

SILVER FERN CHEMICAL, INC.

Safety Data Sheet Diphenylamine



SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

1.1 Product Identifier

Product Name: Diphenylamine

Synonym(s): DPA; Anilinobenzene; N,N-Diphenylamine; N-Phenylaniline; N-Phenylbenzenamine; Anilinobenzene

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

Distributor Information:

Silver Fern Chemical, Inc.
121 W. De La Guerra Street, Suite B
Santa Barbara, CA 93101 USA

Customer Service:

Phone: +1-866-282-3384
Email Address - info@silverfernchemical.com
Website - www.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

Acute Toxicity, Oral - Category 3 [H301]

Acute Toxicity, Dermal - Category 3 [H311]

Acute Toxicity, Inhalation - Category 3 [H331]

Eye Irritation – Category 2A [H319]

Carcinogenicity – Category 2 [H351]

Single Target Organ Toxicity, Single Exposure – Category 2 [H371]

Single Target Organ Toxicity, Repeated Exposure - Category 2; STOT RE 2 [H373]

Aquatic Toxicity, Chronic - Category 1 [H410]

2.2 Label elements

Hazard symbol(s):



Signal word: Danger

Hazard statement(s): H301 - Toxic if swallowed
 H311 - Toxic in contact with skin
 H319 - Causes serious eye irritation
 H331 - Toxic if inhaled
 H351 - Suspected of causing cancer
 H371 - May cause damage to blood
 H373 - May cause damage to the central nervous and respiratory systems, the spleen, liver and kidneys through prolonged and repeated exposure
 H410 - Very toxic to aquatic life with long lasting effects

Precautionary statements:**[Prevention]**

P260 - Do not breathe dust 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.
 P273 - Avoid release to the environment
 P280 - Wear protective gloves, protective clothing and eye protection.

[Response]

P301 + P330 + P310 - IF SWALLOWED: Rinse mouth. Immediately call a POISON CENTER or doctor.
 P302 + P361 + P353 + P312 - IF ON SKIN: Remove immediately all contaminated clothing. Wash with plenty of soap and water. Call a POISON CENTER or doctor if you feel unwell.
 P305+P354+P338 -IF IN EYES: Immediately rinse with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
 P337+P317 - If eye irritation persists: Get medical help.
 P304 + P340 + P311 - IF INHALED: Remove victim to fresh air and keep at rest in a comfortable position for breathing. Call a POISON CENTER or doctor.
 P322 + P312 - Specific treatment: Call a POISON CENTER or doctor if you feel unwell. Refer to Section 4 of this SDS.
 P361 + P363 - Take off immediately all contaminated clothing and wash before reuse.
 P391 - Collect spillage.

[Storage]

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

[Disposal]

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

[This Safety Data Sheet continues on the next page.]

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

None.

SECTION 3 - COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

% by Weight	Ingredient	CAS Number	EC Number	Index Number	GHS Classification
90 - 100	Diphenylamine	122-39-4	204-539-4	612-026-00-5	H301, H311, H331, H373, H410

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 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. 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. Seek immediate medical attention.

Eyes: DO NOT RUB 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. Wash the affected area with soap and water followed by thorough rinsing. Wash contaminated clothing and shoes before reuse. Seek immediate 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 vomitus 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: Causes eye irritation. Symptoms may include redness, swelling, tearing and discomfort. Particulates can cause mechanical irritation of the eye and surrounding tissues. Prolonged contact with eye may cause burns and eye damage.

Skin: Toxic in contact with skin. Prolonged and repeated contact with unprotected skin can result in the absorption of toxic amounts of material. May cause skin irritation with redness, itching, blisters and discomfort. Prolonged contact with unprotected skin may cause dermatitis. May cause allergic skin reaction in sensitive individuals.

Inhalation: Toxic if inhaled. Causes irritation of respiratory tract and mucous membranes, characterized by headache, sore throat, cough, shortness of breath and chest tightness. May cause burns and damage to the respiratory tract, including lung damage. May cause fatigue, somnolence (general depressed activity) and hypertension. May cause respiratory sensitization with asthma-like symptoms, bronchitis, bronchial asthma and emphysema. May cause methemoglobinemia, cyanosis, convulsions, tachycardia, dyspnea (labored breathing) and death. May cause adverse central nervous system effects including headache, convulsions and possible death.

