

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard

Kemira

Hydrifin L

Version
6.0

Revision Date:
10/08/2024

Date of last issue: 03/26/2024
Date of first issue: 08/13/2018

SECTION 1. IDENTIFICATION

Product name : **Hydrifin L**

Manufacturer or supplier's details

Company name of supplier : Kemira Water Solutions, Inc.
Address : 200 Galleria Parkway, Suite 1500
Atlanta GA 30339-5979
Telephone : (770) 436-1542
Telefax : (770) 436-3432
E-mail address of person : us-customerservice@kemira.com
responsible for the SDS
Emergency telephone number : CHEMTREC (24 Hours): 1-800-424-9300

Recommended use of the chemical and restrictions on use

Recommended use : The product is used as a reducing agent for pharmaceuticals, chemical and textile industries, recovery of precious metals from process streams.

Restrictions on use : For industrial use only.

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Skin corrosion : Category 1A
Serious eye damage : Category 1
Acute toxicity (Oral) : Category 4
Reproductive toxicity : Category 1B
Corrosive to metals : Category 1

GHS label elements

Hazard pictograms :



Signal word : Danger

Hazard statements : H290 May be corrosive to metals.
H302 Harmful if swallowed.
H314 Causes severe skin burns and eye damage.
H361d Suspected of damaging the unborn child.

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Precautionary statements

:

Prevention:

P201 + P202 Obtain special instructions before use. Do not handle until all safety precautions have been read and understood.

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

P260 Do not breathe gas, mist, vapours or spray.

P270 Do not eat, drink or smoke when using this product.

P264 Wash face, hands and any exposed skin thoroughly after handling.

P234 Keep only in original packaging.

Response:

P308 + P313 IF exposed or concerned: Get medical attention.

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

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

P363 Wash contaminated clothing before reuse.

P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

P304 + P340 + P312 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a doctor if you feel unwell.

P390 Absorb spillage to prevent material damage.

Storage:

P402 + P404 Store in a dry place. Store in a closed container.

P405 Store locked up.

P406 Store in corrosive resistant container with a resistant inner liner.

Disposal:

P501 Dispose of contents/ container to an approved waste disposal plant.

Other hazards

Reacts with acids and light metals liberating highly flammable hydrogen.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture
Chemical nature : Sodium borohydride

Components

Chemical name	CAS-No.	Concentration (% w/w)
Sodium hydroxide	1310-73-2	<= 40
Sodium borohydride	16940-66-2	<= 12
Sodium metaborate, anhydrous	7775-19-1	< 2.5

Actual concentration is withheld as a trade secret

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SECTION 4. FIRST AID MEASURES

General advice	: In the case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
If inhaled	: Move to fresh air. If breathed in, move person into fresh air. If coughing, difficult breathing or other symptoms of poisoning occur, even after several hours, call a physician immediately.
In case of skin contact	: Use emergency shower. Take off contaminated clothing and shoes immediately. Wash off immediately with plenty of water for at least 30 minutes. Call a physician immediately.
In case of eye contact	: Rinse immediately with plenty of water, also under the eyelids, for at least 30 minutes. Keep eye wide open while rinsing. Prevent rinsing water from flowing into the other eye. Continue rinsing eyes during transport to hospital.
If swallowed	: If accidentally swallowed obtain immediate medical attention. Rinse mouth. Drink 1 or 2 glasses of water. Do NOT induce vomiting. Show this safety data sheet to the doctor in attendance. Never give anything by mouth to an unconscious person.
Most important symptoms and effects, both acute and delayed	: Causes severe burns. corrosive effects toxic effects for reproduction Avoid contact with skin, eyes and clothing. Contact with skin and/or eyes may provoke the following symptoms: Blistering Irritation Burn Pain Ingestion may provoke the following symptoms: Disorientation Dizziness Symptoms may be delayed. Harmful if swallowed. Causes serious eye damage. May damage fertility or the unborn child. Causes severe burns.
Protection of first-aiders	: First Aid responders should pay attention to self-protection and use the recommended protective clothing
Notes to physician	: Symptomatic treatment.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media	: Water Dry powder
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Unsuitable extinguishing media	: The product itself does not burn. Hydrogen gas formed during decomposition is very highly flammable. Halons
Specific hazards during fire-fighting	: Carbon dioxide (CO ₂) Burning may produce irritant fumes.
Hazardous combustion products	: No information available.
Specific extinguishing methods	: Use extinction measures that are appropriate to local circumstances and their surroundings.
Further information	: Extinguish the fire from a sheltered place. Keep people away from and upwind of the fire.
Special protective equipment for firefighters	: In the event of fire, wear self-contained breathing apparatus. Exposure to decomposition products may be a hazard to health. Use NIOSH/MSHA approved respiratory protection.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	: Ensure adequate ventilation. Use personal protective equipment. Keep people away from and upwind of spill/leak.
Environmental precautions	: Take up mechanically and collect into suitable containers for disposal. Contaminated product decomposes releasing hydrogen gas. The containers must be provided with a pressure release system. Prevent product from entering the environment. Local authorities should be advised if significant spillages cannot be contained.
Methods and materials for containment and cleaning up	: Clean contaminated surface thoroughly. Ensure adequate ventilation. After cleaning, flush away traces with water. Large spills should be collected mechanically (remove by pumping) for disposal. Must be disposed of in accordance with local and national regulations.

