Material Safety Data Sheet

Revision Issued: 10/05/2005 Supercedes: 9/25/2001 First Issued: 12/01/85

Section I - Chemical Product And Company Identification

Product Name: Nitric Acid

Synonyms/Common Names: Aqua Fortis; Hydrogen Nitrate; HNO_3

CAS Number: 7697-37-2 HBCC MSDS No. CN03300

HILL BROTHERS Chemical Co.

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Section II - Composition/Information On Ingredients

			Exposure Limits (TWAs) in Air		
Chemical Name	CAS Number	%	ACGIH TLV	OSHA PEL	STEL
Nitric Acid	7697-37-2	30-71	2 ppm	2 ppm	4 ppm

Section III - Hazard Identification

Routes of Exposure: Nitric acid can affect the body if it is inhaled or swallowed, or if it comes in contact with the eyes or skin.

Summary of Acute Health Hazards

Ingestion: Can cause irritation and severe corrosive burns to mouth, throat, and stomach, and may be fatal if swallowed.

Inhalation: Gases or acid mist can cause severe irritation or corrosive burns to the upper respiratory system, including nose, mouth, and throat. Lung irritation, nitrogen oxide poisoning, and pulmonary edema can also occur. May cause severe breathing difficulties which may be delayed in onset.

Skin: Can cause severe corrosive burns or irritation. May stain the skin bright yellow.

Eyes: Can cause irritation, corneal burns, conjunctivitis, and may cause blindness. Contact lenses should not be worn when working with this material.

Summary of Chronic Health Hazards: N/A

Effects of Overexposure: Possible acute pulmonary edema, chronic obstructive pulmonary disease, or chronic bronchitis from inhalation. The vapor and mist may erode the exposed teeth. On the skin or through ingestion, the liquid may cause pain and severe and penetrating burns. In contact with the eyes, the liquid produces severe burns which may lead to visual impairment or blindness.

Medical Conditions Generally Aggravated by Exposure: Skin disorders and respiratory (asthma-like) disorders.

Note to Physicians: Nitric Acid vapors contain nitrogen oxides. Acute overexposure by inhalation can result in delayed pulmonary edema. Observe affected patients for delayed effects up to 48 hours after exposure. Screen patients with chest x-ray, arterial blood gas, methemoglobinemia level, and pulmonary function tests. Bronchiolitis obliterans may develop weeks after exposure.

Section IV - First Aid Measures

Ingestion: DO NOT INDUCE VOMITING. Drink large amounts of water to dilute acid. GET PROMPT MEDICAL ATTENTION.
Inhalation: If inhaled, will cause difficult breathing or loss of consciousness. Move to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen. GET PROMPT MEDICAL ATTENTION.
Skin: Promptly flush with plenty of soap and water for at least 15 minutes. Remove contaminated clothing. Wash clothing before reuse. GET PROMPT MEDICAL ATTENTION.
Eyes: Wash eyes immediately with large amounts of water, for at least 30 minutes, lifting the lower and upper lids. Contact lenses should not be worn when working with this material. Do not allow victim to rub or keep eyes closed. GET PROMPT MEDICAL ATTENTION.

Section V - Fire Fighting Measures

Flash Point: Not Flammable

Autoignition Temperature: N/A

Lower Explosive Limit: N/A

Upper Explosive Limit: N/A

Unusual Fire and Explosion Hazards: Will accelerate the burning of combustible materials and can cause ignition by contact with combustible materials. Contact with common materials may generate hydrogen gas, which can form flammable mixtures with air.

Extinguishing Media: Use water in flooding quantities as fog on adjacent fires.

