

# Nitric Acid

## SECTION 1. IDENTIFICATION

<b>Product Identifier</b>	Nitric Acid
<b>Other Means of Identification</b>	Aqua fortis
<b>Other Identification</b>	EU EINECS/ELINCS Number: 231-714-2
<b>Recommended Use</b>	Laboratory chemical.
<b>Restrictions on Use</b>	None known.
<b>Manufacturer/Supplier Identifier</b>	Caledon Laboratories Ltd, 40 Armstrong Avenue, Georgetown, Ontario, L7G-4R9, (905) 877-0101, www.caledonlabs.com
<b>Emergency Phone No.</b>	CANUTEC, (613) 996-6666
<b>SDS No.</b>	0034

## SECTION 2. HAZARD IDENTIFICATION

### Classification

Oxidizing liquid - Category 3; Skin corrosion - Category 1A; Serious eye damage - Category 1; Specific target organ toxicity (single exposure) - Category 1; Specific target organ toxicity (repeated exposure) - Category 1

### Label Elements



Signal Word:

Danger

Hazard Statement(s):

May cause fire or explosion; strong oxidizer.

Causes severe skin burns and eye damage.

Causes serious eye damage.

Causes damage to organs (respiratory system).

Causes damage to organs (respiratory system, teeth) through prolonged or repeated exposure.

Prevention:

Take any precaution to avoid mixing with combustibles.

Keep away from heat.

Keep or store away from clothing and other combustible materials.

Do not breathe mist, vapours.

Wash hands and skin thoroughly after handling.

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

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

IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

Response:

IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

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

IF INHALED: Remove person to fresh air and keep comfortable for breathing.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.

Continue rinsing.

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IF ON CLOTHING: Rinse immediately contaminated clothing and skin with plenty of water before removing clothes. Immediately call a POISON CENTRE or doctor.

In case of fire: Use carbon dioxide, dry chemical powder, water, water spray or fog to extinguish.

In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.

**Storage:**

Store locked up.

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

Store in corrosive resistant container with a resistant inner liner.

**Disposal:**

Dispose of contents and container in accordance with local, regional, national and international regulations.

**Other Hazards**

None known.

### SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No.	%	Other Identifiers
Nitric acid	7697-37-2	68-70	EU EINECS/ELINCS Number: 231-714-2
Water	7732-18-5	30-32	EC 231-791-2

### SECTION 4. FIRST-AID MEASURES

**First-aid Measures**

**Inhalation**

Move to fresh air. If breathing is difficult, trained personnel should administer emergency oxygen if advised to do so by Poison Centre or doctor. If breathing has stopped, trained personnel should begin rescue breathing. Call a Poison Centre or doctor.

**Skin Contact**

Take off immediately contaminated clothing, shoes and leather goods (e.g. watchbands, belts). Immediately rinse with lukewarm, gently flowing water for 15-20 minutes. Immediately call a Poison Centre or doctor. Thoroughly clean clothing, shoes and leather goods before reuse or dispose of safely.

**Eye Contact**

Immediately rinse the contaminated eye(s) with lukewarm, gently flowing water for 15-20 minutes, while holding the eyelid(s) open. Remove contact lenses, if present and easy to do. Immediately call a Poison Centre or doctor.

**Ingestion**

Have victim drink about 250ml (8fl. oz.) of water to dilute material in stomach. Never give anything by mouth if person is rapidly losing consciousness, or is unconscious or convulsing. Do not induce vomiting. Immediately call a Poison Centre or doctor.

**First-aid Comments**

If exposed or concerned, get medical advice or attention.

**Most Important Symptoms and Effects, Acute and Delayed**

Causes severe skin burns and eye damage. Causes digestive tract burns. Spray mists may cause respiratory tract irritation.

**Immediate Medical Attention and Special Treatment**

**Target Organs**

Eyes, respiratory system, teeth, skin, digestive system.

**Special Instructions**

Symptoms of pulmonary edema can be delayed up to 48 hours after exposure.

### SECTION 5. FIRE-FIGHTING MEASURES

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## Extinguishing Media

### Suitable Extinguishing Media

Carbon dioxide, dry chemical powder, appropriate foam, water spray or fog.

### Unsuitable Extinguishing Media

DO NOT use dry chemical fire extinguishing agents containing ammonium compounds (such as some A:B:C agents). Nitric acid does not burn. Extinguish fire using extinguishing agent suitable for the surrounding fire and not contraindicated for use with nitric acid. Nitric acid is an oxidizer. Therefore, flooding quantities of water spray or fog should be used to fight fires involving nitric acid.

## Specific Hazards Arising from the Product

Strong oxidizer. May cause a fire or explosion.

Fire may produce irritating, corrosive and/or toxic gases.

## Special Protective Equipment and Precautions for Fire-fighters

Oxidizer. Prevent contact with flammable and combustible materials. Knock down vapours or gases with water fog or fine water spray. Before entry, especially into confined areas, use an appropriate monitor to check for: toxic gases or vapours, sufficient oxygen.

