SAFETY DATA SHEET

This safety data sheet was created pursuant to the requirements of:
US OSHA Hazard Communication Standard 2024 (29 CFR 1910.1200)

Revision date: 20-8-2026 **Revision Number:** 1

1. Identification

Product identifier

Product Name 5171-B Epoxy Hardener

Other means of identification

Product Code FO20052226

Material number(s) FO20052226PZ

UN number or ID number UN2927

Synonyms None

Recommended use of the chemical and restrictions on use

Recommended use For industrial use only

Restrictions on use None.

Details of the supplier of the safety data sheet

Supplier Address
Avient Corporation
33587 Walker Road, Avon Lake, OH 44012

E-mail address regulatoryservices@avient.com

Emergency telephone number

Company Phone Number 1 (440) 930-1000
or 1 (844) 4 AVIENT

24 Hour Emergency Phone Number CHEMTREC 1-800-424-9300 (24hrs for spill, leak, fire, exposure or accident)

Emergency Telephone No information available

2. Hazard(s) identification

Classification of the substance or mixture

Acute toxicity - Oral	Category 4
Acute toxicity - Inhalation (Gases)	Category 2
Acute toxicity - Inhalation (Vapors)	Category 2
Acute toxicity - Inhalation (Dusts/Mists)	Category 2
Skin corrosion/irritation	Category 1 Sub-category B
Serious eye damage/eye irritation	Category 1
Skin sensitization	Category 1
Germ cell mutagenicity	Category 2
Specific target organ toxicity (repeated exposure)	Category 2

Hazards not otherwise classified (HNOC)
Not applicable.

Label elements

Danger

Hazard statements
Harmful if swallowed.
Fatal if inhaled.
Causes severe skin burns and eye damage.
May cause an allergic skin reaction.
Suspected of causing genetic defects.
May cause damage to organs through prolonged or repeated exposure.

Precautionary Statements - Prevention
Wash face, hands and any exposed skin thoroughly after handling.
Do not eat, drink or smoke when using this product.
Do not breathe dust, fume, gas, mist, vapors and spray.
Use only outdoors or in a well-ventilated area.
In case of inadequate ventilation wear respiratory protection.
Wear respiratory protection.
Avoid breathing dust, fume, gas, mist, vapors and spray.
Contaminated work clothing must not be allowed out of the workplace.
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Wear protective gloves, protective clothing, eye protection, face protection, and hearing protection.

Precautionary Statements - Response
Specific treatment is urgent (see supplemental first aid instructions on this label).
Immediately call a POISON CENTER or doctor.
Specific treatment (see supplemental first aid instructions on this label).
IF exposed or concerned: Get medical advice and attention.
Get medical advice and attention if you feel unwell.
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.
Wash contaminated clothing before reuse.
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
If skin irritation or rash occurs: Get medical advice and attention.
Take off contaminated clothing and wash it before reuse.
IF ON SKIN: Wash with plenty of water and soap.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
Immediately call a POISON CENTER or doctor.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
Rinse mouth.
IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell.
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

Precautionary Statements - Storage
Store in a well-ventilated place. Keep container tightly closed.
Store locked up.

Precautionary Statements - Disposal
Dispose of contents and container in accordance with local, regional, national, and international regulations as applicable.

Hazards classified under paragraph (d)(1)(ii) of 1910.1200
No information available.

Other information

Harmful to aquatic life with long lasting effects.

3. Composition/information on ingredients

Substance

Not applicable.

Mixture

Chemical name	CAS No.	Weight-%	Trade secret / Unique identifier
Cyclohexanemethanamine, 5-amino-1,3,3-trimethyl-	2855-13-2	40 - 60%	*
Benzyl alcohol	100-51-6	40 - 60%	*
1,6-Hexanediamine, 2,2,4(or 2,4,4)-trimethyl-	25513-64-8	5 - 10%	*
Phenol	108-95-2	1 - 3%	*

4. First-aid measures

Description of first aid measures

General advice Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.