SECTION 7. HANDLING AND STORAGE

Advice on safe handling	: Avoid exposure - obtain special instructions before use. Product must be added cautiously to water to prevent warming and splashes.
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Keep away from sources of ignition - No smoking.
Wear personal protective equipment.
Appropriate fire-fighting equipment should be available at the workplace/storage.
Ensure that eyewash stations and safety showers are close to the workstation location.
To avoid ignition of vapours by static electricity discharge, all metal parts of the equipment must be grounded.
Dose and handle in closed system if possible.
When using do not eat, drink or smoke.

Conditions for safe storage : Keep away from open flames, hot surfaces and sources of ignition.
Keep tightly closed in a dry, cool and well-ventilated place.
Appropriate fire-fighting equipment should be available at the workplace/storage.

Recommended storage temperature : 64 - 77 °F / 18 - 25 °C

Packaging material : Unsuitable material: No data available

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Sodium hydroxide	1310-73-2	C	2 mg/m3	ACGIH
		TWA	2 mg/m3	OSHA Z-1
		C	2 mg/m3	OSHA P0
		C	2 mg/m3	NIOSH REL
Sodium metaborate, anhydrous	7775-19-1	TWA (Inhalable particulate matter)	2 mg/m3 (Borate)	ACGIH
		STEL (Inhalable particulate matter)	6 mg/m3 (Borate)	ACGIH

Personal protective equipment

Respiratory protection : In case of insufficient ventilation wear suitable respiratory equipment.

Hand protection

Material : butyl-rubber
Break through time : > 480 min
Glove thickness : 0.5 mm

Material : Polychloroprene
Break through time : > 480 min
Glove thickness : 0.5 mm

Material : Nitrile rubber
Break through time : > 480 min
Glove thickness : 0.5 mm

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Material : natural rubber
Break through time : > 480 min
Glove thickness : 0.5 mm

Material : PVC
Break through time : > 480 min
Glove thickness : 0.5 mm

Material : Viton®
Break through time : > 480 min
Glove thickness : 0.4 mm

Remarks : Chemical resistant gloves. Protective gloves complying with EN 374. For continuous contact with the chemical, gloves should be used for only half of the breakthrough time. If changes are detected in used gloves, discard them immediately. Use impermeable, CE-approved gloves for the manipulation of chemical products. Take note of the information given by the producer concerning permeability and break through times, and of special workplace conditions (mechanical strain, duration of contact). The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material cannot be calculated in advance and has therefore to be checked prior to the application.

Eye protection : Tightly fitting safety goggles or safety glasses with side-shields.
(EN 166)
Always wear eye protection when the potential for inadvertent eye contact with the product cannot be excluded.
Tightly fitting safety goggles or safety glasses with side-shields.

Skin and body protection : If splashes are likely to occur, wear suitable protective clothing, aprons, shield and suits, rubber or plastic boots.

Protective measures : Avoid exposure - obtain special instructions before use.
Careful training is required for the work.
Use a protective suit as impermeable as possible.
Ensure that eyewash stations and safety showers are close to the workstation location.
Provide adequate general and local exhaust ventilation.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state : Aqueous solution

