chemical Substances (PICCS)	Yes

*Yes - All components of this product comply with the inventory requirements administered by the governing country.

No - One or more components of this product are not on the inventory or are exempt from listing.

15.2 Chemical safety assessment

For this product a chemical safety assessment was not carried out.

SECTION 16 - OTHER INFORMATION

Hazardous Material Information System (HMIS)

HEALTH	*	3
FLAMMABILITY		2
PHYSICAL HAZARD		0
PERSONAL PROTECTION		C

C = safety glasses, gloves and an apron

HMIS Hazard Rating Legend

0 = Minimal 1 = Slight 2 = Moderate

3 = Serious 4 = Severe

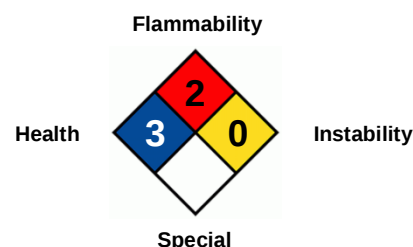
* = Chronic Health Hazard

NFPA Hazard Rating Legend

0 = Insignificant 1 = Slight 2 = Moderate

3 = High 4 = Extreme

National Fire Protection Association (NFPA)



Abbreviation Key

ACGIH American Conference of Governmental Industrial Hygienists

LD₅₀

Lowest Lethal Dose

Effective Date: 29 September 2020

Supersedes: 4 September 2017

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ADR	Accord Dangereux Routier (European regulations concerning the international transport of dangerous goods by road)	mppcf	Millions of Particles Per Cubic Foot
CAS	Chemical Abstract Services	NA	North America
CFR	Code of Federal Regulations	NAERG	North American Emergency Response Guide Book
COC	Cleveland Open Cup	NIOSH	National Institute for Occupational Safety & Health
DOT	Department of Transportation	NTP	National Toxicology Program
EC₅₀	Half maximal effective concentration	OSHA	Occupational Safety and Health Administration
EMS	Emergency Response Procedures for Ships Carrying	PBT	Persistent, Bioaccumulating and Toxic
EPA	Environmental Protection Agency	PEL	Permissible exposure limit
ErC₅₀	Reduction of Growth Rate	PMCC	Pensky-Martens Closed Cup
ERG	Emergency Response Guide Book	ppm	Parts Per Million
FDA	Food and Drug Administration	RCRA	Resource Conservation and Recovery Act
GHS	Globally Harmonized System of Classification and Labelling of Chemicals (GHS)	RID	Dangerous Goods by Rail
HCS	Hazard Communication Standard	RQ	Reportable Quantity
IARC	International Agency for Research on Cancer	TCC/Tag	Tagliabue Closed Cup
IATA	International Air Transport Association	TLV	Threshold Limit Value
IC₅₀	Half Maximal Inhibitory Concentration	TSCA	Toxic Substance Control Act
ICAO	International Civil Aviation Organization	TWA	Time-weighted Average
IDLH	Immediately Dangerous to Life and Health	UN	United Nations
IMDG	International Maritime Dangerous Goods	VOC	Volatile Organic Compounds
IMO	International Maritime Organization	vPvB	Very Persistent and Very Bioaccumulating
LC₅₀	50% Lethal Concentration	WHMIS	Workplace Hazardous Materials Information System
LD₅₀	50% Lethal Dose		

DISCLAIMER OF RESPONSIBILITY

The information on this SDS was obtained from sources which we believe are reliable. However, the information is provided without any warranty, expressed or implied, regarding its correctness. Some information presented and conclusions drawn herein are from sources other than direct test data on the substance itself. The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume damage or expense arising out of or in any way responsibility and expressly disclaim liability for loss, connected with handling, storage, use, or disposal of this product. If the product is used as a component in another product, this SDS information may not be applicable.

Revision date: 29 September 2020, Version 4

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