Inhalation IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing. If breathing has stopped, give artificial respiration. Get medical attention immediately. Do not use mouth-to-mouth method if victim ingested or 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 breathing is difficult, (trained personnel should) give oxygen. Delayed pulmonary edema may occur.

Eye contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Keep eye wide open while rinsing. Do not rub affected area. Remove contact lenses, if present and easy to do. Continue rinsing. Get immediate medical attention.

Skin contact Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Get immediate medical attention. May cause an allergic skin reaction.

Ingestion Do NOT induce vomiting. Rinse mouth. Never give anything by mouth to an unconscious person. Get immediate medical attention.

Self-protection of the first aider Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination. Do not breathe dust, fume, gas, mist, vapors and spray. Use personal protective equipment. See section 8 for more information. Do not use mouth-to-mouth method if victim ingested or 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. Avoid contact with skin, eyes or clothing. Wear personal protective clothing (see section 8).

Most important symptoms and effects, both acute and delayed

Symptoms Coughing and/ or wheezing. Difficulty in breathing. Burning sensation. Redness. May cause blindness. May cause redness and tearing of the eyes. Itching. Rashes. Hives.

Effects of Exposure Mutagenic effects. May cause damage to organs through prolonged or repeated exposure.

Indication of any immediate medical attention and special treatment needed

Note to physicians Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated. Do not give chemical antidotes. Asphyxia from glottal edema may occur. Marked decrease in blood pressure may occur with moist rales, frothy sputum, and high pulse pressure. May cause sensitization in susceptible persons. Treat symptomatically.

5. Fire-fighting measures

Suitable Extinguishing Media Dry chemical, CO2, water spray or regular foam.

Unsuitable extinguishing media Do not use water jetstream.

Specific hazards arising from the chemical The product causes burns of eyes, skin and mucous membranes. Thermal decomposition can lead to release of irritating gases and vapors. Product is or contains a sensitizer. May cause sensitization by skin contact.

Hazardous combustion products Decomposition products can include and are not limited to:. Carbon monoxide. Carbon dioxide (CO2). Nitrogen oxides (NOx). Ammonia.

Explosion data

Sensitivity to mechanical impact None.

Sensitivity to static discharge None.

Special protective equipment and precautions for fire-fighters Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protective equipment.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Personal precautions Ensure adequate ventilation. Do not breathe dust, fume, gas, mist, vapors and spray. Avoid contact with skin, eyes or clothing. Use personal protective equipment. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Attention! Corrosive material. Use personal protective equipment as required.

Other information Refer to protective measures listed in Sections 7 and 8.

For emergency responders Use personal protection recommended in Section 8.

Methods and material for containment and cleaning up

Methods for containment Prevent further leakage or spillage if safe to do so.

Methods for cleaning up Dam up. Soak up with inert absorbent material. Pick up and transfer to properly labeled containers. Clean contaminated surface thoroughly.

Prevention of secondary hazards Clean contaminated objects and areas thoroughly observing environmental regulations.

Reference to other sections See section 8 for more information. See section 13 for more information.

7. Handling and storage

Precautions for safe handling

Advice on safe handling Handle in accordance with good industrial hygiene and safety practice. Do not breathe dust, fume, gas, mist, vapors and spray. Handle product only in closed system or provide appropriate exhaust ventilation. In case of insufficient ventilation, wear suitable respiratory

equipment. Use personal protective equipment. Do not get in eyes, on skin, or on clothing. Do not eat, drink or smoke when using this product. Take off immediately all contaminated clothing and wash it before reuse. Avoid contact with skin, eyes or clothing. Take off contaminated clothing and wash before reuse. Remove contaminated clothing and shoes.

