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Version 8.4

Sigma-Aldrich.

SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

Revision Date 07.04.2025 Print Date 08.04.2025 GENERIC EU MSDS - NO COUNTRY SPECIFIC DATA - NO OEL DATA

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1	Product identifiers Product name	:	Hydrazine monohydrate
	Product Number Brand Index-No. REACH No. CAS-No.	:	207942 Sigma-Aldrich 007-008-00-3 01-2119492624-31-XXXX 7803-57-8
1.2	Relevant identified us	es	of the substance or mixture and uses advised against
	Identified uses	:	Laboratory chemicals, Manufacture of substances
1.3	Details of the supplier	of	the safety data sheet

Company

1.4 Emergency telephone

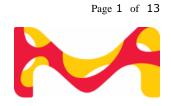
Emergency Phone #	: +(44)-870-8200418 (CHEMTREC (GB))
	+(353)-19014670 (CHEMTREC Ireland)
	001-803-017-9114 (CHEMTREC India)

:

SECTION 2: Hazards identification

2.1	Classification of the substance or Flammable liquids, (Category 3)	mixture H226: Flammable liquid and vapor.
	Acute toxicity, (Category 3)	H301: Toxic if swallowed.
	Acute toxicity, (Category 2)	H330: Fatal if inhaled.
	Acute toxicity, (Category 3)	H311: Toxic in contact with skin.
	Skin corrosion, (Sub-category 1B)	H314: Causes severe skin burns and eye damage.
	Serious eye damage, (Category 1)	H318: Causes serious eye damage.
	Skin sensitization, (Category 1)	H317: May cause an allergic skin reaction.

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Carcinogenicity, (Category 1B)

Short-term (acute) aquatic hazard, (Category 1)

Long-term (chronic) aquatic hazard, (Category 1)

2.2 Label elements

H350: May cause cancer.

H400: Very toxic to aquatic life.

H410: Very toxic to aquatic life with long lasting effects.

Labelling according Regulation (EC) No 1272/2008 Pictogram

Signal Word

Danger

Hazard Statements H226 H301 + H311 H314 H317 H330 H350 H410	Flammable liquid and vapor. Toxic if swallowed or in contact with skin. Causes severe skin burns and eye damage. May cause an allergic skin reaction. Fatal if inhaled. May cause cancer. Very toxic to aquatic life with long lasting effects.
Precautionary Statements	
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P273	Avoid release to the environment.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
P304 + P340 + P310	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/ doctor.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Supplemental Hazard Statements	none

Restricted to professional users.

Reduced Labeling (<= 125 ml)

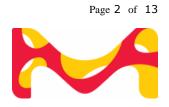
Pictogram



Signal Word Hazard Statements H330 H317 H350 H314 H301 + H311 Danger

Fatal if inhaled. May cause an allergic skin reaction. May cause cancer. Causes severe skin burns and eye damage. Toxic if swallowed or in contact with skin.

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Precautionary Statements	
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
P304 + P340 + P310	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/ doctor.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Supplemental Hazard Statements	none

2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Ecological information:

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher. Toxicological information:

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

SECTION 3: Composition/information on ingredients

3.1 Substances

Synonyms	: Hydrazinium hydroxide
Formula Molecular weight CAS-No. EC-No. Index-No.	 : H₄N₂ · H₂O : 50.06 g/mol : 7803-57-8 : 206-114-9 : 007-008-00-3

ComponentClassificationConcentrationhydrazine monohydrateIncluded in the Candidate List of Substances of Very High
Concern (SVHC) according to Regulation (EC) No. 1907/2006 (REACH)CAS-No.7803-57-8Flam. Liq. 3; Acute Tox. 3;
Acute Tox. 2; Acute Tox. 2; Acute Tox.Index-No.007-008-00-33; Skin Corr. 1B; Eve

Index-No.	007-008-00-3	3; Skin Corr. 1B; Eye	
		Dam. 1; Skin Sens. 1;	
		Carc. 1B; Aquatic Acute 1;	
		Aquatic Chronic 1; H226,	
		H301, H330, H311, H314,	
		H318, H317, H350, H400,	
		H410	
		Concentration limits:	
		>= 10 %: Skin Corr. 1B,	
		H314; 3 - < 10 %: Skin	
		Irrit. 2, H315; 3 - < 10 %:	

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Eye Irrit. 2, H319; M-Factor - Aquatic Acute: 10 - Aquatic Chronic: 10	

For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice

First aiders need to protect themselves. Show this material safety data sheet to the doctor in attendance.

If inhaled

After inhalation: fresh air. Immediately call in physician. If breathing stops: immediately apply artificial respiration, if necessary also oxygen.

In case of skin contact

In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Call a physician immediately.

In case of eye contact

After eye contact: rinse out with plenty of water. Immediately call in ophthalmologist. Remove contact lenses.

