



Material Safety Data Sheet

NFPA Classification	DOT/TDG Pictograms	WHMIS Classification	Protective Clothing
<p>Health Fire Hazard Reactivity Specific Hazard</p>	<p>CORROSIVE</p>		

Section I. Chemical Product and Company Identification

PRODUCT NAME/ TRADE NAME	Nitric Acid	
SYNONYM	Hydrogen nitrate, Aqua fortis	
CHEMICAL NAME	Nitric Acid	Revision Number:1
CHEMICAL FAMILY	Inorganic Acid.	MSDS prepared by Technical Services on: June 27, 2005
CHEMICAL FORMULA	HNO ₃	24 Hour Emergency Telephone Number: (520) 720-2150 (Ask for the Shift Supervisor) CHEMTREC 1-800-424-9300
MATERIAL USES	Agricultural use: Manufacture of products. Industrial applications: Manufacture of chemicals. Manufacture of specialty metal products.	
MANUFACTURER	SUPPLIER	
Apache Nitrogen Products, Inc. P. O. Box 700 Benson, AZ 85602 Fax (520) 720-4158 www.apachenitro.com	Apache Nitrogen Products, Inc. P. O. Box 700 Benson, AZ 85602 Fax (520) 720-4158 www.apachenitro.com	

Section II. Hazardous Ingredients

NAME	CAS #	Exposure Limits (ACGIH)				% by Weight
		TLV-TWA 10mg/m ³	TLV-TWA ppm	STEL 10mg/m ³	STEL ppm	
Nitric acid	7697-37-2	5.2	2	10	4	58

Other Information on Ingredients:

Section III. Hazards Identification

POTENTIAL ACUTE HEALTH EFFECTS	<p>Nitric acid can be corrosive to the skin, eyes, nose, mucous membranes, respiratory tract and gastrointestinal tract, or any tissue with which it comes in contact. Concentrated nitric acid chars the tissue with a characteristic yellow coloration. Severe and fatal skin burns can occur with necrosis and scarring.</p> <p>The eye is especially sensitive to the corrosive effects and can be destroyed. Ingestion may cause severe irritation, burns to the mouth and throat, and hemorrhaging, necrosis and perforation in the gastrointestinal tract.</p> <p>Respiratory effects of acute exposure include tickling in the nose and throat, coughing, sneezing, reflex bronchospasm, dyspnea, and pulmonary edema. Death may be from sudden circulatory collapse, glottic or esophageal edema, perforation of the stomach, gastric hemorrhage, or delayed stricture. Milder exposures can cause irritation of the eyes, skin, mucous membranes and respiratory and digestive tracts. RESPIRATORY EFFECTS MAY BE DELAYED IN ONSET UP TO 30 HOURS. Chemical pneumonitis and sudden circulatory collapse can occur from acute exposures.</p>
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Section III. Hazards Identification

POTENTIAL CHRONIC HEALTH EFFECTS	Chronic exposure to nitric acid can produce changes in pulmonary function and/or chronic bronchitis. Eye irritation and respiratory symptoms resembling frequent upper respiratory viral infections have also been associated with chronic exposure. A yellow discoloration and/or erosion of the dental enamel has been reported, but the erosion is generally not as severe as with sulfuric or hydrochloric acids.
	CARCINOGENIC EFFECTS: NONE by ACGIH, EPA, IARC, NTP, OSHA. MUTAGENIC EFFECTS: NONE by ACGIH, EPA, IARC, NTP, OSHA. TERATOGENIC EFFECTS: NONE by ACGIH, EPA, IARC, NTP, OSHA.

Section IV. First Aid Measures

EYE CONTACT	IMMEDIATELY flush eyes with running water for at least 15 minutes, keeping eyelids open. Check for and remove any contact lenses. SEEK IMMEDIATE MEDICAL ATTENTION in case of eye contact.
MINOR SKIN CONTACT	Immediately flush skin with water while removing contaminated clothing and shoes. Use warm water if available and continue flushing for at least 15, but preferably 30 minutes. GET MEDICAL ATTENTION IF IRRITATION PERSISTS. Contaminated clothing should be discarded in a manner which limits further exposure.
EXTENSIVE SKIN CONTACT	No additional information.
MINOR INHALATION	Allow the affected individual to rest in a well ventilated area. Watch for airway obstruction. Give oxygen if available. Seek immediate medical attention.
SEVERE INHALATION	In emergency situations use proper respiratory protection to evacuate affected individuals to a safe area as soon as possible. Loosen tight clothing around the person's neck and waist. Oxygen may be administered if breathing is difficult. If the person is not breathing, perform artificial respiration. Obtain immediate medical attention.
SLIGHT INGESTION	Do not induce vomiting. Careful removal of the substance from the stomach by medical personnel is required. Call a physician or poison control center immediately. Get immediate medical attention. If tolerated, give no more than 1 cup of milk or water to rinse the mouth and throat and dilute the stomach contents. No more than 8 ounces (1 cup) in adults and 4 ounces (1/2 cup) in children is recommended to minimize the risk of vomiting.
EXTENSIVE INGESTION	No additional information.