General hygiene considerations Do not breathe dust, fume, gas, mist, vapors and spray. Do not get in eyes, on skin, or on clothing. Do not eat, drink or smoke when using this product. Use personal protection recommended in Section 8. Take off immediately all contaminated clothing and wash it before reuse. Contaminated work clothing must not be allowed out of the workplace. Wash hands before breaks and immediately after handling the product. Regular cleaning of equipment, work area and clothing is recommended. Avoid contact with skin, eyes or clothing. Wear protective gloves, eye protection and face protection. Remove and wash contaminated clothing and gloves, including the inside, before re-use.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep containers tightly closed in a dry, cool and well-ventilated place. Keep out of the reach of children. Store locked up. Protect from moisture. Store away from other materials.

8. Exposure controls/personal protection

Control Parameters

Exposure Limits

Chemical name	ACGIH TLV	OSHA PEL	NIOSH
Phenol (108-95-2)	TWA: 5 ppm pSk	TWA: 5 ppm TWA: 19 mg/m^3 (vacated) TWA: 5 ppm (vacated) TWA: 19 mg/m^3 dSk Sdv	TWA: 5 ppm; TWA: 19 mg/m^3; Ceiling: 15.6 ppm 15 min Ceiling: 60 mg/m^3 15 min IDLH: 250 ppm

Note See section 16 for terms and abbreviations.

Other information on limit values Vacated limits revoked by the Court of Appeals decision in AFL-CIO v. OSHA, 965 F.2d 962 (11th Cir., 1992).

Biological occupational exposure limits

Chemical name	ACGIH
Phenol (108-95-2)	250 mg/g creatinine - urine (Phenol with hydrolysis) - end of shift

Appropriate engineering controls

Engineering controls Ensure adequate ventilation, especially in confined areas. Apply technical measures to comply with the occupational exposure limits.

Individual protection measures, such as personal protective equipment

Eye/face protection Face protection shield. Tight sealing safety goggles.

Hand protection Wear suitable gloves.

Skin and body protection Wear suitable protective clothing. Chemical resistant apron.

Respiratory protection Use appropriate respiratory protection. Consult with an industrial hygienist to determine the appropriate respiratory protection for your specific use of this material.

Environmental exposure controls Local authorities should be advised if significant spillages cannot be contained.

9. Physical and chemical properties

Information on basic physical and chemical properties

Appearance	Liquid
Physical state	Liquid
Color	No information available
Odor (includes odor threshold)	Slight

Property	Values	Remarks • Method
Melting point / freezing point	No data available	None known
Boiling point (or initial boiling point or boiling range)	No data available	None known
Flammability	No data available	None known
Flammability Limit in Air		None known
Upper flammability or explosive limits	No data available	
Lower flammability or explosive limits	No data available	
Flash point	No data available	None known
Autoignition temperature	No data available	None known
Decomposition temperature	No data available	None known
SADT (°C)	No data available	None known
pH	No data available	None known
pH (as aqueous solution)	No data available	None known
Kinematic viscosity	No data available	None known
Dynamic viscosity	No data available	None known
Solubility	No data available	None known
Water solubility	No data available	None known
Partition coefficient n-octanol/water (log value)	No data available	None known
Vapor pressure (includes evaporation rate)	No data available	None known
Evaporation rate	No data available	None known
Density and/or relative density	No data available	None known
Bulk density	No data available	
Liquid Density	No data available	
Relative vapor density	No data available	None known
Particle characteristics		None known
Particle Size	No data available	
Particle Size Distribution	No data available	

Other information

10. Stability and reactivity

Reactivity No information available.

Chemical stability Stable under recommended storage conditions.

Possibility of hazardous reactions None under normal processing.

Conditions to avoid Excessive heat. Exposure to air or moisture over prolonged periods.

Incompatible materials Acids. Bases. Oxidizing agent.

Hazardous decomposition products None under normal use conditions.

11. Toxicological information

This mixture has not been evaluated as a whole for health effects. Exposure effects listed are based on existing health data for the individual components which comprise the mixture.

Information on likely routes of exposure

Product Information

Inhalation Specific test data for the substance or mixture is not available. Fatal if inhaled. (based on components). Corrosive by inhalation. Inhalation of corrosive fumes/gases may cause coughing, choking, headache, dizziness, and weakness for several hours. Pulmonary edema may occur with tightness in the chest, shortness of breath, bluish skin, decreased blood pressure, and increased heart rate. Inhaled corrosive substances can lead to a toxic edema of the lungs. Pulmonary edema can be fatal.

