

Safety Data Sheet

Vinyl Acetate Monomer (VAM)

SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

1.1 Product identifier

Product name: Vinyl Acetate Monomer (VAM)

Synonym(s): Acetic acid ethenyl ester; Vinyl acetate; Vinyl acetate ester

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

General use: Industrial applications; use only in well ventilated areas

Uses advised against: No data available

1.3 Details of the supplier and of the safety data sheet

Manufacturer/Distributor

Silver Fern Chemical, Inc.

2226 Queen Anne Avenue North, Suite C

Seattle, WA 98109 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 2 [H225]

Acute Toxicity, Inhalation - Category 4 [H332]

Single Target Organ Toxicity, Single Exposure - Category 3; STOT SE 3 [H335]

Carcinogenicity - Category 2 [H351]

Aquatic Toxicity, Chronic - Category 3 [H412]

2.2 Label elements

Hazard symbol(s):



GHS02



GHS07



GHS08

Signal word: Danger

Hazard statement(s): H225 - Highly flammable liquid and vapor

H332 - Harmful if inhaled

H335 - May cause respiratory irritation

H351 - Suspected of causing cancer

H412 - Harmful to aquatic life with long lasting effects

Precautionary statements:

[Prevention]

P201 - Obtain special instructions before use.

P202 - Do not handle until all safety precautions have been read and understood

P210 - Keep away from heat, open flames and hot surfaces. 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.

P261 - Avoid breathing mist and vapor.

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

P273 - Avoid release to the environment.

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

[Response]

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

P304 + P340 + P312 - IF INHALED: Remove victim to fresh air and keep at rest in a comfortable position for breathing. Call a POISON CENTER or doctor if you feel unwell.

P308 + P313 - If exposed or concerned: Get medical attention.

P332 + P313 - If skin irritation occurs: Get medical attention.

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

None as defined under 29 CFR 1900.1200.

SECTION 3 - COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

% by Weight	Ingredient	CAS Number	EC Number	Index Number	GHS Classification
≥ 99.9	Vinyl acetate	108-05-4	203-545-4	607-023-00-0	H225, H332, H335, H412

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 product mist or vapor causes respiratory irritation or distress, move the exposed person to fresh air immediately. If breathing is difficult or irregular, administer oxygen; if respiratory arrest occurs, start artificial respiration by trained personnel. If unconscious, maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. If irritation persists or the victim feels unwell, seek 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. If irritation persists seek medical attention, preferably from an ophthalmologist.

Skin: Flush skin with large amounts of water while removing contaminated clothing. Wash the affected area with soap and water followed by thorough rinsing. Wash contaminated clothing and shoes before reuse. If irritation persists or the victim feels unwell, seek medical attention.

Ingestion: Rinse mouth with water if the victim is conscious. Remove dentures if present. DO NOT induce vomiting unless directed to do so by medical personnel. Vomiting may occur spontaneously. To prevent aspiration of material into the lungs, lay the victim on one side with the head lower than the waist. 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: May cause eye irritation with inflammation, discomfort and tearing. Vapor or mist may cause eye irritation.

Skin: May cause skin irritation with localized redness, itching and discomfort. Prolonged contact with unprotected skin may cause drying and chapping of the skin, blistering and severe irritation.

Inhalation: Irritating to mucous membranes and to the respiratory system. Symptoms may include headache, sore throat, hoarseness, cough, shortness of breath and chest tightness. Prolonged inhalation may cause unconsciousness. May cause depression of the central nervous system characterized by fatigue, drowsiness, irritability, insomnia, dizziness and lightheadedness. Prolonged exposure may cause, pulmonary edema, lung damage and gradual deterioration of the heart muscles.

Ingestion: Causes irritation of the digestive tract with nausea, vomiting, abdominal pain and diarrhea. Liver function changes and hepatic enzyme induction may occur after chronic exposure.

Chronic: Individuals with pre-existing skin conditions and respiratory disorders may be more susceptible to the effects of this product. Chronic occupational exposure has been reported to cause central nervous system symptoms, chronic bronchitis, cardiovascular symptoms, liver function changes and hepatic enzyme induction. Chronic bronchitis and impaired respiratory function have been associated with industrial exposure. Various lesions of the lungs, emphysema and partial or complete lung collapse may occur.

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 spray or fog, carbon dioxide, foam and dry chemical.

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

5.2 Special hazards arising from the substance or mixture

Highly 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 phone) 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: Avoid sources of ignition. Vapors may form an explosive mixture with air, especially in confined spaces. Ground and bond containers in storage and when container is in use.

5.3 Advice to firefighters

Firefighters should wear full bunker gear including NIOSH-approved positive pressure self-contained breathing apparatus to protect against potential hazardous combustion or decomposition products and oxygen deficiencies. Water may be used to cool closed containers to prevent pressure buildup and possible autoignition or explosion when exposed to extreme heat. Be aware that burning liquid may float on water. Firefighters should control runoff to prevent environmental contamination. Notify appropriate authorities of potential fire and explosion hazard if liquid enters sewers or waterways.