Special Firefighting Procedures: Water spray may be useful in minimizing or dispersing vapors and cooling equipment exposed to heat and flame. In danger area, wear bunker gear and self-contained breathing apparatus for fires beyond the incipient range (29CFR 1910.156)

Section VI - Accidental Release Measures

Spills may need to be reported to the National Response Center (800/424-8802) DOT Reportable Quantity (RQ) is 1000 pounds Adequate ventilation is required to eliminate any nitrogen oxides released and, if soda ash or limestone is used, CO_2. Stay upwind and away from spill. Keep all ignition sources and hot metal surfaces away from spill/release. Keep material out of water sources and sewers. Build dikes using inert material (i.e. dry sand or earth) to contain flow as necessary. Dilute spills or leaks with plenty of water. Neutralize residue with sodium bicarbonate, then place into a chemical waste container. A vapor suppressing foam may be used to reduce vapors.

Section VII - Handling and Storage

Avoid inhalation of vapors or mists and all bodily contact. Keep away from incompatible substances. Store in a cool, well-ventilated, properly drained area out of the sun. Avoid storage on wood floors or near wooden walls, etc. Diking of storage tanks if recommended. Protect from physical damage. Keep containers tightly closed. Do not get in eyes, on skin, or on clothing. Remove contaminated clothing and wash before reuse.

Section VIII - Exposure Controls/Personal Protection

Respiratory Protection: Only respirators approved by MSHA or NIOSSH are permissible. Only non-oxidizable sorbents are allowed. A chemical cartridge respirator is not recommended due to the potential for exposure limits being exceeded prior to odor breakthrough. See SUPPLEMENTAL INFORMATION section.

Respirator Selection

100 ppm or less (250 mg/m³ or less): GMOVS/SAF/SCBAF/SA:PD,PP,CF

100 ppm or greater (250 mg/m³ or greater), or entry and escape from unknown concentrations: GMS/SCBA

Ventilation: Ventilation sufficient to reduce mists and nitrogen oxide concentrations below permissible TLV levels. Mechanical exhaust systems or closed ventilated systems may be required. Always keep the nitric acid vapor concentration levels below 2 ppm (5 mg/m³).

Protective Clothing: Impervious clothing should be used to prevent any possibility of physical contact with liquid nitric acid. Clothing may include a rubber acid suit, hood, boots and gloves, and an air mask and chemical goggles.

Eye Protection: Splash-proof safety goggles should be used if the possibility of liquid nitric acid contacting the eyes exists. Do not wear contact lenses. Eight-inch minimum face shields should be used.

Other Protective Clothing or Equipment: N/A

Work/Hygienic Practices: Facilities for quick drenching of the body, in addition to an eye-wash fountain, should be provided within the immediate work area for emergency use. Employees who handle nitric acid should wash their hands before eating, smoking, or using toilet facilities.

Section IX - Physical and Chemical Properties

Physical State: Liquid **pH:** 1-2

% Acid in Solution:	30	40	56-71
Melting Point/Range:	-42°C@68%	-44°F	31°F

Appearance/Color/Odor: Watery liquid, colorless, yellow, or red fuming liquid with a suffocating, acrid odor.

Solubility in Water: 100% **Molecular Weight:** 63 (solute)

% Acid in Solution	30	40	56-71
Vapor Pressure(mmHg)	5-10	<3@70°F	2.9@68°F

% Acid in Solution	30	40	56-71
Specific Gravity(Water=1)	1.18-1.19	1.2-1.41	1.41

% Acid in Solution	30	40	56-71
Vapor Density(Air=1)	> 1	< 3	1.5-1.7

% Acid in Solution	30	40	56-71
Weight/Gallon (Lbs.)	9.8-9.9	10-11	11.7

Evaporation Rate (N-Butyl Acetate=1): < 1 **% Volatiles:** 100% (by volume)

Boiling Point/Range: 244-251°F @ 68% **How to detect this compound :** N/A

Section X - Stability and Reactivity

Stability: Stable **Hazardous Polymerization:** N/A

Conditions to Avoid: Avoid exposure to direct sunlight.

Materials to Avoid: Most metals, metallic powders, alcohol, charcoal, turpentine, hydrogen sulfide, wood excelsior, paper, cotton and similar organic materials. Alkalies, carbon, carbonates, cyanides, diborane organic chemicals, fluorine, phosphine, sulfides, thiocyanates. Nitric Acid is corrosive or incompatible with many common materials including mild steel, PVC, Viton®, and rubber.
Viton® is a registered trademark of DuPont Dow Elastomers.