Eye contact Specific test data for the substance or mixture is not available. Causes serious eye damage. (based on components). Corrosive to the eyes and may cause severe damage including blindness. May result in permanent damage including blindness.

Skin contact Specific test data for the substance or mixture is not available. Corrosive. (based on components). Causes burns. May cause sensitization by skin contact. Repeated or prolonged skin contact may cause allergic reactions with susceptible persons.

Ingestion Specific test data for the substance or mixture is not available. Causes burns. (based on components). Ingestion causes burns of the upper digestive and respiratory tracts. May cause severe burning pain in the mouth and stomach with vomiting and diarrhea of dark blood. Blood pressure may decrease. Brownish or yellowish stains may be seen around the mouth. Swelling of the throat may cause shortness of breath and choking. May cause lung damage if swallowed. May be fatal if swallowed and enters airways.

Symptoms related to the physical, chemical and toxicological characteristics

Symptoms Coughing and/ or wheezing. Difficulty in breathing. Burning sensation. Redness. May cause blindness. May cause redness and tearing of the eyes. Itching. Rashes. Hives.

Acute toxicity Fatal if inhaled. Harmful if swallowed.

Numerical measures of toxicity

The following ATE values have been calculated for the mixture

ATEmix (oral)	1,023.10 mg/kg
ATEmix (dermal)	21,724.10 mg/kg
ATEmix (inhalation-gas)	333.30 ppm
ATEmix (inhalation-vapor)	1.61 mg/L
ATEmix (inhalation-dust/mist)	0.169 mg/L

Component Information

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
Cyclohexanemethanamine, 5-amino-1,3,3-trimethyl- (2855-13-2)	= 1030 mg/kg (Rat)	> 2000 mg/kg (Rat)	> 5.01 mg/L (Rat) 4 h 1.07 - 5.01 mg/L (Rat) 4 h
Benzyl alcohol (100-51-6)	1230 mg/kg (Rat)	> 2000 mg/kg	-
1,6-Hexanediamine, 2,2,4(or 2,4,4)-trimethyl- (25513-64-8)	= 910 mg/kg (Rat)	-	-
Phenol (108-95-2)	300 mg/kg (Rat)	630 mg/kg (Rabbit)	-

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Skin corrosion/irritation Classification based on data available for ingredients. Causes severe skin burns and eye damage.

Serious eye damage/eye irritation Classification based on data available for ingredients. Causes serious eye damage. Causes burns.

Respiratory or skin sensitization May cause an allergic skin reaction.

Germ cell mutagenicity Contains a known or suspected mutagen. Classification based on data available for ingredients. Suspected of causing genetic defects.

Carcinogenicity Based on available data, the classification criteria are not met.

The table below indicates whether each agency has listed any ingredient as a carcinogen.

Chemical name	ACGIH	IARC	NTP	OSHA
Phenol (108-95-2)	-	Group 3	-	-

Reproductive toxicity Based on available data, the classification criteria are not met.

STOT - single exposure Based on available data, the classification criteria are not met.

STOT - repeated exposure May cause damage to organs through prolonged or repeated exposure.

Aspiration hazard No information available.

Other adverse effects No information available.

Interactive effects No information available.

12. Ecological information

Ecotoxicity Harmful to aquatic life with long lasting effects.

Aquatic ecotoxicity

Component Information

Chemical name	Fish	Crustacea	Algae/aquatic plants	Toxicity to microorganisms
Cyclohexanemethanamine, 5-amino-1,3,3-trimethyl- (2855-13-2)	-	EC50: 14.6 - 21.5mg/L (48h, Daphnia magna)	EC50: =37mg/L (72h, Desmodesmus subspicatus)	-
1,6-Hexanediamine, 2,2,4(or 2,4,4)-trimethyl- (25513-64-8)	-	-	EC50: =29.5mg/L (72h, Desmodesmus subspicatus)	-

Terrestrial ecotoxicity

Component Information

Chemical name	Earthworm	Avian	Honeybees
Phenol (108-95-2)	Acute Toxicity: LC100 = 6900 mg/kg (Eisenia foetida, 56 Days soil dry weight)	-	-

Persistence and degradability No information available.