Colour : colourless

Odour : odourless

Odour Threshold : No data available

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pH	:	14 (77 °F / 25 °C) Concentration: 100 %
Melting point/range	:	-4 - 50 °F / -20 - 10 °C
Boiling point/boiling range	:	266 °F / 130 °C
Flash point	:	does not flash
Evaporation rate	:	No data available
Self-ignition	:	No data available
Upper explosion limit / Upper flammability limit	:	not determined
Lower explosion limit / Lower flammability limit	:	not determined
Vapour pressure	:	Not applicable
Relative vapour density	:	No data available
Relative density	:	No data available
Density	:	1.375 g/cm ³ (77 °F / 25 °C)
Solubility(ies) Water solubility	:	completely soluble, May leach into ground water. (32 - 212 °F / 0 - 100 °C)
Partition coefficient: n-octanol/water	:	No data available
Auto-ignition temperature	:	No data available
Decomposition temperature	:	No data available
Self-Accelerating decomposition temperature (SADT)	:	239 °F / 115 °C Method: UN-Test H.2 Packaging size (Mass): 50 kg 230 °F / 110 °C Method: UN-Test H.2 Packaging size (Volume): 1,250 l 176 °F / 80 °C Method: UN-Test H.2 Packaging size (Volume): 20 m ³
Viscosity Viscosity, dynamic	:	ca. 70 mPa.s (68 °F / 20 °C)

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Viscosity, kinematic	:	No data available
Metal corrosion rate	:	Corrosive to metals

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	Reacts with: Oxidizing agents Acids Light metals
Chemical stability	:	Stable under recommended storage conditions.
Possibility of hazardous reactions	:	Reacts with acids and light metals liberating highly flammable hydrogen.
Conditions to avoid	:	Keep away from open flames, hot surfaces and sources of ignition.
Incompatible materials	:	Acids Oxidizing agents Metals Aluminium Zinc magnesium
Hazardous decomposition products	:	Hazardous decomposition products formed in contact with oxidizing agents: sodium metaborate sodium hydroxide hydrogen Hazardous decomposition products formed in contact with acids: diborane hydrogen

SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity

Harmful if swallowed.

Product:

Acute oral toxicity	:	Acute toxicity estimate: 471.42 mg/kg Method: Calculation method
Acute inhalation toxicity	:	Assessment: Based on available data, the classification criteria are not met.
Acute dermal toxicity	:	Assessment: Based on available data, the classification criteria are not met.

Acute toxicity estimate: > 5,000 mg/kg
Method: Calculation method

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Components:

Sodium hydroxide:

Acute toxicity (other routes of administration) : LD50 (Mouse): 40 mg/kg
Application Route: ipr

Sodium borohydride:

Acute oral toxicity : LD50 (Rat, female): 56.57 mg/kg
Method: OECD Guideline 425
GLP: yes

Acute inhalation toxicity : LC0 (Rat, male): > 5.18 mg/l
Exposure time: 1 h
Test atmosphere: dust/mist

Acute dermal toxicity : LD50 (Rabbit): > 4,000 mg/kg

Skin corrosion/irritation

Causes severe burns.

Product:

Assessment : Causes severe skin burns and eye damage.

Components:

Sodium hydroxide:

Species : Rabbit
Method : Draize Test
Result : Causes burns.

Species : Rabbit
Method : OECD Test Guideline 435
Result : Corrosive to skin

Sodium borohydride:

Species : Rabbit
Exposure time : 4 h
Method : OECD Test Guideline 404
Result : Corrosive
GLP : yes

Serious eye damage/eye irritation

Causes serious eye damage.

Product:

Assessment : Causes serious eye damage.

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Components:

Sodium hydroxide:

Species : Rabbit
Result : Corrosive
Method : Draize Test

Sodium borohydride:

Species : Rabbit
Result : Corrosive
Exposure time : 24 h
GLP : no

Sodium metaborate, anhydrous:

Species : Rabbit
Result : Eye irritation
Remarks : Based on the high pH-value of the product corrosive activity on eyes are expected.

Respiratory or skin sensitisation

Skin sensitisation

Not classified due to lack of data.

Respiratory sensitisation

Not classified due to lack of data.

Product:

Remarks : Contains no substance or substances classified as sensitising.

Components:

Sodium borohydride:

Test Type : Buehler Test
Exposure routes : Skin contact
Species : Guinea pig
Method : OECD Test Guideline 406

Germ cell mutagenicity

Not classified due to lack of data.

Product:

Germ cell mutagenicity - Assessment : Based on available data, the classification criteria are not met.

Components:

Sodium hydroxide:

Genotoxicity in vitro : Test Type: Ames test

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Test system: Salmonella typhimurium (bacterium)
Metabolic activation: No data available
Result: negative

Sodium borohydride:

Genotoxicity in vitro : Test Type: AMES test
Test system: Salmonella typhimurium (bacterium)
Metabolic activation: with and without metabolic activation
Result: negative
GLP: yes
Remarks: Read-across from supporting substance (structural analogue or surrogate).
boric acid

Test Type: In vitro gene mutation study in mammalian cells
Test system: mouse lymphoma cells
Metabolic activation: with and without metabolic activation
Result: negative
GLP: yes
Remarks: Read-across from supporting substance (structural analogue or surrogate).
boric acid

Genotoxicity in vivo : Species: Mouse (male and female)
Application Route: Oral
Remarks: Read-across from supporting substance (structural analogue or surrogate).
boric acid

Carcinogenicity

Not classified due to lack of data.