Hazardous Decomposition Products: Toxic gases and vapors such as Nitrogen Oxides.

Section XI - Toxicological Information

Nitric acid vapor or mist is an irritant of the eyes, mucous membranes, and skin. When nitric acid is exposed to air or comes in contact with organic matter, it decomposes to yield a mixture of toxic oxides of nitrogen, including nitric oxide and nitrogen dioxide. Exposure to high concentrations of nitric acid vapor or mist causes pneumonitis and pulmonary edema which may be fatal; onset of symptoms may be delayed for 4 to 30 hours. In contact with the eyes, the liquid produces severe burns which may result in permanent damage and visual impairment. On the skin, the liquid or concentrated vapor produces immediate, severe and penetrating burns; concentrated solutions cause deep ulcers and stain the skin a bright yellow or yellowish brown color. The vapor and mist may erode the exposed teeth. Ingestion of the liquid will cause immediate pain and burns of the mouth, esophagus, and gastrointestinal tract.

Section XII - Ecological Information

N/A

Section XIII - Disposal Considerations

Nitric acid may be disposed of by neutralizing with water and alkaline material (such as soda ash, lime, etc.) and disposing in a secured sanitary landfill. Disposal of nitric acid may be subject to federal, state, and local regulations. Users of this product should review their operations in terms of applicable federal, state, and local laws and regulations, then consult with the appropriate regulatory agencies before discharging or disposing of waste material.

Section XIV - Transport Information

DOT Proper Shipping Name: NITRIC ACID
DOT Hazard Class/ I.D. No.: 8, UN2031, II
If Nitric Acid Concentration is above 70%: 8, (5.1), UN2031, I

Section XV - Regulatory Information

This product contains the following toxic chemical(s) subject to the reporting requirements of SARA TITLE III of the Emergency Planning and Community Right-To Know Act (EPCRA) of 1986 and of 40 CFR 372:
Section 302 Extremely Hazardous Substance (EHS): CAS # 7697-37-2
1000 Lbs. (454 Kilograms) (85 Gals.) Threshold Planning Quantity (TPQ)
Section 304 Extremely Hazardous Substance (EHS): CAS # 7697-37-2
1000 Lbs. (454 Kilograms) (85 Gals.) Reportable Quantity (RQ)
CERCLA Hazardous Substance: CAS #7697-37-2
1000 Lbs. (454 Kilograms) (85 Gals.) Reportable Quantity (RQ)
Section 313 Supplier Notification: CAS # 7697-37-2, % by Weight: 30-71%
NFPA Rating: Health - 3; Fire - 0; Reactivity - 0; Other - (Oxidizer)
0=Insignificant 1=Slight 2=Moderate 3=High 4=Extreme
Carcinogenicity Lists:
National Toxicology Program (NTP): No
International Agency for Research on Cancer (IARC) Monograph: No
Occupational Safety & Health Administration (OSHA) Regulated: Yes

Section XVI - Other Information

Synonyms/Common Names: Aqua Fortis; Hydrogen Nitrate; HNO_3
Chemical Family/Type: Inorganic acid
Sections changed since last revision: XIV, XV

IMPORTANT! Read this MSDS before use or disposal of this product. Pass along the information to employees and any other persons who could be exposed to the product to be sure that they are aware of the information before use or other exposure. This MSDS has been prepared according to the OSHA Hazard Communication Standard [29 CFR 1910.1200]. The MSDS information is based on sources believed to be reliable. However, since data, safety standards, and government regulations are subject to change and the conditions of handling and use, or misuse are beyond our control, **Hill Brothers Chemical Company** makes no warranty, either expressed or implied, with respect to the completeness or continuing accuracy of the information contained herein and disclaims all liability for reliance thereon. Also, additional information may be necessary or helpful for specific conditions and circumstances of use. It is the user's responsibility to determine the suitability of this product and to evaluate risks prior to use, and then to exercise appropriate precautions for protection of employees and others.