Material Safety Data Sheet

Section 1. Chemical Product and Company Identification

<table>
<thead>
<tr>
<th>NFPA</th>
<th>HMIS</th>
<th>Personal Protective Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td><img src="image.png" alt="Image" /></td>
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</tbody>
</table>

**Common Name/Trade Name**
Nitric acid, Red fuming

**Manufacturer**
SPECTRUM LABORATORY PRODUCTS INC.
14422 S. SAN PEDRO STREET
GARDENA, CA 90248

**CAS#**
7697-37-2

**RTECS**
QU5900000

**TSCA**
TSCA 8(b) inventory: Nitric acid, Red fuming

**CI#**
Not applicable.

**Commercial Name(s)**
Not available.

**Synonym**
Hydrogen Nitrato; Azotic Acid; Aqua Fortis; Nitrous Fumes

**Chemical Name**
Nitric Acid (Red fuming)

**Chemical Family**
Acid.

**Chemical Formula**
HNO3

**Supplier**
SPECTRUM LABORATORY PRODUCTS INC.
14422 S. SAN PEDRO STREET
GARDENA, CA 90248

Section 2. Composition and Information on Ingredients

**Name**
1) Nitric acid, Red fuming

**TWA (mg/m³)**

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS #</th>
<th>TWA (mg/m³)</th>
<th>STEL (mg/m³)</th>
<th>CEIL (mg/m³)</th>
<th>% by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Nitric acid, Red fuming</td>
<td>7697-37-2</td>
<td>2</td>
<td>4</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

**Exposure Limits**

**Toxicological Data on Ingredients**
Nitric acid, Red fuming:

**VAPOR (LC50):** Acute: 67 ppm 4 hours [Rat].

Section 3. Hazards Identification

**Potential Acute Health Effects**
Very hazardous in case of skin contact (corrosive, irritant, permeator), of eye contact (irritant), of ingestion, of inhalation. Liquid or spray mist may produce tissue damage particularly on mucous membranes of eyes, mouth and respiratory tract. Skin contact may produce burns. Inhalation of the spray mist may produce severe irritation of the respiratory tract, characterized by coughing, choking, or shortness of breath. Prolonged exposure may result in skin burns and ulceration. Over-exposure by inhalation may cause respiratory irritation. Severe over-exposure can result in death. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.

Continued on Next Page
### Potential Chronic Health Effects

- **CARCINOGENIC EFFECTS:** Not available.
- **MUTAGENIC EFFECTS:** Not available.
- **TERATOGENIC EFFECTS:** Not available.
- **DEVELOPMENTAL TOXICITY:** Not available.

The substance may be toxic to lungs, mucous membranes, upper respiratory tract, skin, eyes, teeth. Repeated or prolonged exposure to the substance can produce target organs damage. Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

### Section 4. First Aid Measures

#### Eye Contact

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention immediately.

#### Skin Contact

In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

#### Serious Skin Contact

Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

#### Inhalation

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

#### Serious Inhalation

Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. **WARNING:** It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.

#### Ingestion

Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

#### Serious Ingestion

Not available.

### Section 5. Fire and Explosion Data

#### Flammability of the Product

Non-flammable.

#### Auto-Ignition Temperature

Not applicable.

#### Flash Points

Not applicable.

#### Flammable Limits

Not applicable.

#### Products of Combustion

Not available.

#### Fire Hazards in Presence of Various Substances

- Risk of explosion of the product in presence of mechanical impact: Not available.
- Risk of explosion of the product in presence of static discharge: Not available.
- Slightly explosive in presence of reducing materials, of metals, of alkalis.

#### Explosion Hazards in Presence of Various Substances

- Flammable in presence of cellulose or other combustible materials.
- Phosphine, hydrogen sulfide, selenide all ignite when fuming nitric acid is dripped into gas.
- Phosphine ignites in concentrated nitric acid.
- Nickel tetrathosphate ignites with fuming nitric acid.
- Contact with metals may evolve flammable hydrogen gas.
- A jet of ammonia will ignite nitric acid vapor.
- Cellulose may be converted to the highly flammable nitrate ester on contact with the vapor of nitric acid as well as the liquid itself.

### Special Remarks on Fire Hazards

- Not applicable.
**Nitric acid, Red fuming**

Reacts explosively with metallic powders, carbides, cyanides, sulfides, alkalis and turpentine.

Can react explosively with many reducing agents.

Arsine, phosphine, tetraborane all oxidized explosively in presence of fuming nitric acid.

Cesium and rubidium acetylides explode in contact with nitric acid.

Explosive reaction with Nitric Acid + Nitrobenzene + water.

Detonation with Nitric Acid + 4-Methylcyclohexane.

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**Section 6. Accidental Release Measures**

**Small Spill**

Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container. If necessary: **Neutralize the residue with a dilute solution of sodium carbonate.**

**Large Spill**

Corrosive liquid. Oxidizing material. Poisonous liquid.

Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Avoid contact with a combustible material (wood, paper, oil, clothing...). Keep substance damp using water spray. Do not touch spilled material. Use water spray curtain to divert vapor drift. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dilute if needed. Call for assistance on disposal.