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. Spill creates 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. DO NOT FLUSH SPILL DOWN THE DRAIN. Cover drains and contain spill. Cover spill with a large quantity of inert absorbent. Do not use combustible material such as sawdust. Collect material using non-sparking tools and place into an approved container for proper disposal. Observe possible material restrictions (Sections 7.2 and 10.5). Do not allow material or runoff from rinsing contaminated areas to enter floor drains or storm drains and ditches that lead to waterways. Dispose of via a licensed waste disposal contractor.

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

Advice on safe handling :

Avoid any personal contact. Use only with adequate respiratory and personal protection. Do not enter storage area unless adequately ventilated. Do not handle near heat, sparks, or flame. Use only non-sparking tools. Avoid contact with eyes, skin and clothing. Avoid contact with incompatible agents. Metal containers involved in the transfer of this material should be grounded and bonded. Handle empty containers carefully - residue may be flammable and toxic. After handling, always wash hands thoroughly with soap and water.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers :

Container headspace may contain vinyl acetate monomer vapors. Monitor inhibitor to maintain appropriate concentration. Vinyl acetate with an inhibitor level of 3-5 ppm hydroquinone should not be stored longer than six months at 21-27 deg C (70-80 deg F), or longer than one year with 14-17 ppm hydroquinone. Vinyl acetate vapors are uninhibited and may form polymers in vents or flame arrestors of storage tanks, resulting in plugging of vents. Isolate from oxidizers, caustics and alkalis, chemicals capable of spontaneous heating, ignition sources and explosives. Electrical installations should be in accordance with Articles 500 and 501 of the National Electrical Code (Class 1 Group D hazard locations). NFPA 30, Flammable and Combustible Code, should be followed for all storage and handling. Containers must be properly grounded before beginning transfer. Inspect containers carefully and frequently for leaks.

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

CAS Number	Ingredient	OSHA PEL	ACGIH TLV	NIOSH
108-05-4	Vinyl acetate	-----	10 ppm TWA; 15 ppm STEL	4 ppm; 15 mg/m ³ , ceiling

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. 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 safety glasses with unperforated side shields or protective splash goggles during use.

Hand protection: Wear gloves made of butyl rubber 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



SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	Clear, colorless liquid
Odor	Sweet, characteristic
Odor Threshold	No data available
Molecular Weight	86.09 g/mol
Chemical Formula	C ₄ H ₈ O ₂
pH	No data available
Freezing/Melting Point	- 93 °C (- 135 °F)
Initial Boiling Point	72 °C (162 °F)
Evaporation Rate	No data available
Flammability (solid, gas)	Not applicable
Flash Point	- 8 °C (- 18 °F), closed cup
Autoignition Temperature	402 °C (775.6 °F)
Decomposition Temperature	No data available
Lower Explosive Limit (LEL)	2.6% (v)
Upper Explosive Limit (UEL)	13.4 % (v)
Vapor Pressure	11.7 kPa @ 20 °C
Vapor Density	3 [Air = 1]
Specific Gravity	0.934 @ 25 °C
Viscosity	0.43 cP @ 20 °C
Solubility in Water	25 g/l @ 20 °C
Partition Coefficient (n-octanol/water)	log P _{ow} = 0.73
Oxidizing Properties	Not applicable
Explosive Properties	Not applicable
Volatiles by Weight @ 21 °C	No data available

9.2 Other Data

No data available

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 conditions.

10.3 Possibility of hazardous reactions

Unstable upon depletion of inhibitor. Vapors may form explosive mixture with air. Hazardous polymerization will not occur.

10.4 Conditions to avoid

Avoid exposure to high temperatures, sources of ignition, hot surfaces and contact with incompatible materials. Avoid use in confined areas.

10.5 Incompatible materials

Strong oxidizing agents, strong acids, strong bases, peroxides

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: 2,900 mg/kg

Acute inhalation toxicity

LC₅₀, rat: 11.4 mg/l

Acute dermal toxicity

LD₅₀, rabbit: 2,335 mg/kg

Skin irritation

May cause skin irritation.

Eye irritation

May cause eye irritation.

Sensitization

No data available

Carcinogenicity

Suspected of causing cancer.

Genotoxicity in vitro

No data available

Germ cell mutagenicity

Negative in reproductive cell micronucleus test

Positive in somatic cell micronucleus test; positive in somatic cell chromosomal aberration test

Reproductive toxicity

No data available

Specific organ toxicity - single exposure

May cause respiratory irritation, drowsiness or dizziness.

Specific organ toxicity - repeated exposure

No data available

Aspiration hazard

No data available

11.2 Further information

Vinyl acetate (CAS #108-05-4): IARC, Group 2B carcinogen - *Possibly carcinogenic to humans*. Not listed as a carcinogen by ACGIH, NTP or OSHA.

