



MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Material name NITRIC ACID, REAGENT (ACS)
Catalog # 626
Version # 02
Revision date 07-Apr-2009
CAS # Mixture
Synonym(s) AQUA FORTIS
Manufacturer information GFS Chemicals, Inc.
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2. Hazards Identification

Emergency overview DANGER -- OXIDIZER
Contact with combustible material may cause fire.

Corrosive. Causes skin and eye burns. Harmful if inhaled. Harmful if swallowed. Harmful if absorbed through skin. Irritating to respiratory system. Prolonged exposure may cause chronic effects. DANGER

DANGER -- OXIDIZER
Oxidizing material. Contact with combustible material may cause fire. Contact with other combustible material can cause fire.

Corrosive. Causes severe skin and eye burns. Causes skin and eye burns. Prolonged exposure may cause chronic effects.

OSHA regulatory status This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).

Potential health effects

Routes of exposure Inhalation. Ingestion. Skin contact. Eye contact.

Eyes Causes eye burns. Harmful in contact with eyes. Risk of serious damage to eyes. Do not get this material in contact with eyes.

Skin Causes skin burns. Harmful in contact with skin. Do not get this material in contact with skin.

Inhalation Causes burns. Harmful if inhaled. Irritating to respiratory system. Do not breathe dust/fume/gas/mist/vapors/spray.

Ingestion Harmful if swallowed. Components of the product may be absorbed into the body by ingestion. Ingestion may produce burns to the lips, oral cavity, upper airway, esophagus and possibly the digestive tract. Do not ingest.

Target organs Eyes. Respiratory system. Skin.

Signs and symptoms Contact with this material will cause burns to the skin, eyes and mucous membranes.

Potential environmental effects Components of this product are hazardous to aquatic life. May cause long-term adverse effects in the environment.

3. Composition / Information on Ingredients

Hazardous components	CAS #	Percent
NITRIC ACID	7697-37-2	65 - 70
Non-hazardous components	CAS #	Percent
WATER	7732-18-5	30 - 35

4. First Aid Measures

First aid procedures

Eye contact

Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.

Skin contact

Remove and isolate contaminated clothing and shoes. Immediately flush skin with plenty of water. Get medical attention immediately. For minor skin contact, avoid spreading material on unaffected skin. Wash clothing separately before reuse.

Inhalation

Move to fresh air. Oxygen or artificial respiration if needed. Do not use mouth-to-mouth method if victim inhaled the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Call a physician or poison control center immediately.

Ingestion

Have victim rinse mouth thoroughly with water. Do not induce vomiting without advice from poison control center. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. Do not use mouth-to-mouth method if victim ingested the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. If material is ingested, immediately contact a poison control center.

Notes to physician

In case of shortness of breath, give oxygen. Keep victim warm.

General advice

Immediate medical attention is required. In case of shortness of breath, give oxygen. Keep victim warm. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire Fighting Measures

Flammable properties

Contact with combustible material may cause fire. These substances will accelerate burning when involved in a fire.

Extinguishing media

Suitable extinguishing media

Water.

Protection of firefighters

Specific hazards arising from the chemical

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

Protective equipment and precautions for firefighters

Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA. Do not move cargo or vehicle if cargo has been exposed to heat. If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also consider initial evacuation for 800 meters (1/2 mile) in all directions. ALWAYS stay away from tanks engulfed in flame. Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Move containers from fire area if you can do so without risk. In the event of fire, cool tanks with water spray. Use water spray to cool unopened containers. Cool containers exposed to flames with water until well after the fire is out. For massive fire in cargo area, use unmanned hose holder or monitor nozzles, if possible. If not, withdraw and let fire burn out.

Specific methods

In the event of fire, cool tanks with water spray. Use water spray to cool unopened containers.

