

**Safety Data Sheet**  
**Phthalic Anhydride**

**SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION**

**1.1 Product identifier**

**Product name:** Phthalic Anhydride

**Synonym(s):** 1,2-Benzenedicarboxylic anhydride, PAN, Phthalic acid anhydride

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

**General use:** Industrial applications and laboratory use

**Uses advised against:** None known

**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](http://www.silverfernchemical.com); email address - [info@silverfernchemical.com](mailto: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:** Mixture

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

Acute Toxicity, Oral - Category 4 [H302]

Skin Irritation - Category 2 [H315]

Sensitization, Skin - Category 1 [H317]

Eye Damage - Category 1 [H318]

Sensitization, Inhalation - Category 1 [H334]

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

**2.2 Label elements**

**Hazard symbol(s):**



GHS05



GHS07



GHS08

**Signal word:** Danger

**Hazard statement(s):**  
H302 - Harmful if swallowed  
H315 - Causes skin irritation  
H317 - May cause an allergic skin reaction  
H318 - Causes serious eye damage  
H334 - May cause allergy or asthma symptoms or breathing difficulty if inhaled.  
H335 - May cause respiratory irritation

**Precautionary statements:**

**[Prevention]**

P261 - Avoid breathing dust, fume and vapor.  
P264 - Wash hands and other exposed skin areas thoroughly after handling.  
P270 - Do not eat, drink or smoke when using this product.  
P271 - Use only outdoors or in a well-ventilated area.  
P272 - Contaminated work clothing should not be allowed out of the workplace.  
P280 + P284 - Wear protective gloves, protective clothing, eye protection and respiratory protection.  
P285 - In case of inadequate ventilation wear respiratory protection.

**[Response]**

P301 + P330 + P312 - IF SWALLOWED: Rinse mouth. Call a POISON CENTER or doctor if you feel unwell.  
P302 + P352 - IF ON SKIN: Wash with plenty of soap and water.  
P304 + P340 + P312 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor if you feel unwell.  
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 contact a POISON CENTER or doctor.  
P321 + P312 - Specific treatment: Call a POISON CENTER or doctor if you feel unwell. Refer to Section 4 of this SDS.  
P333 + P313 - If skin irritation or rash occurs: Get medical attention.

P342 + P311 - If experiencing respiratory symptoms: Call a POISON CENTER or doctor.  
P362 - Take off contaminated clothing and wash before reuse.  
P405 + P403 + P233 - Store locked up in a well-ventilated place. Keep container tightly closed.  
P501 - Dispose of contents and containers in accordance with national and local regulations.

[Storage]  
[Disposal]

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

May form combustible dust concentrations in air.

## SECTION 3 - COMPOSITION/INFORMATION ON INGREDIENTS

### 3.1 Substances

% by Weight	Ingredient	CAS Number	EC Number	Index Number	GHS Classification
> 99	Phthalic anhydride	85-44-9	201-607-5	607-009-00-4	H302, H314, H317, H318, H334, H335
< 0.05	Maleic anhydride	108-31-6	203-657156	607-096-00-9	H302, H315, H317, H334, H372

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 dust or fume 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. Do not use mouth-to-mouth method if victim inhaled this 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. If symptoms persist or you feel unwell, seek medical attention.

**Eyes:** DO NOT rub eyes or keep eyes closed. Immediately flush eyes with large amounts of water or saline solution for at least 30 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. Wash the affected area with soap and water followed by thorough rinsing. Wash contaminated clothing reuse. Destroy contaminated shoes. If irritation persists or if rash develops, seek medical attention. In case of chemical burns seek immediate medical attention.

**Ingestion:** Rinse mouth with water if the victim is conscious. Remove dentures if present. Give 1 - 2 cupfuls of water or milk to drink if the victim is conscious, alert, able to swallow and is not experiencing respiratory distress. DO NOT induce vomiting unless directed to do so by medical personnel. Vomiting may occur spontaneously. 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 eye irritation and serious eye damage. Symptoms include inflammation, swelling, pain, tearing, blurred vision and burns. May cause chemical conjunctivitis and corneal damage. Permanent eye damage including blindness could result.

**Skin:** Causes skin irritation and possible burns, especially if the skin is wet. Symptoms may include redness, itching, blisters and discomfort. May cause an allergic skin reaction in susceptible individuals with redness, itching and rash. May cause dermatitis.

**Inhalation:** Harmful if inhaled. Inhalation may produce severe irritation of respiratory tract and mucous membranes, characterized by headache, sore throat, bloody sputum, nasal discharge, nasal ulcer bleeding, hoarseness, cough, shortness of breath and chest tightness. May cause delayed lung edema. May cause burns and damage to the respiratory tract. May cause respiratory sensitization with asthma-like symptoms, bronchitis, bronchial asthma and emphysema.

