

SAFETY DATA SHEET

Version 8.3
Revision Date 19.10.2021
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SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name : Nitric acid

Product Number : V800281
Brand : Vetec
CAS-No. : 7697-37-2

1.2 Other means of identification

No data available

1.3 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : For R&D use only. Not for pharmaceutical, household or other uses.

1.4 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Pty. Ltd.
Suite 1, Level 1, Building B
11 Talavera Road
MACQUARIE PARK NSW 2113
AUSTRALIA

Telephone : +61 1800 800 097

1.5 Emergency telephone

Emergency Phone # : Free call (24/7): 1800 448 465
Int'l (24/7): +61 2 9037 2994
(CHEMTREC)

SECTION 2: Hazards identification

2.1 GHS Classification

Oxidizing liquids (Category 3), H272
Corrosive to Metals (Category 1), H290
Acute toxicity, Inhalation (Category 3), H331
Skin corrosion/irritation (Category 1A), H314
Serious eye damage/eye irritation (Category 1), H318

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

2.2 GHS Label elements, including precautionary statements

Pictogram



Signal word : Danger

Hazard statement(s)

H272 May intensify fire; oxidizer.
 H290 May be corrosive to metals.
 H314 Causes severe skin burns and eye damage.
 H331 Toxic if inhaled.

Precautionary statement(s)

Prevention

P210 Keep away from heat.
 P220 Keep/Store away from clothing/ combustible materials.
 P221 Take any precaution to avoid mixing with combustibles.
 P264 Wash skin thoroughly after handling.
 P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response

P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.
 P304 + P340 + P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/ doctor.
 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/ doctor.
 P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

Storage

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

2.3 Other hazards

Corrosive to the respiratory tract.

SECTION 3: Composition/information on ingredients

Substance / Mixture : Substance

3.1 Substances

Formula : HNO3
 Molecular weight : 63.01 g/mol
 CAS-No. : 7697-37-2
 EC-No. : 231-714-2
 Index-No. : 007-004-00-1

Hazardous ingredients

| Component | Classification | Concentration |
|--------------------|---|---------------|
| nitric acid | Ox. Liq. 3; Met. Corr. 1; Acute Tox. 3; 1A; 1; H272, H290, H331, H314, H318 Concentration limits: >= 1 %: Met. Corr. 1, H290; 1 - < 5 %: Skin Irrit. 2, H315; 1 - < 3 %: | <= 100 % |

| | | |
|--|--|--|
| | Eye Irrit. 2, H319; \geq 3 %: 1, H318; \geq 65 %: Ox. Liq. 3, H272; \geq 20 %: Skin Corr. 1A, H314; 5 - < 20 %: Skin Corr. 1B, H314; | |
|--|--|--|

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

After swallowing: make victim drink water (two glasses at most), avoid vomiting (risk of perforation). Call a physician immediately. 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

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture

Nitrogen oxides (NO_x)

Not combustible.

Has a fire-promoting effect due to release of oxygen.

Ambient fire may liberate hazardous vapours.

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.

5.4 Further information

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. 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.

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.

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

No metal containers.

Tightly closed. Keep locked up or in an area accessible only to qualified or authorized persons. Separately or together with other oxidising substances only and away from sources of ignition and heat. Because of their oxidation potential these products can raise the burning rate of combustible substances substantially or ignite combustible substances on contact with them.

Storage class

Storage class (TRGS 510): 5.1A: Strongly oxidizing hazardous materials

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.3 no other specific uses are stipulated.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Ingredients with workplace control parameters

| Component | CAS-No. | Value | Control parameters | Basis |
|-----------|---------|-------|--------------------|-------|
|-----------|---------|-------|--------------------|-------|

| | | | | |
|-------------|-----------|------------------|-----------------------------|---|
| nitric acid | 7697-37-2 | PEL (long term) | 2 ppm 5.2 mg/m ³ | Singapore. Workplace Safety and Health Act - First Schedule Permissible Exposure Limits of Toxic Substances |
| | | PEL (short term) | 4 ppm 10 mg/m ³ | Singapore. Workplace Safety and Health Act - First Schedule Permissible Exposure Limits of Toxic Substances |

8.2 Exposure controls

Appropriate engineering controls

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

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 EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).

Splash contact

Material: butyl-rubber

Minimum layer thickness: 0.7 mm

Break through time: 60 min

Material tested: Butoject® (KCL 898)

Body Protection

Acid-resistant protective clothing

Respiratory protection

required when vapours/aerosols are generated. Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

Control of environmental exposure

Do not let product enter drains.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

- | | |
|-------------------|----------------------------------|
| a) Appearance | Form: liquid Color: colorless |
| b) Odor | stinging |
| c) Odor Threshold | 0.75 ppm |
| d) pH | < 1 at 20 °C |

| | |
|---|---|
| e) Melting point/freezing point | Melting point: -41.59 °C |
| f) Initial boiling point and boiling range | No data available |
| g) Flash point | No data available |
| h) Evaporation rate | No data available |
| i) Flammability (solid, gas) | No data available |
| j) Upper/lower flammability or explosive limits | No data available |
| k) Vapor pressure | 10 hPa at 20 °C |
| l) Vapor density | 2.04 |
| m) Density | 1.51 g/cm ³ at 20 °C |
| Relative density | No data available |
| n) Water solubility | 1,000 g/l at 20 °C - soluble, (development of heat) |
| o) Partition coefficient: n-octanol/water | log Pow: -2.3 - Bioaccumulation is not expected. |
| p) Autoignition temperature | No data available |
| q) Decomposition temperature | No data available |
| r) Viscosity | Viscosity, kinematic: No data available Viscosity, dynamic: 0.746 mPa.s at 25 °C |
| s) Explosive properties | No data available |
| t) Oxidizing properties | No data available |