Product:

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

Components:

Sodium hydroxide:

Remarks : No known carcinogenic or other chronic effects.

Sodium borohydride:

Species : Mouse, male and female
Application Route : Oral

Species : Mouse
Application Route : Oral
Method : Calculation method

IARC

No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

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OSHA No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

NTP No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

Reproductive toxicity

May damage fertility or the unborn child.

Product:

Reproductive toxicity - Assessment : May damage fertility or the unborn child.

Components:

Sodium borohydride:

Effects on fertility : Test Type: Three-generation study
Species: Rat, male
Application Route: Oral
General Toxicity - Parent: NOAEL: 61 mg/kg bw/day
Remarks: Read-across from supporting substance (structural analogue or surrogate).

Effects on foetal development : Application Route: Oral
Remarks: Read-across from supporting substance (structural analogue or surrogate).

Sodium metaborate, anhydrous:

Effects on fertility : General Toxicity F1: NOAEL: 106.5 mg/kg bw/day

Effects on foetal development : Application Route: Oral

STOT - single exposure

Not classified due to lack of data.

STOT - repeated exposure

Not classified due to lack of data.

Repeated dose toxicity

Product:

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

Aspiration toxicity

Not classified due to lack of data.

Components:

Sodium borohydride:

No aspiration toxicity classification

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Experience with human exposure

Product:

General Information	:	Target Organs: Mucous membranes Remarks: Ingestion causes burns of the upper digestive and respiratory tracts.
Inhalation	:	Remarks: Inhaled corrosive substances can lead to a toxic oedema of the lungs. Higher exposure may cause lung oedema, circulatory collapse and unconsciousness.
Skin contact	:	Remarks: Repeated skin contact may cause skin irritation, dryness, cracking, inflammation and/or dermatitis.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Product:

Ecotoxicology Assessment

Acute aquatic toxicity	:	Based on available data, the classification criteria are not met.
Chronic aquatic toxicity	:	Based on available data, the classification criteria are not met.

Components:

Sodium hydroxide:

Toxicity to fish	:	LC50 (Oncorhynchus mykiss (rainbow trout)): 45.4 mg/l Exposure time: 96 h LC50 (Gambusia affinis (Mosquito fish)): 125 mg/l Exposure time: 96 h LC100 (Cyprinus carpio (Carp)): 180 mg/l Exposure time: 24 h LC50 (Carassius auratus (goldfish)): 160 mg/l Exposure time: 24 h LC50 (Leuciscus idus (ide)): 157 - 189 mg/l Exposure time: 48 h
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia (water flea)): 40.4 mg/l Exposure time: 48 h Test Type: Immobilization

Sodium borohydride:

Toxicity to fish	:	LC50 (Gambusia affinis (Mosquito fish)): 5,600 mg/l Exposure time: 96 h
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LC50 (Gambusia affinis (Mosquito fish)): 1,800 mg/l
Exposure time: 24 h

Toxicity to daphnia and other aquatic invertebrates : LC50 (Daphnia magna (Water flea)): 133 mg/l
Exposure time: 48 h
Test Type: static test
Test substance: Peracetic acid
Method: ASTM E729-80

Persistence and degradability

Product:

Biodegradability : Remarks: Not applicable

Stability in water : Remarks: Decomposes in water forming sodium metaborate, sodium hydroxide and hydrogen.

Components:

Sodium hydroxide:

Biodegradability : Remarks: The methods for determining the biological degradability are not applicable to inorganic substances.

Sodium borohydride:

Biodegradability : Remarks: The methods for determining biodegradability are not applicable to inorganic substances.

Bioaccumulative potential

Components:

Sodium hydroxide:

Partition coefficient: n-octanol/water : Remarks: Not applicable
inorganic compound

Mobility in soil

No data available

Other adverse effects

Product:

Additional ecological information : pH over 9 is harmful for most fresh water fishes.
Fresh water algae disappears when the pH-value is over 8,5.
The toxicity of this alkali is based on its alkalinity and thus depends on the buffering effect from dilution with water.

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SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : Must be disposed of as hazardous waste.
Dispose of as special waste in compliance with local and national regulations.

Contaminated packaging : Must be disposed of in accordance with local and national regulations.