**Ingestion:** Harmful if swallowed. Causes irritation of the digestive tract with nausea, vomiting, abdominal pain and diarrhea. May cause burns to the mouth, lips, throat and digestive tract. May cause severe permanent damage including perforation of the digestive tract. May cause liver and kidney damage.

**Chronic:** Individuals with pre-existing skin, eye and respiratory disorders may be more susceptible to the effects of this product. Prolonged and repeated skin contact with unprotected skin may cause sensitization (hives, dermatitis, eczema) or aggravate existing skin conditions. Chronic exposure to dust or vapor may cause respiratory sensitization (bronchitis and asthma). May cause chronic eye irritation. May cause damage to the liver and kidneys.

### 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 suitable for the surrounding fire.

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

### 5.2 Special hazards arising from the substance or mixture

Combustible dust. This material forms explosive mixtures with air on intense heating. 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 high temperatures, sources of ignition and hot surfaces. This material forms explosive mixtures with air on intense heating. Avoid dust generation and accumulation. When suspended in air dust can pose an explosion hazard.

### 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. Avoid dust generation and accumulation. DO NOT inhale dust. 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.

### 6.2 Environmental precautions

Avoid dispersal of spilled material or runoff and prevent contact with soil and entry into drains, sewers or waterways.

### 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. Carefully 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

Wear all appropriate personal protective equipment specified in Section 8.2. Do not get in eyes or on skin or clothing. DO NOT breathe dust. 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. Destroy contaminated shoes.

#### Advice on protection against fire and explosion

Keep away from heat and sources of ignition. Forms explosive mixtures with air on intense heating. Avoid dust generation and accumulation. Forms combustible dust clouds in air.

### 7.2 Conditions for safe storage, including any incompatibilities

Store between 15 - 25 °C (59 - 77 °F). Store in dry, cool, well-ventilated areas away from incompatible materials (see Section 10.5), food and drink. Keep away from heat and ignition sources. Transfer only to approved containers having correct labeling. Keep containers tightly closed when not in use to prevent moisture absorption. Protect containers against physical damage. Containers that have been opened must be carefully resealed and kept upright to prevent spillage. Containers are hazardous when empty as they contain product residues. 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
85-44-9	Phthalic anhydride	2 ppm; 12 mg/m <sup>3</sup> TWA	1 ppm TWA	1 ppm; 6 mg/m <sup>3</sup> TWA; 60 mg/m <sup>3</sup> IDLH

### 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 Nitrile rubber gloves 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:** Wear a dust mask when handling this product. Always use an approved respirator when vapor/aerosols/dusts 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.*



Safety Glasses



Gloves



Protective Apron



Dust Respirator

## SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

### 9.1 Information on basic physical and chemical properties

Appearance	Colorless to white crystals or granular solid
Odor	Characteristic, acrid
Odor Threshold	0.06 ppm
Molecular Weight	148.12 g/mol
Chemical Formula	C <sub>8</sub> H <sub>4</sub> O <sub>3</sub>
pH	1.37 - 1.94 @ 95 °C)
Freezing/Melting Point	128 - 132 °C (262 - 272 °F)
Initial Boiling Point	284 °C (542 °F)
Evaporation Rate	Not applicable
Flammability (solid, gas)	Non-flammable; combustible dust
Flash Point	151 °C (303.8 °F) PMCC
Autoignition Temperature	570 °C (1,058 °F)
Decomposition Temperature	No data available
Lower Explosive Limit (LEL)	1.7% (v)
Upper Explosive Limit (UEL)	10.5% (v)
Vapor Pressure	0.001 mm Hg @ 20 °C
Vapor Density	5.1 [Air = 1]
Specific Gravity	1.527 @ 4 °C
Viscosity	6.4 cPs @ 97°C
Solubility in Water	Insoluble
Partition Coefficient (n-octanol/water)	log P <sub>ow</sub> = 1.6 @ 20 °C
Oxidizing Properties	Not applicable
Explosive Properties	Not applicable
Volatiles by Weight @ 21 °C	0%

### 9.2 Other Data

May form combustible dust in air

## 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

Under normal conditions of storage and use, hazardous reactions will not occur. Hazardous polymerization will not occur.

### 10.4 Conditions to avoid

Strong heating, moisture, contact with incompatible materials. Avoid dust generation and accumulation.