Ingestion: Toxic if swallowed. Causes irritation of the gastrointestinal system with nausea, vomiting, abdominal pain and diarrhea. May cause damage to the digestive tract, the liver, kidneys and bladder. May cause methemoglobinemia, characterized by dizziness, drowsiness, headache, shortness of breath, cyanosis (bluish discoloration of skin due to deficient oxygenation of the blood), rapid heart rate and chocolate-brown colored blood. May affect the blood and blood pressure.

Chronic: Individuals with pre-existing skin, eye and respiratory disorders may be more susceptible to the effects of this product. Chronic exposure will result in the absorption of harmful, possibly toxic, amounts resulting in systemic effects. Prolonged and repeated skin contact with unprotected skin may cause dermatitis, sensitization or aggravate existing skin conditions. Chronic exposure to dust or vapor may cause respiratory sensitization (bronchitis and asthma). May damage the liver, kidneys and bladder. Prolonged may cause anemia and methemoglobinemia. May damage the central nervous system, respiratory system and digestive tract. There is a danger of cumulative effects. Suspected of causing cancer. Refer to Section 11.2.

4.3 Indication of any immediate medical attention and special treatment needed

Advice to doctor and hospital personnel

Treat symptomatically and supportively. Cleansing the entire contaminated area of the body is of utmost importance. Absorption of this product into the body may cause cyanosis. Moderate degrees of cyanosis need to be treated only by supportive measures: bed rest and oxygen inhalation. For methemoglobinemia, administer oxygen alone or with Methylene Blue depending on the methemoglobin concentration in the blood.

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: No data available

5.2 Special hazards arising from the substance or mixture

Combustible material. This substance 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.

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 or vapor. 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 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 and shoes before reuse. Work with material under a hood in the lab.

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.

7.2 Conditions for safe storage, including any incompatibilities

Store below 30 °C (86 °F). Store in dry, cool, well-ventilated areas away from incompatible materials (see Section 10.5), food and drink. Do not store in direct sunlight. 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
122-39-4	Diphenylamine	-----	10 mg/m ³ TWA	10 mg/m ³ TWA

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. Work with material under a hood in the lab. 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	White to pale yellow, crystalline solid
Odor	Characteristic
Odor Threshold	No data available
Molecular Weight	169.22 g/mol
Chemical Formula	C ₁₂ H ₁₁ N
pH	No data available
Freezing/Melting Point	50 - 53 °C (122 - 127 °F) [literature]
Initial Boiling Point	302 °C (576 °F) [literature]
Evaporation Rate	Not applicable
Flammability (solid, gas)	No data available
Flash Point	153 °C (307 °F), closed cup
Autoignition Temperature	No data available
Decomposition Temperature	No data available
Lower Explosive Limit (LEL)	No data available
Upper Explosive Limit (UEL)	No data available
Vapor Pressure	1 hPa @ 108 °C
Vapor Density	No data available
Specific Gravity	1.160
Viscosity	No data available
Solubility in Water	Insoluble
Partition Coefficient (n-octanol/water)	log P _{ow} = 3.15
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 and handling conditions. Material is light sensitive.

10.3 Possibility of hazardous reactions

Forms explosive mixtures with air on intense heating. Hazardous polymerization will not occur.

10.4 Conditions to avoid

Strong heating, contact with incompatible materials.

10.5 Incompatible materials

Strong oxidizing agents, strong acids

10.6 Hazardous decomposition products

Thermal decomposition products include oxides of carbon and nitrogen oxides (NO_x).

SECTION 11 – TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute oral toxicity

LD₅₀, rat: 1,120 g/kg

Acute inhalation toxicity

No data available

Acute dermal toxicity

No data available

Skin irritation

May cause skin irritation.

Eye irritation

Causes eye irritation.

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

May cause damage to the central nervous and respiratory systems, the liver, kidneys and other organs through prolonged and repeated exposure

Aspiration hazard

No data available

11.2 Further information

Diphenylamine (CAS #122-39-4): IARC Group 2B carcinogen - *Possibly carcinogenic to humans*. Not listed as a carcinogen by ACGIH, OSHA or NTP.