**Section 7. Handling and Storage**

**Precautions**


**Storage**

Keep container dry. Keep away from heat. Keep away from sources of ignition. Keep away from combustible material. Do not ingest. Do not breathe gas/fumes/vapor/spray. Never add water to this product. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as reducing agents, combustible materials, organic materials, metals, acids, alkalis, moisture.

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**Section 8. Exposure Controls/Personal Protection**

**Engineering Controls**

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the workstation location.

**Personal Protection**


**Personal Protection in Case of a Large Spill**

Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

**Exposure Limits**

- TWA: 2 STEL: 4 (ppm) from ACGIH (TLV) [United States] [1999]
- TWA: 2 STEL: 4 (ppm) [Australia]
- TWA: 2 STEL: 4 from NIOSH
- TWA: 5 STEL: 10 (mg/m³) from NIOSH
- TWA: 2 STEL: 4 (ppm) from OSHA (PEL) [United States]
- TWA: 5 STEL: 10 (mg/m³) from OSHA (PEL) [United States]

Consult local authorities for acceptable exposure limits.

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**Section 9. Physical and Chemical Properties**

<table>
<thead>
<tr>
<th>Physical state and appearance</th>
<th>Liquid.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Molecular Weight</td>
<td>63.01 g/mole</td>
</tr>
<tr>
<td>pH (1% soln/water)</td>
<td>Acidic.</td>
</tr>
<tr>
<td>Boiling Point</td>
<td>85°C (185°F)</td>
</tr>
<tr>
<td>Melting Point</td>
<td>-50°C (-58°F)</td>
</tr>
<tr>
<td>Critical Temperature</td>
<td>Not available.</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>1.5 (Water = 1)</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>6.4 kPa (@ 20°C)</td>
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</table>

**Odor** Unpleasant. Disagreeable and choking. (Strong.)

**Taste** Not available.

**Color** Yellow to Brownish-red.

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<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vapor Density</td>
<td>2.3 (Air = 1)</td>
</tr>
<tr>
<td>Volatility</td>
<td>Not available</td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>0.29 ppm</td>
</tr>
<tr>
<td>Water/Oil Dist. Coeff.</td>
<td>Not available</td>
</tr>
<tr>
<td>Ionicity (in Water)</td>
<td>Not available</td>
</tr>
<tr>
<td>Dispersion Properties</td>
<td>See solubility in water.</td>
</tr>
<tr>
<td>Solubility</td>
<td>Easily soluble in cold water.</td>
</tr>
</tbody>
</table>

### Section 10. Stability and Reactivity Data

#### Stability
The product is stable.

#### Instability Temperature
Not available.

#### Conditions of Instability
Incompatible materials, water/moisture

**Incompatibility with various substances**
- Reactive with reducing agents, combustible materials, organic materials, metals, acids, alkalis.
- Slightly reactive to reactive with moisture.

#### Corrosivity
- Extremely corrosive in presence of aluminum, of copper.
- Non-corrosive in presence of glass, of stainless steel (304), of stainless steel (316).

#### Special Remarks on Reactivity
- A strong oxidizer.
- Reacts violently with alcohol, organic material, turpene, charcoal.
- Violent reaction with Nitric acid + Acetone and Sulfuric acid.
- Nitric Acid will react with water or steam to produce heat and toxic, corrosive and flammable vapors.

#### Special Remarks on Corrosivity
- In presence of traces of oxides, it attacks all base metals except aluminum and special chromium steels.
- It will attack some forms of plastics, rubber, and coatings.
- No corrosive effect on bronze.
- No corrosivity data for zinc, and steel

#### Polymerization
Will not occur.

### Section 11. Toxicological Information

#### Routes of Entry
Absorbed through skin. Dermal contact. Eye contact. Inhalation.

#### Toxicity to Animals
**WARNING:** THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE.
Acute toxicity of the vapor (LC50): 67 4 hours [Pat].

#### Chronic Effects on Humans
May cause damage to the following organs: lungs, mucous membranes, upper respiratory tract, skin, eyes, teeth.

#### Other Toxic Effects on Humans
Extremely hazardous in case of eye contact (corrosive), of inhalation (lung corrosive).
Very hazardous in case of skin contact (corrosive, irritant, permeator), of ingestion, .

#### Special Remarks on Toxicity to Animals
Not available.

#### Special Remarks on Chronic Effects on Humans
Not available.

#### Special Remarks on other Toxic Effects on Humans
Acute Potential Health Effects:
- Skin: Severely irritates skin. Causes skin burns and may cause deep and penetrating ulcers of the skin with a characteristic yellow to brownish discoloration. May be fatal if absorbed through skin.
- Eyes: Severely irritates eyes. Causes eye burns. May cause irreversible eye injury.
- Ingestion: May be fatal if swallowed. Causes serious gastrointestinal tract irritation or burns with nausea, vomiting, severe abdominal pain, and possible “coffee grounds” appearance of the vomitus. May cause perforation of the digestive tract.
- Inhalation: May be fatal if inhaled. Vapor is extremely hazardous. Vapor may cause nitrous gas poisoning. Effects may be delayed. May cause irritation of the mucous membranes and respiratory tract with burning pain in the nose and throat, coughing, sneezing, wheezing, shortness of breath and pulmonary edema. Other symptoms may include nausea, and vomiting.