Chemical protective clothing (e.g. chemical splash suit) and positive pressure SCBA may be necessary.

## SECTION 6. ACCIDENTAL RELEASE MEASURES

### Personal Precautions, Protective Equipment, and Emergency Procedures

Evacuate the area immediately. Isolate the hazard area. Keep out unnecessary and unprotected personnel. Do not touch damaged containers or spilled product unless wearing appropriate protective equipment. Increase ventilation to area or move leaking container to a well-ventilated and secure area. Eliminate all ignition sources. Use grounded, explosion-proof equipment.

### Environmental Precautions

Do not allow into any sewer, on the ground or into any waterway. If the spill is inside a building, prevent product from entering drains, ventilation systems and confined areas.

### Methods and Materials for Containment and Cleaning Up

Do not use absorbents. Contain spill using noncombustible material such as vermiculite, earth or sand. Do NOT use combustible materials such as sawdust. Flush spill area. Dike and recover contaminated water for appropriate disposal. Store recovered product in suitable containers that are: corrosion-resistant, tightly-covered.

### Other Information

Report spills to local health, safety and environmental authorities, as required.

## SECTION 7. HANDLING AND STORAGE

### Precautions for Safe Handling

Prevent accidental contact with flammable and combustible materials. Do not get in eyes, on skin or on clothing. Wash hands thoroughly after handling this material. Do NOT smoke in work areas. Do NOT eat, drink or store food in work areas. Never add water to a corrosive. Always add corrosives slowly to COLD water. Do not swallow.

### Conditions for Safe Storage

Do not store in metal containers. Store in an area that is: cool, dry, well-ventilated, clear of combustible and flammable materials (e.g. old rags, cardboard). Store in a closed container. Protect from sunlight.

## SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Control Parameters

Chemical Name	ACGIH TLV®		OSHA PEL		AIHA WEEL	
	TWA	STEL	TWA	Ceiling	8-hr TWA	TWA
Nitric acid	2 ppm	4 ppm	2 ppm			

### Appropriate Engineering Controls

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Use local exhaust ventilation and enclosure, if necessary, to control amount in the air. Provide eyewash and safety shower if contact or splash hazard exists.

#### Individual Protection Measures

##### Eye/Face Protection

Wear chemical safety goggles and face shield when contact is possible.

##### Skin Protection

Wear chemical protective clothing e.g. gloves, aprons, boots.

Butyl rubber, neoprene rubber, Barrier® (PE/PA/PE), Viton®/butyl rubber, Silver Shield/4H® (PE/EVAL/PE).

##### Respiratory Protection

Wear a full facepiece NIOSH approved air-purifying respirator with an acid gas cartridge.

## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

### Basic Physical and Chemical Properties

<b>Appearance</b>	Clear colourless - yellow. Absorbs moisture from the air.
<b>Odour</b>	Suffocating
<b>Odour Threshold</b>	Not available
<b>pH</b>	0.1 (1.0 N solution)
<b>Melting Point/Freezing Point</b>	~ -42 °C (-44 °F) (melting); ~ -42 °C (-44 °F) (freezing)
<b>Initial Boiling Point/Range</b>	~ 122 °C (252 °F)
<b>Flash Point</b>	Not applicable
<b>Evaporation Rate</b>	Not available
<b>Flammability (solid, gas)</b>	Not applicable
<b>Upper/Lower Flammability or Explosive Limit</b>	Not applicable (upper); Not applicable (lower)
<b>Vapour Pressure</b>	48 mm Hg (6 kPa) at 20 °C
<b>Vapour Density (air = 1)</b>	2.17
<b>Relative Density (water = 1)</b>	1.419
<b>Solubility</b>	Soluble in all proportions in water; Not available (in other liquids)
<b>Partition Coefficient, n-Octanol/Water (Log Kow)</b>	Not available
<b>Auto-ignition Temperature</b>	Not applicable
<b>Decomposition Temperature</b>	Not available
<b>Viscosity</b>	Not available (dynamic)
<b>Other Information</b>	
<b>Physical State</b>	Liquid
<b>Molecular Formula</b>	HNO <sub>3</sub>
<b>Molecular Weight</b>	63.02

## SECTION 10. STABILITY AND REACTIVITY

### Reactivity

Class 2 oxidizer - 40 - 80% Nitric acid class 2 Oxidizers cause a moderate increase in the burning rate of combustible materials with which they come into contact.

### Chemical Stability

Normally stable.

### Possibility of Hazardous Reactions

Decomposes in the presence of air, heat, light.

### Conditions to Avoid

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High temperatures. Exposure to air. Light.

#### **Incompatible Materials**

Metals (e.g. aluminum), unsaturated hydrocarbons (e.g. turpentine), strong bases (e.g. sodium hydroxide), acid anhydrides (e.g. acetic anhydride), alcohols (e.g. ethanol), aldehydes (e.g. acetaldehyde), amines (e.g. triethylamine), ketones (e.g. acetone), nitriles (e.g. butyronitrile).

