

## SAFETY DATA SHEET

Version 5.8  
Revision Date 01/28/2015  
Print Date 11/10/2015

### 1. PRODUCT AND COMPANY IDENTIFICATION

#### 1.1 Product identifiers

Product name : Nitric acid

Product Number : 225711

Brand : Aldrich

CAS-No. : 7697-37-2

#### 1.2 Relevant identified uses 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 : Sigma-Aldrich  
3050 Spruce Street  
SAINT LOUIS MO 63103  
USA

Telephone : +1 800-325-5832

Fax : +1 800-325-5052

#### 1.4 Emergency telephone number

Emergency Phone # : (314) 776-6555

### 2. HAZARDS IDENTIFICATION

#### 2.1 Classification of the substance or mixture

##### GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Oxidizing liquids (Category 3), H272

Skin corrosion (Category 1), H314

Serious eye damage (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; oxidiser.

H314

Causes severe skin burns and eye damage.

H318

Causes serious eye damage.

Precautionary statement(s)

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.

P301 + P330 + P331

IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

P303 + P361 + P353

IF ON SKIN (or hair): Take off immediately all contaminated clothing.

|                           |   |
|---------------------------|---|
| P304 + P340 + P310        | Rinse skin with water/shower.<br>IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER or doctor/ physician.                      |
| 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 or doctor/ physician. |
| P363                      | Wash contaminated clothing before reuse.  |
| P370 + P378               | In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.  |
| P405                      | Store locked up.  |
| P501                      | Dispose of contents/ container to an approved waste disposal plant.   |

## 2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

### 3.2 Mixtures

|                  |                    |
|------------------|--------------------|
| Formula          | : HNO <sub>3</sub> |
| Molecular weight | : 63.01 g/mol      |

#### Hazardous components

| Component          |              | Classification                                    | Concentration  |
|--------------------|--------------|---|----------------|
| <b>Nitric acid</b> |              |   |                |
| CAS-No.            | 7697-37-2    | Ox. Liq. 3; Skin Corr. 1A; Eye Dam. 1; H272, H314 | >= 70 - < 90 % |
| EC-No.             | 231-714-2    |   |                |
| Index-No.          | 007-004-00-1 |   |                |

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

## 4. FIRST AID MEASURES

### 4.1 Description of first aid measures

#### General advice

Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

#### If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

#### In case of skin contact

Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Consult a physician.

#### In case of eye contact

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician. Continue rinsing eyes during transport to hospital.

#### If swallowed

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

### 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

## 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<sub>x</sub>)

## 5.3 Advice for firefighters

Wear self-contained breathing apparatus for firefighting if necessary.

## 5.4 Further information

Use water spray to cool unopened containers.

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## 6. ACCIDENTAL RELEASE MEASURES

### 6.1 Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas.

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

Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13).

### 6.4 Reference to other sections

For disposal see section 13.

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## 7. HANDLING AND STORAGE

### 7.1 Precautions for safe handling

Avoid inhalation of vapour or mist.

Keep away from sources of ignition - No smoking. Keep away from heat and sources of ignition.

For precautions see section 2.2.

### 7.2 Conditions for safe storage, including any incompatibilities

Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

Storage class (TRGS 510): Oxidizing hazardous materials

### 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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## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1 Control parameters

#### Components with workplace control parameters

| Component   | CAS-No.   | Value  | Control parameters | Basis                                   |
|-------------|-----------|--|--------------------|---|
| Nitric acid | 7697-37-2 | TWA  | 2.000000 ppm       | USA. ACGIH Threshold Limit Values (TLV) |
|             | Remarks   | Upper Respiratory Tract irritation<br>Eye irritation<br>Dental erosion |                    |   |
|             |           | STEL   | 4.000000 ppm       | USA. ACGIH Threshold Limit Values (TLV) |
|             |           | Upper Respiratory Tract irritation<br>Eye irritation<br>Dental erosion |                    |   |

|  |  |                                    |                                 |  |
|--|--|------------------------------------|---------------------------------|--|
|  |  | ST                                 | 4.000000 ppm<br>10.000000 mg/m3 | USA. NIOSH Recommended Exposure Limits   |
|  |  | TWA                                | 2.000000 ppm<br>5.000000 mg/m3  | USA. NIOSH Recommended Exposure Limits   |
|  |  | TWA                                | 2.000000 ppm<br>5.000000 mg/m3  | USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants |
|  |  | The value in mg/m3 is approximate. |                                 |  |

## 8.2 Exposure controls

### Appropriate engineering controls

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

### Personal protective equipment

#### Eye/face protection

Tightly fitting safety goggles. Faceshield (8-inch minimum). Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

#### Skin protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

#### Full contact

Material: Fluorinated rubber

Minimum layer thickness: 0.7 mm

Break through time: 480 min

Material tested: Vitoject® (KCL 890 / Aldrich Z677698, Size M)

#### Splash contact

Material: Nature latex/chloroprene

Minimum layer thickness: 0.6 mm

Break through time: 120 min

Material tested: Lapren® (KCL 706 / Aldrich Z677558, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374

If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

#### Body Protection

Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

#### Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

#### Control of environmental exposure

Do not let product enter drains.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