6. Accidental Release Measures

Personal precautions

Keep unnecessary personnel away. Keep upwind. Keep out of low areas. Keep people away from and upwind of spill/leak. Fully encapsulating, vapor protective clothing should be worn for spills and leaks with no fire. Ventilate closed spaces before entering them. Ensure adequate ventilation. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

Environmental precautions

Prevent further leakage or spillage if safe to do so. Runoff from fire control or dilution water may cause pollution. Do not contaminate water.

Methods for containment

Stop leak if you can do so without risk. Keep combustibles (wood, paper, oil, etc.) away from spilled material. Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Prevent entry into waterways, sewers, basements or confined areas.

Methods for cleaning up

Should not be released into the environment. Dike far ahead of spill for later disposal. Neutralize with sodium hydroxide, soda ash or lime. Clean surface thoroughly to remove residual contamination. Following product recovery, flush area with water.

Never return spills in original containers for re-use.

7. Handling and Storage

Handling

Keep away from clothing and other combustible materials. Do not get this material in contact with eyes. Do not get this material in contact with skin. Avoid breathing dust/fume/gas/mist/vapors/spray. Do not get this material on clothing. Use only with adequate ventilation. Wear personal protective equipment. Avoid prolonged exposure. Wash thoroughly after handling. Avoid release to the environment.

Storage

Store in a well-ventilated place. Keep container tightly closed. Do not store near combustible materials. Keep this material away from food, drink and animal feed. Keep out of the reach of children. Use care in handling/storage.

8. Exposure Controls / Personal Protection

Occupational exposure limits

ACGIH

Components	CAS #	Type	Value	Form
NITRIC ACID	7697-37-2	STEL	4 ppm	
		TWA	2 ppm	

U.S. - OSHA

Components	CAS #	Type	Value	Form
NITRIC ACID	7697-37-2	PEL	2 ppm	
			5 mg/m3	
		STEL	10 mg/m3	
			4 ppm	
		TWA	2 ppm	
5 mg/m3				

Engineering controls

Ensure adequate ventilation, especially in confined areas.

Personal protective equipment

Respiratory protection

Use a chemical cartridge respirator for concentrations exceeding the Occupational Exposure Limit. Avoid breathing dust/fume/gas/mist/vapors/spray.

Hand protection

Wear protective gloves.

Eye / face protection

Do not get this material in contact with eyes. Wear chemical goggles. Face-shield.

Skin protection

Do not get this material in contact with skin. Do not get this material on clothing. Wear chemical protective equipment that is specifically recommended by the manufacturer. Wear appropriate chemical resistant clothing. Structural firefighters protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations. Use chemical splash goggles and face shield (ANSI Z87.1 or approved equivalent). Wear appropriate chemical resistant gloves.

General hygiene considerations

Do not get this material in contact with eyes. Do not get this material in contact with skin. Do not get this material on clothing. When using, do not eat, drink or smoke. Keep away from food and drink. Handle in accordance with good industrial hygiene and safety practice.

General

Structural firefighters protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations.

9. Physical & Chemical Properties

Appearance

Clear.

Color

Colorless.

Odor

Pungent.

Odor threshold

Not available.

Physical state

Liquid.

Form

Liquid.

pH

< 1 Very acidic.

Melting point

Not available.

Freezing point

Not available.

Boiling point	249.8 °F (121 °C) Constant boiling composition.
Flash point	Not available.
Evaporation rate	Not available.
Flammability	Not available.
Flammability limits in air, upper, % by volume	Not available.
Flammability limits in air, lower, % by volume	Not available.
Vapor pressure	48 torr @ 20 C
Vapor density	2 - 3
Specific gravity	1.408
Relative density	1.408 g/cm ³
Solubility (water)	Miscible.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Percent volatile	100 %
Molecular weight	63.0100
Molecular formula	HNO ₃

10. Chemical Stability & Reactivity Information

Chemical stability	Stable at normal conditions.
Incompatible materials	Contact with metals may evolve flammable hydrogen gas. Alcohols. Combustible material. Flammable materials. Reducing agents.
Hazardous decomposition products	nitrogen oxides (NO _x)
Possibility of hazardous reactions	Hazardous polymerization does not occur.