#### **Hazardous Decomposition Products**

Corrosive, oxidizing nitrogen oxides.

## **SECTION 11. TOXICOLOGICAL INFORMATION**

### **Likely Routes of Exposure**

Inhalation; skin contact; eye contact; ingestion.

### **Acute Toxicity**

<b>Chemical Name</b>	<b>LC50</b>	<b>LD50 (oral)</b>	<b>LD50 (dermal)</b>
Nitric acid	67 ppm (mouse) (4-hour exposure)		

LD50 (oral): No information was located.

LD50 (dermal): No information was located.

### **Skin Corrosion/Irritation**

Causes severe skin burns.

### **Serious Eye Damage/Irritation**

May irritate or burn the eyes. Permanent damage including blindness may result.

### **STOT (Specific Target Organ Toxicity) - Single Exposure**

#### **Inhalation**

At high concentrations nose and throat irritation. Symptoms may include coughing, shortness of breath, difficult breathing and tightness in the chest. Symptoms may develop hours after exposure and are made worse by physical effort.

#### **Skin Absorption**

At low concentrations skin to darken. Symptoms may include redness, rash, swelling and itching. At high concentrations causes severe skin burns.

#### **Ingestion**

May cause burns of the gastrointestinal tract if swallowed.

### **Aspiration Hazard**

No information was located.

### **STOT (Specific Target Organ Toxicity) - Repeated Exposure**

May cause irritation of the respiratory system. May cause respiratory tract injury. Symptoms may include shortness of breath, rapid breathing, and coughing. The ability to do some physical activities can be reduced. Mucus production, chronic bronchitis and chronic cough.

### **Respiratory and/or Skin Sensitization**

Not a respiratory sensitizer. Not a skin sensitizer.

### **Carcinogenicity**

Conclusions cannot be drawn from the limited studies available.

### **Reproductive Toxicity**

#### **Development of Offspring**

Conclusions cannot be drawn from the limited studies available.

#### **Sexual Function and Fertility**

Conclusions cannot be drawn from the limited studies available.

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**Effects on or via Lactation**

No information was located.

**Germ Cell Mutagenicity**

Not known to be a mutagen.

**Interactive Effects**

No information was located.

**SECTION 12. ECOLOGICAL INFORMATION****Ecotoxicity**

Studies were not located.

**Persistence and Degradability**

Expected to be readily biodegradable.

**Bioaccumulative Potential**

No information was located.

**Mobility in Soil**

The product is water soluble and may spread in water systems.

**Other Adverse Effects**

The product may affect the acidity (pH-factor) in water with risk of harmful effects to aquatic organisms.

**SECTION 13. DISPOSAL CONSIDERATIONS****Disposal Methods**

Dispose of contents and container in accordance with local, regional, national and international regulations. Empty containers retain product residue. Follow label warnings even if container appears to be empty.

**SECTION 14. TRANSPORT INFORMATION**

Regulation	UN No.	Proper Shipping Name	Transport Hazard Class(es)	Packing Group
Canadian TDG	UN2031	Nitric Acid	8, 5.1	II
US DOT	UN2031	Nitric Acid	8, 5.1	II
IATA (Air)	UN2031	Nitric Acid	8, 5.1	II
IMO (Marine)	UN2031	Nitric Acid	8, 5.1	II

**Environmental Hazards** Not applicable

**Special Precautions** Not applicable

**Transport in Bulk According to Annex II of MARPOL 73/78 and the IBC Code**

Not applicable

**SECTION 15. REGULATORY INFORMATION****Safety, Health and Environmental Regulations****Canada****Domestic Substances List (DSL) / Non-Domestic Substances List (NDSL)**

Listed on the DSL.

**CEPA - National Pollutant Release Inventory (NPRI)**

Part 1A.

**USA**

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## Toxic Substances Control Act (TSCA) Section 8(b)

All ingredients are listed on the TSCA Inventory.

### Additional USA Regulatory Lists

CERCLA: Listed

SARA Title III - Section 302:

Acute Health Hazard: Yes

Chronic Health Hazard: Yes

Fire Hazard: Yes

Pressure Hazard: No

Reactive Hazard: No

SARA Title III - Section 311/312

Hazardous chemical: No.

## SECTION 16. OTHER INFORMATION

<b>NFPA Rating</b>	<b>Health - 4    Flammability - 0    Instability - 3</b>
	<b>Special Hazard - Oxidizing</b>
<b>SDS Prepared By</b>	Caledon Laboratories Ltd
<b>Date of Preparation</b>	October 24, 2016
<b>Revision Indicators</b>	The following SDS content was changed on November 14, 2016: Section 8 - Exposure Controls/Personal Protection; Exposure Guidelines.
<b>References</b>	CHEMINFO database. Canadian Centre for Occupational Health and Safety (CCOHS). Supplier Safety Data Sheets.
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