If swallowed

If swallowed: give water to drink (two glasses at most). Seek medical advice immediately. In exceptional cases only, if medical care is not available within one hour, induce vomiting (only in persons who are wide awake and fully conscious), administer activated charcoal (20 - 40 g in a 10% slurry) and consult a doctor as quickly as possible. Do not attempt to neutralise.

4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

Small (incipient) fires must be extinguished with alcohol resistant foam, dry chemical powder or carbon dioxide. Large amounts of water are ineffective. Cool containers with large amounts of water.

5.2 Special hazards arising from the substance or mixture

Nature of decomposition products not known. Combustible. Vapors are heavier than air and may spread along floors. Forms explosive mixtures with air at elevated temperatures. Development of hazardous combustion gases or vapours possible in the event of fire.

5.3 Advice for firefighters

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

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5.4 Further information

Remove container from danger zone and cool with water. Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Keep away from heat and sources of ignition. Evacuate the danger area, observe emergency procedures, consult an expert. For personal protection see section 8.

6.2 Environmental precautions

Do not let product enter drains. Risk of explosion.

6.3 Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully with liquid-absorbent material (e.g. Chemizorb®). Dispose of properly. Clean up affected area.

6.4 **Reference to other sections** For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling

Work under hood. Do not inhale substance/mixture. Avoid generation of vapours/aerosols.

Advice on protection against fire and explosion

Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharge.

Hygiene measures

Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions

Keep container tightly closed in a dry and well-ventilated place. Keep away from heat and sources of ignition. Keep locked up or in an area accessible only to gualified or authorized persons.

Storage class

Storage class (TRGS 510): 3: Flammable liquids

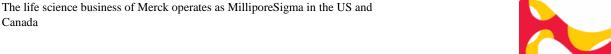
7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

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SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Ingredients with workplace control parameters

8.2 Exposure controls

Personal protective equipment

Eye/face protection

Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Tightly fitting safety goggles

Skin protection

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN 16523-1 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de). Full contact

Material: Latex gloves Minimum layer thickness: 0.6 mm Break through time: 480 min Material tested:Lapren® (KCL 706 / Aldrich Z677558, Size M)

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN 16523-1 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de). Splash contact Material: Nitrile rubber Minimum layer thickness: 0.11 mm Break through time: 30 min Material tested:KCL 741 Dermatril® L

Body Protection

Flame retardant antistatic protective clothing.

Respiratory protection

Recommended Filter type: Filter type K

The entrepeneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.

Control of environmental exposure

Do not let product enter drains. Risk of explosion.

SECTION 9: Physical and chemical properties 9.1 Information on basic physical and chemical properties

- a) Physical state liquid, clear
- b) Color colorless

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c)	Odor	No data available
d)	Melting point/freezing point	Melting point/ range: -51.7 °C - lit.
e)	Initial boiling point and boiling range	120.1 °C - lit.
f)	Flammability (solid, gas)	No data available
g)	Upper/lower flammability or explosive limits	No data available
h)	Flash point	38 °C - closed cup - (anhydrous substance)
i)	Autoignition temperature	No data available
j)	Decomposition temperature	> 250 °C
k)	рН	10.6 - 10.7 at 10 g/l
I)	Viscosity	Viscosity, kinematic: No data available Viscosity, dynamic: No data available
m)	Water solubility	completely soluble
n)	Partition coefficient: n-octanol/water	No data available
o)	Vapor pressure	7 hPa at 25 °C
p)	Density	1.032 g/cm3 at 25 °C - lit.
	Relative density	No data available
q)	Relative vapor density	No data available
r)	Particle characteristics	No data available

- s) Explosive properties Not explosive
- t) Oxidizing properties No data available

9.2 Other safety information

Solubility in other Ethanol - soluble solvents

SECTION 10: Stability and reactivity

10.1 Reactivity

Vapor/air-mixtures are explosive at intense warming.

10.2 Chemical stability

The product is chemically stable under standard ambient conditions (room temperature) .

10.3 Possibility of hazardous reactions

Exothermic reaction with: Oxidizing agents

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Heavy metals Light metals metallic oxides halogens Metals acids Organic Substances Nitro compounds strong alkalis Risk of explosion with: Alkali metals sodium mercury compounds tin (II) chloride Violent reactions possible with: Heavy metals alkalines Light metals metallic chlorides metallic oxides halogens Metals Acids Oxidizing agents organic nitro compounds Heavy metal salts

10.4 Conditions to avoid

Heat, flames and sparks. Heating.

- **10.5 Incompatible materials** Oxidizing agents, Oxygen, Copper, Organic materials, Zinc
- **10.6 Hazardous decomposition products** In the event of fire: see section 5

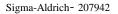
SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

LD50 Oral - Rat - male - 262 mg/kg (OECD Test Guideline 401) Remarks: anhydrous substance Acute toxicity estimate Oral - 262 mg/kg (ATE value derived from LD50/LC50 value) LC50 Inhalation - Rat - male - 4 h - 0.76 mg/l - vapor

Remarks: (ECHA) anhydrous substance Acute toxicity estimate Inhalation - 0.76 mg/l - vapor



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(ATE value derived from LD50/LC50 value) Acute toxicity estimate Dermal - Not tested on animals - 300.1 mg/kg Remarks: Expert judgment

Skin corrosion/irritation

Skin - Rabbit Result: Corrosive - 4 h Remarks: (55% solution) anhydrous substance

Serious eye damage/eye irritation

Remarks: Causes serious eye damage.