11. Toxicological Information

Acute effects	Causes severe burns.	
Acute Inhalation: LC 50		
NITRIC ACID	7697-37-2	Mouse 67 mg/l 4 h
NITRIC ACID	7697-37-2	Rat 138 mg/l 30 min
NITRIC ACID	7697-37-2	Rat 244 mg/l 30 min
NITRIC ACID	7697-37-2	Rat 334 mg/l 30 min
NITRIC ACID	7697-37-2	Rat 65 mg/l 4 h
NITRIC ACID	7697-37-2	Mouse 244 mg/l 30 min

Toxicology data for the preparation

Acute LC50: 230 mg/l, Mouse, Inhalation, estimated

Local effects	Causes burns. Irritating to respiratory system.
Chronic effects	Hazardous by OSHA criteria. Prolonged exposure may cause chronic effects. Hazardous by WHMIS criteria.
Carcinogenicity	This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.
Corrosivity	Hazardous by OSHA criteria.
Further information	Corrosive effects.

12. Ecological Information

Ecotoxicity	Components of this product are hazardous to aquatic life.
Environmental effects	Harmful to aquatic life.
Persistence and degradability	Not available.

13. Disposal Considerations

Waste codes	D002: Waste Corrosive material [pH ≤2 or ≥12.5, or corrosive to steel]
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Disposal instructions

Dispose of this material and its container at hazardous or special waste collection point. Do not allow this material to drain into sewers/water supplies. Solutions with low pH-value must be neutralized before discharge. Dispose in accordance with all applicable regulations.

14. Transport Information**DOT****Basic shipping requirements:**

Proper shipping name	Nitric acid other than red fuming, with not more than 70 percent nitric acid
Hazard class	8
UN number	UN2031
Packing group	II
Additional information:	
Special provisions	A6, B2, B47, B53, IB2, T8, TP2, TP12
Packaging exceptions	None
Packaging non bulk	158
Packaging bulk	242
ERG number	157

**15. Regulatory Information****US federal regulations**

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

All components are on the U.S. EPA TSCA Inventory List.

US EPCRA (SARA Title III) Section 302 - Extremely Hazardous Spill: Reportable quantity

NITRIC ACID 7697-37-2 1000 LBS

US EPCRA (SARA Title III) Section 302 - Extremely Hazardous Substance: Threshold Planning Quantity

NITRIC ACID 7697-37-2 1000 LBS

US EPCRA (SARA Title III) Section 313 - Toxic Chemical: De minimis concentration

NITRIC ACID 7697-37-2 1.0 %

CERCLA (Superfund) reportable quantity

NITRIC ACID: 1000.0000

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories
 Immediate Hazard - Yes
 Delayed Hazard - Yes
 Fire Hazard - Yes
 Pressure Hazard - No
 Reactivity Hazard - No

Section 302 extremely hazardous substance No

Section 311 hazardous chemical Yes

Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of New and Existing Chemicals (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

State regulations

This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

US - New Jersey Community RTK (EHS Survey): Reportable threshold

NITRIC ACID 7697-37-2 500 LBS

US - Pennsylvania RTK - Hazardous Substances: Listed substance

NITRIC ACID 7697-37-2 Listed.

16. Other Information

Further information

HMIS® is a registered trade and service mark of the NPCA.

HMIS® ratings

Health: 3
Flammability: 0
Physical hazard: 1

NFPA ratings

Health: 3
Flammability: 0
Instability: 1
Special hazards: OX

Disclaimer

The information in the sheet was written based on the best knowledge and experience currently available. The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication, The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification, The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

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07-Apr-2009

This data sheet contains changes from the previous version in section(s):

This document has undergone significant changes and should be reviewed in its entirety.