## 10.5 Incompatible materials

Strong acids, organic acids, strong reducing agents, water, alkali hydroxides, nitric acid, alcohols, glycerol, metallic oxides, nitrites, oxidizing agents, air, metals, (in the presence of atmospheric oxygen and/or moisture), combustible materials

## 10.6 Hazardous decomposition products

Thermal decomposition products include oxides of carbon.

## SECTION 11 – TOXICOLOGICAL INFORMATION

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### 11.1 Information on toxicological effects

#### Acute oral toxicity

LD<sub>50</sub>, rat: 1,530 g/kg

#### Acute inhalation toxicity

LC<sub>50</sub>, rat: > 2.14 mg/l, 4 h

#### Acute dermal toxicity

LD<sub>50</sub>, rabbit: > 10,000 mg/kg

#### Skin irritation

Causes skin irritation.

#### Eye irritation

Causes serious eye damage.

#### Sensitization

May cause an allergic skin reaction. May cause allergy or asthma symptoms or breathing difficulties if inhaled.

#### 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

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### 12.1 Toxicity

#### Toxicity to fish:

LC<sub>50</sub> - *Leuciscus idus* (Golden orfe), 48 h: 313 mg/l

LC<sub>50</sub> - *Oryzias latipes* (Japanese rice fish), 96 h: > 99 mg/l

#### Toxicity to aquatic invertebrates:

EC<sub>50</sub> - *Daphnia magna* (Water flea), 48 h: 71 mg/l, immobilization

#### Toxicity to aquatic plants:

IC<sub>50</sub> - *Pseudokirchneriella subcapitata* (Green algae), 72 h: 68 mg/l

### 12.2 Persistence and degradability

This material is readily biodegradable.

### 12.3 Bioaccumulation potential

This material does not bioaccumulate.

### 12.4 Mobility in soil

No data available

### 12.5 Results of PBT and vPvB assessment

This material is not persistent, bioaccumulative or toxic (PBT) or very persistent or 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

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### 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:** Phthalic Anhydride (CAS #85-44-9), U190

## SECTION 14 – TRANSPORTATION INFORMATION

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**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.

*Solid Phthalic Anhydride with maleic anhydride content less than 0.05% is not regulated for any mode of transportation.*

**NOT REGULATED FOR TRANSPORT**

## SECTION 15 - REGULATORY INFORMATION

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### 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.

**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**  
No listings

**Drug Enforcement Administration (DEA) Lists 1 & 2, Exempt Chemical Mixtures (21 CFR 1310.12(c)) and Code Number:** No listings

**Department of Homeland Security (DHS) Chemical Facility Anti-Terrorism Standards (CFATS) Chemicals:** No listings

#### **Superfund Amendments and Reauthorization Act (SARA)**

##### **SARA Section 311/312 Hazard Categories**

Harmful if swallowed

May cause allergy or asthma symptoms or breathing difficulty if inhaled.

Causes skin irritation and serious eye damage

May cause respiratory irritation

May cause an allergic skin reaction

**SARA 313 Information:** Phthalic Anhydride (CAS #85-44-9) is subject to the reporting levels established by 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 this product exceed the threshold (de minimis) reporting levels established by these sections of Title III of SARA.

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

**Comprehensive Response Compensation and Liability Act (CERCLA):** This product contains the following CERCLA reportable substance:  
Phthalic Anhydride (CAS #85-44-9): RQ = 2,268 kg (5,000 lb)

#### **Clean Air Act (CAA)**

Phthalic Anhydride (CAS #85-44-9) 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)**

Phthalic Anhydride (CAS #85-44-9) 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**

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**

*Phthalic Anhydride (CAS #85-44-7)* 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.



## Canada

### WHMIS Hazard Classification

Harmful if swallowed May cause allergy or asthma symptoms or breathing difficulty if inhaled.  
Causes and serious eye irritation May cause respiratory irritation  
May cause an allergic skin reaction

**Canadian National Pollutant Release Inventory (NPRI):** Phthalic Anhydride (CAS #85-44-9) is 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	1
PHYSICAL HAZARD	0
PERSONAL PROTECTION	F

F = safety glasses, gloves, apron, & dust mask

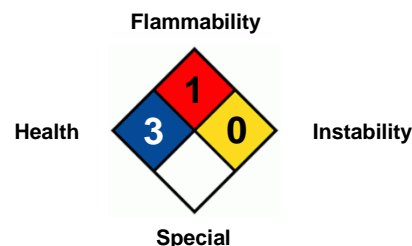
### HMIS Hazard Rating Legend

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

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

**LC<sub>50</sub>** 50% Lethal Concentration  
**LD<sub>50</sub>** 50% Lethal Dose

**WHMIS** Workplace Hazardous Materials Information System

### **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: 28 October 2020, Version 3

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