Section V. Fire and Explosion Data

THE PRODUCT IS	Not combustible. Decomposes at high temperatures.
AUTO-IGNITION TEMPERATURE	Not available.
FLASH POINT	Not available.
FLAMMABILITY LIMITS	Not available.
PRODUCTS OF COMBUSTION	Nitrogen oxides (NO, NO ₂).
FIRE HAZARD IN THE PRESENCE OF VARIOUS SUBSTANCES	Slightly flammable in the presence of reducing materials, of combustible materials, of organic materials.
EXPLOSION HAZARD IN THE PRESENCE OF VARIOUS SUBSTANCES	Will react with many metals to generate highly flammable and explosive hydrogen gas.
FIRE FIGHTING MEDIA AND INSTRUCTIONS	Oxidizing material. Cool containing vessels with water jet in order to prevent pressure buildup, auto-ignition or explosion. Avoid contact with organic materials. Use extinguishing media suitable for surrounding materials. Fire fighters should wear self-contained breathing apparatus (SCBA) and full turnout gear. Dike and collect water used to fight fire for later treatment and disposal.
SPECIAL REMARKS ON FIRE HAZARDS	Powerful oxidizing agent; may ignite oxidizable materials. Evolves toxic fumes when heated to the decomposition state. A self contained breathing apparatus should be used to avoid inhalation of toxic fumes.
SPECIAL REMARKS ON EXPLOSION HAZARDS	Oxidizing acid. May react violently when mixed with organic materials, especially under conditions of heat and pressure.

Section VI. Accidental Release Measures

SMALL SPILL	Corrosive liquid. Warn personnel to move away. Isolate hazard area. Observe protective equipment requirements. Keep unnecessary and unprotected personnel from entering. Stop leak if possible to do so without risk. Prevented from entering sewage or drainage systems and bodies of water. Contain spill with dry earth, sand or other non-combustible material. Neutralize spill by slowly and carefully applying powdered limestone to spill. Allow time to neutralize. Use appropriate tools to put the solid material in a convenient waste disposal container. Finish cleaning the spill area with running water. Ensure disposal is in compliance with government requirements and ensure conformity to local regulations. Consult your environmental advisor regarding disposal alternatives.
LARGE SPILL	No additional information.

Section VII. Handling and Storage

PRECAUTIONS	Keep locked up. Keep container dry. DO NOT ingest. Do not breathe fumes, or spray. In case of insufficient ventilation, wear suitable respiratory equipment. Avoid contact with skin and eyes. Keep away from incompatible materials. Wear chemical resistant gloves, a chemical suit, rubber boots, and chemical safety goggles plus a face shield. When using do not eat, drink or smoke. Ensure that an eyewash station and safety shower is near the place of use.
STORAGE	Contains nitric acid. Will corrode incompatible metals and many plastic materials. 304 or 347 stainless steel are acceptable materials of construction. Storage tanks should be designed to API Standard 650. Tanks should be vented and painted white or in light, heat-reflecting colors. Piping should be welded schedule 40 stainless steel. Ensure that all pumps, valves, meters, are of compatible material. Gaskets should be of teflon. Secondary containment is recommended where practical or required by law.

Section IX. Physical and Chemical Properties

PHYSICAL STATE AND APPEARANCE	Liquid		
MOLECULAR WEIGHT	63.02	COLOR	Brownish yellow.
pH (10% SOLN/WATER)	<1	ODOR	Pungent antiseptic like odor.
BOILING POINT	119°C (246°F)	ODOR THRESHOLD	0.27 ppm.
MELTING POINT	-22°C (-8°F)	TASTE	Not available.
CRITICAL TEMPERATURE	Not available	VOLATILITY	Not available.
SPECIFIC GRAVITY g/cc	1.37 (Water = 1)	SOLUBILITY	Soluble in cold or hot water.
BULK DENSITY kg/m³ ; lbs/ft³	1365 kg/m ³ 11.4 lbs/gal (US); 13.7 lbs/gal (UK)	DISPERSION PROPERTIES	See solubility in water.
VAPOR PRESSURE	6.6mm Hg @ 20°C (0.74mm HNO ₃ +5.9mm H ₂ O)	WATER/OIL DIST. COEFF.	Not available.
VAPOR DENSITY	2.2 (Air = 1)		