Bioaccumulative potential

Component Information

Chemical name	Partition coefficient	Bioconcentration factor (BCF)	Trophic magnification factor (TMF)
Cyclohexanemethanamine, 5-amino-1,3,3-trimethyl- (2855-13-2)	0.99	-	-
1,6-Hexanediamine, 2,2,4(or 2,4,4)-trimethyl- (25513-64-8)	-0.3	-	-
Phenol (108-95-2)	1.47	17.5	-

Mobility in soil No information available.

Other adverse effects No information available.

13. Disposal considerations

Disposal methods

Waste from residues/unused products Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation.

Contaminated packaging Do not reuse empty containers.

California Hazardous Waste Status This product contains one or more substances that are listed with the State of California as a hazardous waste.

14. Transport information

Note: This material is not subject to regulation as a hazardous material for shipping

DOT

UN number or ID number UN2927
Proper shipping name Toxic liquids, corrosive, organic, n.o.s.
Transport hazard class(es) 6.1
Subsidiary hazard class 8
Packing group II
Reportable quantity (kg) (Phenol: RQ (kg)= 454.00) Phenol: RQ (lb)= 1000.00
Reportable quantity (kg) (calculated) Phenol: RQ (kg)= 15655.17
Reportable quantity (lbs) (calculated) Phenol: RQ (lb)= 34483.00
Special Provisions IB2, T11, TP2, TP27
DOT Marine Pollutant NP
Description UN2927, Toxic liquids, corrosive, organic, n.o.s. (Phenol, 1,6-Hexanediamine, 2,2,4(or 2,4,4)-trimethyl-), 6.1 (8), II
Emergency Response Guide Number 154

TDG

UN number or ID number UN2927
UN proper shipping name Toxic liquid, corrosive, organic, n.o.s.
Transport hazard class(es) 6.1

Subsidiary hazard class	8
Packing group	II
Description	UN2927, Toxic liquid, corrosive, organic, n.o.s. (Phenol, 1,6-Hexanediamine, 2,2,4(or 2,4,4)-trimethyl-), 6.1 (8), II

MEX

UN number or ID number	UN2927
UN proper shipping name	Toxic liquid, corrosive, organic, n.o.s.
Transport hazard class(es)	6.1
Subsidiary hazard class	8
Packing group	II
Technical Name	Phenol, 1,6-Hexanediamine, 2,2,4(or 2,4,4)-trimethyl-
Description	UN2927, Toxic liquid, corrosive, organic, n.o.s. (Phenol, 1,6-Hexanediamine, 2,2,4(or 2,4,4)-trimethyl-), 6.1 (8), II
Special Provisions	274

ICAO (air)

UN number or ID number	UN2927
UN proper shipping name	Toxic liquid, corrosive, organic, n.o.s.
Transport hazard class(es)	6.1
Subsidiary hazard class	8
Packing group	II
Description	UN2927, Toxic liquid, corrosive, organic, n.o.s. (Phenol, 1,6-Hexanediamine, 2,2,4(or 2,4,4)-trimethyl-), 6.1 (8), II
Special Provisions	A4, A137

IATA

UN number or ID number	UN2927
UN proper shipping name	Toxic liquid, corrosive, organic, n.o.s.
Technical Name	Phenol, 1,6-Hexanediamine, 2,2,4(or 2,4,4)-trimethyl-
Transport hazard class(es)	6.1
Subsidiary hazard class	8
Packing group	II
Environmental hazards	No
Special Provisions	A4, A137
ERG Code	6C
Description	UN2927, Toxic liquid, corrosive, organic, n.o.s. (Phenol, 1,6-Hexanediamine, 2,2,4(or 2,4,4)-trimethyl-), 6.1 (8), II