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

Very toxic to aquatic life with long lasting effects on the environment.

Toxicity to fish:

LC₅₀ - Pimephales promelas (fathead minnow), 96 h: 3.79mg/l

Toxicity to aquatic invertebrates:

EC₅₀ - Daphnia magna (Water flea), 48 h: 0.27 - 0.36g/l

Toxicity to aquatic plants:

EC₅₀ - Desmodismus subspicatus (Green algae), 72 h: 0.048mg/l

12.2 Persistence and degradability

This material is not readily biodegradable.

12.3 Bioaccumulation potential

This material has the potential to bioaccumulate.

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

No data available

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)

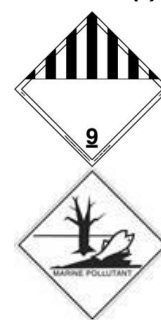
SECTION 14 – TRANSPORTATION INFORMATION

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 miscellaneous materials in Packing Group III when inner packagings are not over 5.0 kg (11 lb.) net capacity each, packed in a strong outer packaging.

USA DOT (Ground Transportation)	NOT REGULATED FOR TRANSPORT - Not dangerous goods
IMO/IMDG (Water Transportation)	
Proper Shipping Name	Environmentally hazardous substance, solid, n.o.s. (Diphenylamine)
Hazard Class	9
UN	UN3077
Packing Group	III
Marine Pollutant	Yes
EMS Number	F-A, S-F
ICAO/IATA (Air Transportation)	
Proper Shipping Name	Environmentally hazardous substance, solid, n.o.s. (Diphenylamine)
Hazard Class	9
UN	UN3077
Packing Group	III
Quantity Limitations	49 CFR 175.27 and 175.75 - Cargo Aircraft Only: no limit; Passenger Aircraft: no limit
RID/ADR (Rail Transportation)	
Proper Shipping Name	Environmentally hazardous substance, solid, n.o.s. (Diphenylamine)
Hazard Class	9
UN	UN3077
Packing Group	III

Drum Label(s)



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.

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 Toxic if swallowed, inhaled or in contact with skin Suspected of causing cancer
May cause damage to the central nervous and respiratory systems, the liver and kidneys through prolonged and repeated exposure

SARA 313 Information: Diphenylamine (CAS #122-39-4) 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): None of the components of this product exceed the threshold (de minimis) reporting levels for hazardous wastes established by CERCLA.

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)

This product does not contain Hazardous Substances.

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

Diphenylamine (CAS #122-39-4) 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.

Canada

WHMIS Hazard Classification

Harmful if swallowed

May cause damage to organs by single exposure and through prolonged and repeated exposure

Canadian National Pollutant Release Inventory (NPRI): Diphenylamine (CAS #122-39-4) is listed on the NPRI.

European Economic Community

WGK, Germany (Water danger/protection): 3 (highly 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		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

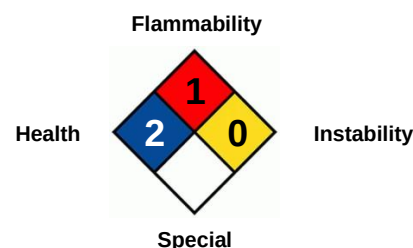
* = Chronic Health Hazard

NFPA Hazard Rating Legend

0 = Insignificant 1 = Slight 2 = Moderate

3 = High 4 = Extreme

National Fire Protection Association (NFPA)



Abbreviation Key

ACGIH	American Conference of Governmental Industrial Hygienists
ADR	Accord Dangereux Routier (European regulations concerning the international transport of dangerous goods by road)
CAS	Chemical Abstract Services
CFR	Code of Federal Regulations
COC	Cleveland Open Cup
DOT	Department of Transportation
EC ₅₀	Half maximal effective concentration
EMS	Emergency Response Procedures for Ships Carrying

LD _{Lo}	Lowest Lethal Dose
mppcf	Millions of Particles Per Cubic Foot
NA	North America
NAERG	North American Emergency Response Guide Book
NIOSH	National Institute for Occupational Safety & Health
NTP	National Toxicology Program
OSHA	Occupational Safety and Health Administration
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: 28 December 2022, Version 3

<end of document>