Section X. Stability and Reactivity Data

STABILITY	The product is stable.
INSTABILITY TEMPERATURE	Not available.
CONDITIONS OF INSTABILITY	No additional remark.
INCOMPATIBILITY WITH VARIOUS SUBSTANCES	Extremely reactive or incompatible with alkalis. Highly reactive with reducing agents, combustible materials, metals. Slightly reactive with organic materials, acids, moisture.
CORROSIVITY	Corrosive to mild metals such as copper, aluminum, brass, iron, and mild steel. Not corrosive to 304L or 316 stainless steel.
SPECIAL REMARKS ON REACTIVITY	Oxidizer. Avoid other reducing agents and combustibles organic materials. Corrosive to most metals. Will release flammable and potentially explosive hydrogen gas on contact with amphoteric metals. Heating may cause release of nitrogen oxides.
SPECIAL REMARKS ON CORROSIVITY	Contact your sales representative or a metallurgical specialist to ensure compatibility with system equipment.

Section XI. Toxicological Information

SIGNIFICANT ROUTES OF EXPOSURE	Ingestion. Inhalation.
SPECIAL REMARKS ON TOXICITY TO ANIMALS	Harmful to fish and other water organisms. May cause burns to mouth, throat and stomach. May cause corneal opacity. Harmful if inhaled.
OTHER EFFECTS ON HUMANS	No additional information.
SPECIAL REMARKS ON CHRONIC EFFECTS ON HUMANS	Prolonged and/or repeated exposures may cause dental disorder and/or damage.
SPECIAL REMARKS ON OTHER EFFECTS ON HUMANS	Death due to breathing failure may occur almost immediately or may be delayed several hours to several days depending on severity of exposure. Nitrogen oxide gas may be released if this material is overheated or placed in contact with oxidizing agents (e.g. peroxides). Nitrogen oxides (especially nitrogen dioxide) are toxic by inhalation.

Section XII. Ecological Information

ECOTOXICITY	Corrosive to skin and eyes on contact. May cause burns to mouth, throat and stomach. May cause corneal opacity. Toxic to wildlife and domestic animals. Aquatic/Marine Toxicity: Harmful to fish and other water organisms. Highly soluble. Will disperse with current. Release to watercourses may cause effects down stream from the point of release. U.S. D.O.T.: This material is NOT listed as a Marine pollutant.
BOD and COD	Not available.

Section XII. Ecological Information


PRODUCTS OF DEGRADATION	Nitrogen oxides (NO, NO ₂). Degradation products may accumulate under normal storage conditions.
TOXICITY OF THE PRODUCTS OF DEGRADATION	The products of degradation are as toxic as the product itself.
SPECIAL REMARKS ON THE PRODUCTS OF DEGRADATION	The product will disperse in water. Product may degrade water quality and taste. Notify downstream water users. Will dissolve and disperse in water. Reclaiming material may not be viable.


Section XIII. Disposal Considerations

WASTE DISPOSAL OR RECYCLING	For small spills absorb with an inert dry material (such as sand or earth) and place in an appropriate waste disposal container. For large spills, dike with an inert, non-porous material, and pump up or absorb and place in an appropriate waste disposal container. Ensure compatibility of all materials of construction in all transfer equipment and containers. Consult your environmental advisor for information on disposal alternatives.
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Section XIV. Transport Information

DOT / TDG CLASSIFICATION	DOT/TDG CLASS 8: Corrosive liquid.
PIN and Shipping Name	Proper shipping name: Nitric Acid PIN #: UN2031 PG II
SPECIAL PROVISIONS FOR TRANSPORT	B2, B47, B 53, IB2, T 8, TP 2, TP 12

DOT (U.S.A.) (Pictograms)	
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National Fire Protection Association (U.S.A.)	<p>Hazards presented under emergency conditions only.</p> <div style="display: flex; align-items: center;"> <div style="margin-right: 20px;">Health</div>  <div style="margin-left: 20px;"> <p>Fire Hazard</p> <p>Reactivity</p> <p>Specific Hazard</p> </div> </div>
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NOTICE TO READER

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