IMDG

UN number or ID number	UN2927
UN proper shipping name	Toxic liquid, corrosive, organic, n.o.s.
Technical Name	Phenol, 1,6-Hexanediamine, 2,2,4(or 2,4,4)-trimethyl-
Transport hazard class(es)	6.1
Subsidiary hazard class	8
Packing group	II
Marine pollutant indicator	NP
Special Provisions	274
EmS-No.	F-A, S-B
Description	UN2927, Toxic liquid, corrosive, organic, n.o.s. (Phenol, 1,6-Hexanediamine, 2,2,4(or 2,4,4)-trimethyl-), 6.1 (8), II

15. Regulatory information

International Regulations

The Rotterdam Convention Not applicable

International Inventories

TSCA Complies

DSL/NDSL	Complies
ENCS	Complies
IECSC	Complies
KECL	Not determined
PICCS	Not determined
AIIC	Complies
NZIoC	Complies
TCSI	Complies

US Federal Regulations

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

SARA 311/312 Hazard Categories
Should this product meet EPCRA 311/312 Tier reporting criteria at 40 CFR 370, refer to Section 2 of this SDS for appropriate classifications.

CWA (Clean Water Act)
This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

Chemical name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Phenol (108-95-2)	1000 lb	X	X	X

CAA (Clean Air Act)
This product does not contain any substances regulated as pollutants pursuant to Clean Air Act (CAA).

CERCLA
This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302).

Chemical name	Hazardous Substances RQs	Extremely Hazardous Substances RQs
Phenol (108-95-2)	1000 lb	1000 lb

US State Regulations

California Proposition 65
This product does not contain any Proposition 65 chemicals

U.S. State Right-to-Know Regulations

Chemical name	New Jersey	Massachusetts	Pennsylvania
Cyclohexanemethanamine, 5-amino-1,3,3-trimethyl- (2855-13-2)	X	-	-
Benzyl alcohol (100-51-6)	-	X	X
1,6-Hexanediamine, 2,2,4(or 2,4,4)-trimethyl- (25513-64-8)	X	-	-
Phenol (108-95-2)	X	X	X

U.S. EPA Label Information

EPA Pesticide Registration Number Not applicable

16. Other information

NFPA	**Health hazards** 4	**Flammability** 0	**Instability** 0	**Special hazards** -
HMIS	**Health hazards** 3 *	**Flammability** 0	**Physical hazards** 0	**Personal protection** -

Chronic Hazard Star Legend ** = Chronic Health Hazard*

Key or legend to abbreviations and acronyms used in the safety data sheet

List may include phrases which are not applicable to this product

ACGIH	American Conference of Governmental Industrial Hygienists
ADN	Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways (Europe)
ADR	Agreement concerning the International Carriage of Dangerous Goods by Road (Europe)
AIIC	Australian Inventory of Industrial Chemicals
ATE	Acute Toxicity Estimate
ASTM	American Society for the Testing of Materials
bar	Biological Reference Values for Chemical Compounds in the Work Area
BAT	Biological tolerance values for occupational exposure
BEL	Biological exposure limits
bw	Body weight
Ceiling	Maximum limit value
CMR	Carcinogen, Mutagen or Reproductive Toxicant
DOT	Department of Transportation (United States)
DSL	Domestic Substances List (Canada)
ECEL	Existing Chemical Exposure Limit
EINECS	European Inventory of Existing Chemical Substances
ELINCS	European List of Notified Chemical Substances
EmS	Emergency Schedule
ENCS	Existing and New Chemical Substances (Japan)
EPA	U.S. Environmental Protection Agency
GHS	Globally Harmonized System
HMIS	Hazardous Materials Identification System
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IBC	International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk
ICAO	International Civil Aviation Organization
IECSC	Inventory of Existing Chemical Substances in China
IMDG	International Maritime Dangerous Goods
IMO	International Maritime Organization
ISO	International Organization for Standardization
KECI	Korean Existing Chemicals Inventory
LC50	Lethal Concentration to 50% of a test population
LD50	Lethal Dose to 50% of a test population (Median Lethal Dose)
MARPOL	International Convention for the Prevention of Pollution from Ships
NDSL	Non-Domestic Substances List (Canada)
NFPA	National Fire Protection Association
NIOSH	National Institute for Occupational Safety and Health
n.o.s.	Not Otherwise Specified
NOAEC	No Observed Adverse Effect Concentration
NOAEL	No Observed Adverse Effect Level
NOELR	No Observable Effect Loading Rate
NTP	National Toxicology Program (United States)
NZIoC	New Zealand Inventory of Chemicals
OECD	Organization for Economic Cooperation and Development
OEL	Occupational exposure limits
OSHA	Occupational Safety and Health Administration of the US Department of Labor
PBT	Persistent, Bioaccumulative and Toxic substance
PICCS	Philippines Inventory of Chemicals and Chemical Substances
PMT	Persistent, Mobile and Toxic