9.2 Other safety information

Dissociation constant -1.3

Relative vapor density 2.04

SECTION 10: Stability and reactivity

10.1 Reactivity

No data available

10.2 Chemical stability

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

10.3 Possibility of hazardous reactions

Risk of explosion with:

Acetone
acetonitrile
acetylidene
Alcohols
anilines

antimony hydride
arsenic hydride
organic combustible substances
phosphides
benzene/benzene derivatives
Amines
alkenes
Halogenated hydrocarbon
Ether
hydrazine and derivatives
Sulfides
Dioxane
acetic acid
Acetic anhydride
Fluorine
glycerol
rubber
oils
chlorates
potassium permanganate
Hydrocarbons
Copper
lithium silicide
organic solvent
Cyanides
Powdered metals
Methanol
Ketones
organic nitro compounds
nonmetallic halides
mercury(II) nitrate
Reducing agents
sulphur dioxide
cyanide complexes
Titanium
hydrogen peroxide
Tin
sugars
formaldehyde
Impurities
dichloromethane
Diethyl ether
ethanol
Boranes
Ethylene glycol
with
Heat.
Risk of ignition or formation of inflammable gases or vapours with:
Amines
Ammonia
combustible substances
Aldehydes
hydrogen iodide
Potassium
magnesium

sodium
hydrides
iodides
phosphorus
pyridine
hydrogen sulphide
turpentine oils and/or turpentine substitutes
halogen-halogen compounds
anilines
furfuryl alcohol
Exothermic reaction with:
Nitriles
formic acid
antimony
arsenic
selenium
Boron
Lithium
nonmetallic halides
strong alkalis
nitrides
sodium hypochlorite
Uranium
semimetals
Water
ferric oxide
in powder form
Generates dangerous gases or fumes in contact with:
conc. sulfuric acid

10.4 Conditions to avoid

May discolor on exposure to air and light.
no information available

10.5 Incompatible materials

Cellulose, Metals
Contact with metals may lead to the formation of nitrous gases and hydrogen.

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

Oral: No data available

Acute toxicity estimate Inhalation - 4 h - 2.65 mg/l

(Expert judgment)

Dermal: No data available

Skin corrosion/irritation

Skin - Rabbit

Result: Causes severe burns.

Remarks: (IUCLID)

Causes poorly healing wounds.

Serious eye damage/eye irritation

Eyes - Rabbit

Result: Causes burns.

Remarks: (IUCLID)

Causes serious eye damage.

Respiratory or skin sensitization

No data available

Germ cell mutagenicity

Test Type: Ames test

Test system: Salmonella typhimurium

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 471

Result: negative

Carcinogenicity

No data available

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

burning sensation, Cough, wheezing, laryngitis, Shortness of breath, spasm, inflammation and edema of the larynx, spasm, inflammation and edema of the bronchi, pneumonitis, pulmonary edema, Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin., 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**

No data available

12.2 Persistence and degradability

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

12.3 Bioaccumulative potential

No data available

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Endocrine disrupting properties

No data available

12.7 Other adverse effects

May be harmful to aquatic organisms due to the shift of the pH.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product

Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself. See www.retrologistik.com for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

SECTION 14: Transport information

14.1 UN number

ADR/RID: 2031

IMDG: 2031

IATA-DGR: 2031

14.2 UN proper shipping name

ADR/RID: NITRIC ACID

IMDG: NITRIC ACID

IATA-DGR: Nitric acid

Passenger Aircraft: Not permitted for transport

14.3 Transport hazard class(es)

ADR/RID: 8 (5.1)

IMDG: 8 (5.1)

IATA-DGR: 8 (5.1)

14.4 Packaging group

ADR/RID: I

IMDG: I

IATA-DGR: I

14.5 Environmental hazards

ADR/RID: no

IMDG Marine pollutant: no

IATA-DGR: no

14.6 Special precautions for user

None

14.7 Incompatible materials

Cellulose, Metals Contact with metals may lead to the formation of nitrous gases and hydrogen.

Other regulations

Hazchem Code : 2P

SECTION 15: Regulatory information

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

Notification status

DSL: All components of this product are on the Canadian DSL

ENCS: On the inventory, or in compliance with the inventory

| | |
|---------------|---|
| ISHL: | On the inventory, or in compliance with the inventory |
| KECI: | On the inventory, or in compliance with the inventory |
| NZIoC: | On the inventory, or in compliance with the inventory |
| PICCS: | On the inventory, or in compliance with the inventory |

SECTION 16: Other information

Full text of H-Statements referred to under sections 2 and 3.

| | |
|------|--|
| H272 | May intensify fire; oxidizer. |
| H290 | May be corrosive to metals. |
| H314 | Causes severe skin burns and eye damage. |
| H315 | Causes skin irritation. |
| H318 | Causes serious eye damage. |
| H319 | Causes serious eye irritation. |
| H331 | Toxic if inhaled. |

Further information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. 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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