No human data were available regarding the evaluation of prenatal or reproductive toxicity, and no data were available to assess the potential effects of exposure to vinyl acetate during lactation. In animal studies, fertility was affected by exposure to vinyl acetate, and toxic effects on the male fertility index and sperm morphology were reported.

Handle in accordance with good industrial hygiene and safety practice.

SECTION 12 - ECOLOGICAL INFORMATION

12.1 Toxicity

Harmful to aquatic life with long lasting effects.

Toxicity to fish:	LC ₅₀ - Pimephales promelas (fathead minnow), 96 h: 14 mg/l
Toxicity to aquatic invertebrates:	EC ₅₀ - Daphnia magna (water flea), static test, 48 h: 12.6 mg/l
Toxicity to aquatic plants:	EC ₅₀ - Pseudokirchneriella subcapitata (green algae), 72 h: 12.7 mg/l
Toxicity to microorganisms	EC ₃ - Pseudomonas putida (bacteria), 16 h: 6 mg/l

12.2 Persistence and degradability

This material is readily biodegradable.

12.3 Bioaccumulation potential

This material will not bioaccumulate.

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

This material is not persistent, bioaccumulative and toxic (PBT) and not very persistent and very bioaccumulative (vPvB).

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 flammable liquids in 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	Vinyl acetate, stabilized
Hazard Class	3
UN/NA	UN1301
Packing Group	II
NEAREG	Guide #129P
Packaging Authorization	Non-Bulk: 49 CFR 173.202; Bulk: 173.242
Packaging Exceptions	49 CFR 173.150

Drum Label(s)



IMO/IMDG (Water Transportation)

Proper Shipping Name	Vinyl acetate, stabilized
Hazard Class	3
UN/NA	UN1301
Packing Group	II
Marine Pollutant	No
EMS Number	F-E, S-D

ICAO/IATA (Air Transportation)

Proper Shipping Name	Vinyl acetate, stabilized
Hazard Class	3
UN/NA	UN1301
Packing Group	II
Quantity Limitations	49 CFR 175.27 and 175.75 - Cargo Aircraft Only: 60 l; Passenger Aircraft: 5 l

RID/ADR (Rail Transportation)

Proper Shipping Name	Vinyl acetate, stabilized
Hazard Class	3
UN/NA	UN1301
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: Vinyl Acetate

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
Vinyl acetate monomer (CAS #108-05-4)

Release: Minimum Concentration = 1.00%

Release: Screening threshold quantity = 10,000 lb

Superfund Amendments and Reauthorization Act (SARA)

SARA Section 311/312 Hazard Categories

Highly flammable liquid and vapor Harmful if inhaled May cause respiratory irritation Suspected of causing cancer

SARA 313 Information: Vinyl acetate (CAS #108-05-4) is subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-to Know Act of 1986.

SARA 302/304 Extremely Hazardous Substance: Vinyl acetate (CAS #108-05-4) is subject to the reporting levels of established by these sections of Title III of SARA.

SARA 302/304 Emergency Planning & Notification: Vinyl acetate (CAS #108-05-4) is subject to the reporting levels established by of these sections of Title III of SARA.

Comprehensive Response Compensation and Liability Act (CERCLA): This material contains the following CERCLA reportable substance: Vinyl acetate (CAS #108-05-4): RQ = 2,270 kg (5,000 lb)

Clean Air Act (CAA)

Vinyl acetate (CAS #108-05-4) is a Hazardous Air Pollutant (HAP) 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)

Vinyl acetate (CAS #108-05-4) is a Hazardous Substance.

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

WARNING: This product can expose you to chemicals including [Vinyl Acetate], which is known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

Other U.S. State Inventories

Vinyl acetate (CAS #108-05-4) is listed on the following State Hazardous Substance Inventories, Right-to-Know lists and/or Air Quality/Air Pollutants lists: CA, DE, MN, NJ, NY, PA, RI, WI, WV.

Massachusetts Right To Know

Vinyl Acetate 108-05-4

Hydroquinone 123-31-9

Canada

WHMIS Hazard Classification

Highly flammable liquid and vapor Suspected of causing cancer

Causes eye irritation May cause respiratory irritation

Harmful if inhaled

Canadian National Pollutant Release Inventory (NPRI): Vinyl acetate (CAS #108-05-4) is listed on the NPRI.

European Economic Community

WGK, Germany (Water danger/protection): 2 (obviously hazardous to water)

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	*	2
FLAMMABILITY		3
PHYSICAL HAZARD		2
PERSONAL PROTECTION		C

C = safety glasses, gloves,
& apron

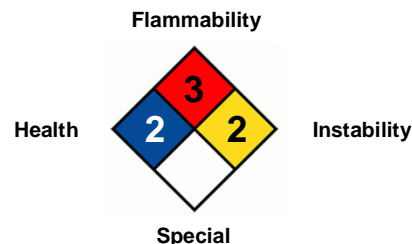
HMIS Hazard Rating Legend

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
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.

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