Continued on Next Page
### Chronic Potential Health Effects

Repeated inhalation may produce changes in pulmonary function and/or chronic bronchitis. It may also affect behavior (headache, dizziness, drowsiness, muscle contraction or spasticity, weakness, loss of coordination, mental confusion), and urinary system (kidney failure, decreased urinary output after several hours of uncorrected circulatory collapse).

Repeated exposure may cause discoloration and/or erosion of teeth (dental enamel). Eye irritation and respiratory tract signs and symptoms resembling those of frequent upper respiratory viral infections have been associated with chronic nitric acid exposure.

### Section 12. Ecological Information

<table>
<thead>
<tr>
<th>Ecotoxicity</th>
<th>Not available.</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOD5 and COD</td>
<td>Not available.</td>
</tr>
<tr>
<td>Products of Biodegradation</td>
<td>Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.</td>
</tr>
<tr>
<td>Toxicity of the Products of Biodegradation</td>
<td>The products of degradation are less toxic than the product itself.</td>
</tr>
<tr>
<td>Special Remarks on the Products of Biodegradation</td>
<td>Not available.</td>
</tr>
</tbody>
</table>

### Section 13. Disposal Considerations

**Waste Disposal**

Waste must be disposed of in accordance with federal, state and local environmental control regulations.

### Section 14. Transport Information

**DOT Classification**

- Class 8: Corrosive material
- CLASS 5.1: Oxidizing material
- CLASS 6.1: Poisonous material

**Identification**

UNNA: 2032: Nitric acid, Red Fuming  PG: I

**Special Provisions for Transport**

Inhalation Hazard, Zone B

**DOT (Pictograms)**

![Pictogram for Oxidizer](image)

### Section 15. Other Regulatory Information and Pictograms

**Federal and State Regulations**

- Connecticut hazardous material survey: Nitric acid, Red fuming
- Illinois toxic substances disclosure to employee act: Nitric acid, Red fuming
- Illinois chemical safety act: Nitric acid, Red fuming
- New York release reporting list: Nitric acid, Red fuming
- Rhode Island RTK hazardous substances: Nitric acid, Red fuming
- Pennsylvania RTK: Nitric acid, Red fuming
- Florida: Nitric acid, Red fuming
- Minnesota: Nitric acid, Red fuming
- Massachusetts RTK: Nitric acid, Red fuming
- Massachusetts spill list: Nitric acid, Red fuming
- New Jersey: Nitric acid, Red fuming
- New Jersey spill list: Nitric acid, Red fuming
- Louisiana RTK reporting list: Nitric acid, Red fuming
- Louisiana spill reporting: Nitric acid, Red fuming
- California Director's List of Hazardous Substances: Nitric acid, Red fuming
- TSCA (b) inventory: Nitric acid, Red fuming
- SARA 302/304/311/312 extremely hazardous substances: Nitric acid, Red fuming

**Continued on Next Page**
California Proposition 65 Warnings

California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: No products were found.
California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: No products were found.

Other Regulations

EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances (EINECS No. 231-714-2).
Canada: Listed on Canadian Domestic Substance List (DSL).
China: Listed on National Inventory.
Japan: Listed on National Inventory (ENCS).
Korea: Listed on National Inventory (KEC I).
Philippines: Listed on National Inventory (PICCS).
Australia: Listed on AICS.

Other Classifications

WHMIS (Canada)  CLASS C: Oxidizing material.
CLASS D-1A: Material causing immediate and serious toxic effects (VERY TOXIC).
CLASS E: Corrosive liquid.

DSCL (EEC) R8- Contact with combustible material may cause fire.
R35- Causes severe burns.

S23- Do not breathe gas/fumes/vapour/spray [***]
S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S36- Wear suitable protective clothing.
S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

HMIS (U.S.A.)

Health Hazard 3
Fire Hazard 0
Reactivity 1
Personal Protection

National Fire Protection Association (U.S.A.)

Health Flammability

Reactivity Specific hazard

WHMIS (Canada) (Pictograms)

DSCL (Europe) (Pictograms)

TDG (Canada) (Pictograms)

ADR (Europe) (Pictograms)

Protective Equipment Gloves.
Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate.

Face shield.

### Section 16. Other Information

<table>
<thead>
<tr>
<th>MSDS Code</th>
<th>N3405</th>
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<tbody>
<tr>
<td>References</td>
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<tr>
<td>Other Special Considerations</td>
<td>Not available.</td>
</tr>
</tbody>
</table>

Verified by Sonia Owen.  

**CALL (310) 516-8000**

**Notice to Reader**

All chemicals may pose unknown hazards and should be used with caution. This Material Safety Data Sheet (MSDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this MSDS. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this MSDS is based on technical data judged to be reliable, Spectrum Quality Products, Inc. assumes no responsibility for the completeness or accuracy of the information contained herein.