### 9.1 Information on basic physical and chemical properties

- |               |                    |
|---------------|--------------------|
| a) Appearance | Form: liquid       |
|               | Colour: colourless |

|   |  |
|---|--|
| b) Odour  | No data available  |
| c) Odour Threshold                              | No data available  |
| d) pH   | < 1.0  |
| e) Melting point/freezing point                 | No data available  |
| f) Initial boiling point and boiling range      | 120.5 °C (248.9 °F) - lit.   |
| 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) Vapour pressure                              | 49 hPa (37 mmHg) at 50 °C (122 °F)                                       |
| l) Vapour density                               | No data available  |
| m) Relative density                             | 1.413 g/cm <sup>3</sup> at 20 °C (68 °F)                                 |
| n) Water solubility                             | No data available  |
| o) Partition coefficient: n-octanol/water       | No data available  |
| p) Auto-ignition temperature                    | No data available  |
| q) Decomposition temperature                    | No data available  |
| r) Viscosity                                    | No data available  |
| s) Explosive properties                         | No data available  |
| t) Oxidizing properties                         | The substance or mixture is classified as oxidizing with the category 3. |

## 9.2 Other safety information

No data available

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## 10. STABILITY AND REACTIVITY

### 10.1 Reactivity

No data available

### 10.2 Chemical stability

Stable under recommended storage conditions.

### 10.3 Possibility of hazardous reactions

No data available

### 10.4 Conditions to avoid

No data available

### 10.5 Incompatible materials

No data available

### 10.6 Hazardous decomposition products

Other decomposition products - No data available  
In the event of fire: see section 5

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## 11. TOXICOLOGICAL INFORMATION

### 11.1 Information on toxicological effects

#### Acute toxicity

No data available

Inhalation: No data available

Dermal: No data available

No data available

#### Skin corrosion/irritation

No data available

#### Serious eye damage/eye irritation

No data available

#### Respiratory or skin sensitisation

No data available

#### Germ cell mutagenicity

No data available

#### Carcinogenicity

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.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

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.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

#### Reproductive toxicity

No data available

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

#### Additional Information

RTECS: Not available

Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin., Inhalation may provoke the following symptoms:, spasm, inflammation and edema of the bronchi, spasm, inflammation and edema of the larynx, pneumonitis, pulmonary edema, Symptoms and signs of poisoning are:, burning sensation, Cough, wheezing, laryngitis, Shortness of breath, Headache, Nausea, Vomiting, Pulmonary edema. Effects may be delayed., Large doses may cause: conversion of hemoglobin to methemoglobin, producing cyanosis; marked fall in blood pressure, leading to collapse, coma, and possibly death.

Liver - Irregularities - Based on Human Evidence

Liver - Irregularities - Based on Human Evidence (Nitric acid)

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## 12. ECOLOGICAL INFORMATION

### 12.1 Toxicity

No data available

**12.2 Persistence and degradability**

No data available

**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 Other adverse effects**

No data available

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**13. DISPOSAL CONSIDERATIONS****13.1 Waste treatment methods****Product**

Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

**Contaminated packaging**

Dispose of as unused product.

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**14. TRANSPORT INFORMATION****DOT (US)**

UN number: 2031      Class: 8 (5.1)      Packing group: I  
Proper shipping name: Nitric acid  
Reportable Quantity (RQ): 1429 lbs

Poison Inhalation Hazard: No

**IMDG**

UN number: 2031      Class: 8 (5.1)      Packing group: I      EMS-No: F-A, S-Q  
Proper shipping name: NITRIC ACID

**IATA**

UN number: 2031      Class: 8 (5.1)      Packing group: I  
Proper shipping name: Nitric acid  
IATA Passenger: Not permitted for transport

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**15. REGULATORY INFORMATION****SARA 302 Components**

The following components are subject to reporting levels established by SARA Title III, Section 302:

|             | CAS-No.   | Revision Date |
|-------------|-----------|---------------|
| Nitric acid | 7697-37-2 | 2007-07-01    |

**SARA 313 Components**

The following components are subject to reporting levels established by SARA Title III, Section 313:

|             | CAS-No.   | Revision Date |
|-------------|-----------|---------------|
| Nitric acid | 7697-37-2 | 2007-07-01    |

**SARA 311/312 Hazards**

Reactivity Hazard, Acute Health Hazard, Chronic Health Hazard

**Massachusetts Right To Know Components**

|             | CAS-No.   | Revision Date |
|-------------|-----------|---------------|
| Nitric acid | 7697-37-2 | 2007-07-01    |

**Pennsylvania Right To Know Components**

| CAS-No. | Revision Date |
|---------|---------------|
|---------|---------------|

|             |           |            |
|-------------|-----------|------------|
| Nitric acid | 7697-37-2 | 2007-07-01 |
| Water       | 7732-18-5 |            |

#### New Jersey Right To Know Components

|             |           |               |
|-------------|-----------|---------------|
| Nitric acid | CAS-No.   | Revision Date |
| Water       | 7697-37-2 | 2007-07-01    |
|             | 7732-18-5 |               |

#### California Prop. 65 Components

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

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## 16. OTHER INFORMATION

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

|            |  |
|------------|--|
| Eye Dam.   | Serious eye damage                       |
| H272       | May intensify fire; oxidiser.            |
| H314       | Causes severe skin burns and eye damage. |
| H318       | Causes serious eye damage.               |
| Ox. Liq.   | Oxidizing liquids                        |
| Skin Corr. | Skin corrosion                           |

### HMIS Rating

|                        |   |
|------------------------|---|
| Health hazard:         | 3 |
| Chronic Health Hazard: | * |
| Flammability:          | 0 |
| Physical Hazard        | 3 |

### NFPA Rating

|                    |    |
|--------------------|----|
| Health hazard:     | 3  |
| Fire Hazard:       | 0  |
| Reactivity Hazard: | 3  |
| Special hazard.I:  | OX |

### Further information

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### Preparation Information

Sigma-Aldrich Corporation  
Product Safety – Americas Region  
1-800-521-8956

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