Respiratory or skin sensitization

(Regulation (EC) No 1272/2008, Annex VI) (anhydrous substance)

Germ cell mutagenicity No data available

Carcinogenicity

Presumed to have carcinogenic potential for humans

Reproductive toxicity

No data available

Specific target organ toxicity - single exposure No data available

Specific target organ toxicity - repeated exposure No data available

Aspiration hazard No data available

11.2 Additional Information

Endocrine disrupting properties

Product:

Assessment

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

CNS stimulation., Cyanosis, Salivation, Seizures., Diarrhea, Fever, Confusion., Hypoglycemia, Anorexia., Convulsions, Coma.

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Liver - Irregularities - Based on Human Evidence

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish

static test LC50 - Poecilia reticulata (guppy) - 0.61 mg/l - 96 h Remarks: (ECHA)

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Toxicity to daphnia and other aquatic invertebrates	semi-static test EC50 - Daphnia pulex (Water flea) - 0.16 mg/l - 48 h (US-EPA) Remarks: (in analogy to similar products)
Toxicity to algae	static test ErC50 - Desmodesmus subspicatus (green algae) - 0.017 mg/l - 48 h (Regulation (EC) No. 440/2008, Annex, C.3)
Toxicity to bacteria	static test EC50 - activated sludge - 5.5 mg/l - 3 h (OECD Test Guideline 209)
Toxicity to daphnia and other aquatic invertebrates(Chronic toxicity)	semi-static test NOEC - Daphnia magna (Water flea) - 0.123 mg/l - 21 d (OECD Test Guideline 211)

12.2 Persistence and degradability

Biodegradability

aerobic - Exposure time 24 h Result: 99 % - Inherently biodegradable. (OECD Test Guideline 302B) Remarks: (anhydrous substance)

12.3 Bioaccumulative potential No data available

12.4 Mobility in soil No data available

12.5 Results of PBT and vPvB assessment

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6 Endocrine disrupting properties <u>Product:</u>

Assessment

: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

12.7 Other adverse effects

No data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods No data available

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SECT	SECTION 14: Transport information			
14.1	UN number ADR/RID: 2030	IMDG: 2030	IATA: 2030	
14.2	UN proper shipping name ADR/RID: HYDRAZINE, AQUE IMDG: HYDRAZINE, AQUE IATA: Hydrazine, aqueou Passenger Aircraft: Not permi	EOUS SOLUTION is solution		
14.3	Transport hazard class(es) ADR/RID: 8 (6.1)	MDG: 8 (6.1)	IATA: 8 (6.1)	
14.4	Packaging group ADR/RID: II	IMDG: II	IATA: II	
14.5	Environmental hazards ADR/RID: yes	IMDG Marine pollutant: yes	IATA: no	
14.6	Special precautions for use	er		
	Further information :	No data available		
14.7	Maritime transport in bulk	according to IMO instrumen	Its	

Not applicable for product as supplied.

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006.

1907/2006.	
Authorisations and/or restrictions on use REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles (Annex XVII)	: hydrazine monohydrate
REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59).	: hydrazine monohydrate
National legislation Seveso III: Directive 2012/18/EU of the H2 European Parliament and of the Council on the control of major-accident hazards involving dangerous substances.	ACUTE TOXIC

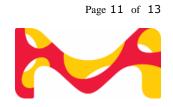
P5c FLAMMABLE LIQUIDS

E1 ENVIRONMENTAL HAZARDS

Other regulations

Observe work restrictions regarding maternity protection in accordance to Dir 92/85/EEC or stricter national regulations where applicable.

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Take note of Dir 94/33/EC on the protection of young people at work.

15.2 Chemical Safety Assessment

For this product a chemical safety assessment was not carried out

SECTION 16: Other information

Full text of H-Statements

H226	Flammable liquid and vapor.
H301	Toxic if swallowed.
H311	Toxic in contact with skin.
H314	Causes severe skin burns and eye damage.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H330	Fatal if inhaled.
H350	May cause cancer.

Full text of other abbreviations

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - Agreement concerning the International Carriage of Dangerous Goods by Road; AIIC - Australian Inventory of Industrial Chemicals; ASTM -American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; 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; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; 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 - Industrial 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; n.o.s. -Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; 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; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; 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

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Further information

The information is believed to be correct but is not exhaustive and will be used solely as a guideline, which is based on current knowledge of the chemical substance or mixture and is applicable to appropriate safety precautions for the product. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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