SECTION 14. TRANSPORT INFORMATION

International Regulation

IATA-DGR

UN/ID No. : UN 3320
Proper shipping name : Sodium borohydride and sodium hydroxide solution
Class : 8
Packing group : II
Labels : Corrosive

IMDG-Code

UN number : UN 3320
Proper shipping name : SODIUM BOROHYDRIDE AND SODIUM HYDROXIDE
SOLUTION, STABILIZED
Class : 8
Packing group : II
Labels : 8
EmS Code : F-A, S-B
Marine pollutant : no

Transport in bulk according to IMO instruments

Not applicable for product as supplied.

National Regulations

49 CFR

UN/ID/NA number : UN 3320
Proper shipping name : Sodium borohydride and sodium hydroxide solution
Class : 8
Packing group : II
Labels : CORROSIVE
ERG Code : 157
Marine pollutant : no

Special precautions for user

Remarks : Keep away from food, drink and animal feeding stuffs.
The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

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SECTION 15. REGULATORY INFORMATION

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

This material does not contain any components with a section 302 EHS TPQ.

SARA 311/312 Hazards : Corrosive to metals
Chemicals which, in contact with water, emit flammable gases
Skin corrosion or irritation
Reproductive toxicity
Acute toxicity (any route of exposure)
Serious eye damage or eye irritation

SARA 313 : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

California Prop. 65

WARNING: This product can expose you to chemicals including Methanol, which is/are known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

The components of this product are reported in the following inventories:

IECSC : All components of this product are included on the Chinese inventory or are not required to be listed on the Chinese inventory.

KECI : All components of this product are included in the Korean (ECL) inventory or are not required to be listed on the Korean (ECL) inventory.

EINECS : All components of this product are included in the European Inventory of Existing Chemical Substances (EINECS) or are not required to be listed on EINECS.

TSCA : All components of this product are included in the United States TSCA Chemical Inventory with Active Status or are not required to be listed on the United States TSCA Chemical Inventory.

NZIoC : All components of this product are included in the New Zealand inventory (NZIoC) or are not required to be listed on the New Zealand inventory (NZIoC).

AIIC : All components of this product are included in the Australian Inventory of Industrial Chemicals (AIIC) or are not required to be listed on the Australian Inventory of Industrial Chemicals (AIIC).

DSL : All components of this product are included in the Canada Domestic Substance List (DSL) or are not required to be listed on the Canada Domestic Substance List (DSL).

ENCS : All components of this product are included on the Japanese (ENCS) inventory or are not required to be listed on the Japanese (ENCS) inventory.

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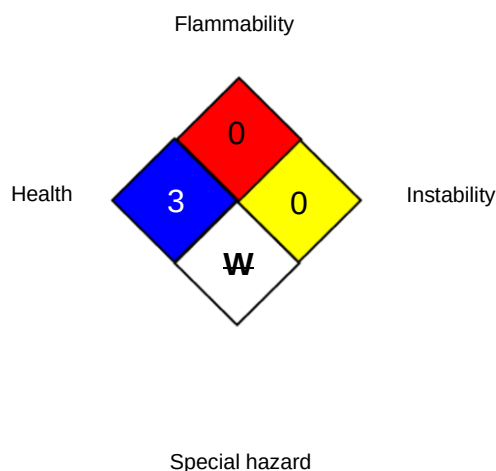
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SECTION 16. OTHER INFORMATION

Further information

NFPA 704:



HMIS® IV:

HEALTH	*	3
FLAMMABILITY		0
PHYSICAL HAZARD		4

HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks.

Full text of other abbreviations

ACGIH	:	USA. ACGIH Threshold Limit Values (TLV)
NIOSH REL	:	USA. NIOSH Recommended Exposure Limits
OSHA P0	:	USA. Table Z-1-A Limits for Air Contaminants (1989 vacated values)
OSHA Z-1	:	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
ACGIH / TWA	:	8-hour, time-weighted average
ACGIH / STEL	:	Short-term exposure limit
ACGIH / C	:	Ceiling limit
NIOSH REL / C	:	Ceiling value not be exceeded at any time.
OSHA P0 / C	:	Ceiling limit
OSHA Z-1 / TWA	:	8-hour time weighted average

AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; 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; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Indus-

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard



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Version
6.0

Revision Date:
10/08/2024

Date of last issue: 03/26/2024
Date of first issue: 08/13/2018

trial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea 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; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

This Safety Data Sheet is prepared according to the OSHA Hazard Communication Standard (29 CFR 1910.1200), an adoption of the UN Globally Harmonized System of Classification and Labeling of Chemicals (GHS), Revision 3 by Kemira.

Sources of key data used to compile the Safety Data Sheet : Regulations, databases, literature, own tests.
Revision Date : 10/08/2024

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