PPE	Personal protective equipment
QSAR	Quantitative Structure Activity Relationship
RID	Agreement concerning the International Carriage of Dangerous Goods by Rail (Europe)
SADT	Self-Accelerating Decomposition Temperature
SAR	Structure-activity relationship
SARA	Superfund Amendments and Reauthorization Act
SDS	Safety Data Sheet
SL	Surface Limit
STEL	Short Term Exposure Limit
STOT RE	Specific target organ toxicity - Repeated exposure
STOT SE	Specific target organ toxicity - Single exposure
TCSI	Taiwan Chemical Substance Inventory
TDG	Transport of Dangerous Goods (Canada)
TSCA	Toxic Substances Control Act (United States)
TWA	Time-Weighted Average
UN	United Nations
VOC	Volatile organic compounds
vPvB	Very Persistent and Very Bioaccumulative
vPvM	Very Persistent and Very Mobile
As	Allergenic substance
DS	Dermal Sensitizer
Ot	Ototoxicant
pOt	Ototoxicant - potential to cause hearing disorders
PS	Photosensitizer
RS	Respiratory Sensitizer
S	Sensitizer
poS	Sensitizer - capable of causing occupational asthma
Sa	Simple asphyxiant
Sd	Skin designation
pSd	Skin designation - potential for cutaneous absorption
Sdv	Skin designation - vacated
Sk	Skin notation
dSk	Skin notation - danger of cutaneous absorption
pSk	Skin notation - potential for cutaneous absorption

Key literature references and sources for data used to compile the SDS

U.S. Agency for Toxic Substances and Disease Registry (ATSDR)
U.S. Environmental Protection Agency ChemView Database
European Food Safety Authority (EFSA)
U.S. Environmental Protection Agency
U.S. EPA Acute Exposure Guideline Level(s) (AEGL(s))
U.S. Environmental Protection Agency Federal Insecticide, Fungicide, and Rodenticide Act
U.S. Environmental Protection Agency High Production Volume Chemicals
Food Research Journal
U.S. Hazardous Substance Data Bank (HSDB)
International Uniform Chemical Information Database (IUCLID)
Japan National Institute of Technology and Evaluation (NITE)
Australia National Industrial Chemicals Notification and Assessment Scheme (NICNAS)
U.S. National Institute for Occupational Safety and Health (NIOSH)
National Library of Medicine's ChemID Plus (NLM CIP)
National Library of Medicine’s PubMed database (NLM PUBMED)
U.S. National Toxicology Program (NTP)
New Zealand's Chemical Classification and Information Database (CCID)
International Organization for Economic Co-operation and Development (OECD) Environment, Health, and Safety Publications
International Organization for Economic Co-operation and Development (OECD) High Production Volume Chemicals Program
International Organization for Economic Co-operation and Development (OECD) Screening Information Data Set
United Nations World Health Organization (WHO)

Revision date 20-8-2026
Revision Note No information available.

Disclaimer

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End of Safety Data Sheet