

**Material Safety Data Sheet**

Version 3.1  
Revision Date 12/10/2009  
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**1. PRODUCT AND COMPANY IDENTIFICATION**

Product name : Nitric acid

Product Number : 438073  
Brand : Sigma-Aldrich

Company : Sigma-Aldrich Canada, Ltd  
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OAKVILLE ON L6H 6J8  
CANADA

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**2. COMPOSITION/INFORMATION ON INGREDIENTS**

| CAS-No.            | EC-No.    | Index-No.    | Concentration   |
|--------------------|-----------|--------------|-----------------|
| <b>Nitric acid</b> |           |              |                 |
| 7697-37-2          | 231-714-2 | 007-004-00-1 | >= 68 - <= 70 % |
| <b>Water</b>       |           |              |                 |
| 7732-18-5          | 231-791-2 | -            | >= 30 - <= 32 % |

**3. HAZARDS IDENTIFICATION****Emergency Overview****Target Organs**

Lungs, Teeth., Cardiovascular system.

**WHMIS Classification**

E Corrosive Material  
C

Corrosive to metals  
Corrosive  
Oxidizer

**HMIS Classification**

Health hazard: 3  
Chronic Health Hazard: \*  
Flammability: 0  
Physical hazards: 3

**Potential Health Effects**

**Inhalation** May be harmful if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.

**Skin** May be harmful if absorbed through skin. Causes skin burns.

**Eyes**  
**Ingestion**

Causes eye burns.  
May be harmful if swallowed. Causes burns.

#### 4. 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**

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

**If swallowed**

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

#### 5. FIRE-FIGHTING MEASURES

**Flammable properties**

Flash point                      no data available

Ignition temperature      no data available

**Suitable extinguishing media**

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

**Special protective equipment for fire-fighters**

Wear self contained breathing apparatus for fire fighting if necessary.

**Further information**

Use water spray to cool unopened containers.

#### 6. ACCIDENTAL RELEASE MEASURES

**Personal precautions**

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

**Environmental precautions**

Do not let product enter drains.

**Methods for cleaning up**

Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).

#### 7. HANDLING AND STORAGE

**Handling**

Avoid inhalation of vapour or mist.

Keep away from sources of ignition - No smoking. Keep away from combustible material.

**Storage**

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.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Components with workplace control parameters

| Components  | CAS-No.   | Value     | Control parameters             | Update     | Basis   |
|-------------|-----------|-----------|--------------------------------|------------|---|
| Nitric acid | 7697-37-2 | TWA       | 2 ppm                          | 2006-11-29 | Canada. British Columbia OEL  |
|             |           | STEL      | 4 ppm                          | 2006-11-29 | Canada. British Columbia OEL  |
|             |           | TWAE<br>V | 2 ppm<br>5 mg/m <sup>3</sup>   | 2005-12-17 | Canada. Ontario OELs  |
|             |           | STEV      | 4 ppm<br>10 mg/m <sup>3</sup>  | 2005-12-17 | Canada. Ontario OELs  |
|             |           | STEL      | 4 ppm<br>10 mg/m <sup>3</sup>  | 2007-01-01 | Canada. Alberta, Occupational Health and Safety Code (table 2: OEL) |
|             |           | TWA       | 2 ppm<br>5.2 mg/m <sup>3</sup> | 2007-01-01 | Canada. Alberta, Occupational Health and Safety Code (table 2: OEL) |
|             |           | TWAE<br>V | 2 ppm<br>5.2 mg/m <sup>3</sup> | 2006-12-29 | Canada. Quebec OELs   |
|             |           | STEV      | 4 ppm<br>10 mg/m <sup>3</sup>  | 2006-12-29 | Canada. Quebec OELs   |

### Personal protective equipment

#### 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).

#### Hand protection

Handle with gloves.

#### Eye protection

Tightly fitting safety goggles. Faceshield (8-inch minimum).

#### Skin and body protection

Choose body protection according to the amount and concentration of the dangerous substance at the work place.

#### Hygiene measures

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

## 9. PHYSICAL AND CHEMICAL PROPERTIES

### Appearance

|        |            |
|--------|------------|
| Form   | liquid     |
| Colour | colourless |

**Safety data**

|                       |  |
|-----------------------|--|
| pH                    | < 1.0                                    |
| Melting point         | no data available                        |
| Boiling point         | 122 °C (252 °F) at 1,013 hPa (760 mmHg)  |
| Flash point           | no data available                        |
| Ignition temperature  | no data available                        |
| Lower explosion limit | no data available                        |
| Upper explosion limit | no data available                        |
| Vapour pressure       | 49 hPa (37 mmHg) at 50 °C (122 °F)       |
| Density               | 1.413 g/cm <sup>3</sup> at 20 °C (68 °F) |
| Water solubility      | no data available                        |

**10. STABILITY AND REACTIVITY****Storage stability**

Stable under recommended storage conditions.

**Materials to avoid**

Alkali metals, Organic materials, Acetic anhydride, Acetonitrile, Alcohols, Acrylonitrile, Ammonia, Crotonaldehyde, Halogenated hydrocarbon, Acids, Bases, Metals, hexalithium disilicide, Hydrogen peroxide, Ketones, metal acetylides, Water, Fluorine, Amines, Thiols, cadmium, Bromine, Copper, Hydrazine, Hydrazinium nitrate, Nitro compounds, Cyanides, Phosphorus trihydride (phosphine), Diphosphine, Halides, Organic halides, May set fire to wood or paper., Polyethers, Methyl vinyl ether

**Hazardous decomposition products**

Hazardous decomposition products formed under fire conditions. - nitrogen oxides (NO<sub>x</sub>)

**11. TOXICOLOGICAL INFORMATION****Acute toxicity**

no data available

**Irritation and corrosion**

no data available

**Sensitisation**

no data available

**Chronic exposure**

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.

**Signs and Symptoms of Exposure**

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.

**Potential Health Effects**

|                      |   |
|----------------------|---|
| <b>Inhalation</b>    | May be harmful if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract. |
| <b>Skin</b>          | May be harmful if absorbed through skin. Causes skin burns.   |
| <b>Eyes</b>          | Causes eye burns.   |
| <b>Ingestion</b>     | May be harmful if swallowed. Causes burns.  |
| <b>Target Organs</b> | Lungs, Teeth., Cardiovascular system.,  |

## 12. ECOLOGICAL INFORMATION

### Elimination information (persistence and degradability)

no data available

### Ecotoxicity effects

no data available

### Further information on ecology

no data available

## 13. DISPOSAL CONSIDERATIONS

### Product

Observe all federal, state, and local environmental regulations. 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.

## 14. TRANSPORT INFORMATION

### DOT (US)

UN-Number: 2031 Class: 8 Packing group: II  
 Proper shipping name: Nitric acid  
 Reportable Quantity (RQ): 1429 lbs  
 Marine pollutant: No  
 Poison Inhalation Hazard: No

### IMDG

UN-Number: 2031 Class: 8 (5.1) Packing group: II EMS-No: F-A, S-Q  
 Proper shipping name: NITRIC ACID  
 Marine pollutant: No

### IATA

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

## 15. REGULATORY INFORMATION

### DSL Status

All components of this product are on the Canadian DSL list.

### WHMIS Classification

|   |                    |                     |
|---|--------------------|---------------------|
| E | Corrosive Material | Corrosive to metals |
| C |                    | Corrosive           |
|   |                    | Oxidizer            |

## 16. OTHER INFORMATION

### Further information

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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 Co., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale.