

CORCO CHEMICAL CORPORATION

Manufacturers of ACS Reagents and Semiconductor Grade Chemicals

SAFETY DATA SHEET

Nitric Acid, ACS Reagent

1. Identification

Product identifier: Nitric Acid, ACS Reagent

Product Code Number: N500

Trade Name: Nitric Acid, ACS Reagent

Synonyms: Aqua Fortis, Azotic Acid

Chemical Formula: HNO₃ solution

Product Use: Process chemical, Laboratory and scientific research and development

Company Identification: Corco Chemical Corporation

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Fairless Hills, PA 19030

Phone: 215-295-5006

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24 Hour Emergency Telephone Number:

CHEMTREC (U.S.): 1-800-424-9300

CHEMTREC (Outside U.S.): 1-703-527-3887

SDS Date of Preparation: 11/7/19

2. Hazard(s) identification

Classification of the Substance or Mixture:

Oxidizing Liquid Category 3

Corrosive to Metals Category 1

Acute Inhalation Toxicity Category 3

Eye Damage Category 1

Skin Corrosion Category 1A

Label Elements:

Danger!



Hazard Statements

H272 May intensify fire; oxidizer.
 H290 May be corrosive to metals.
 H314 Causes severe skin burns and eye damage.
 H331 Toxic if inhaled.

Precautionary Statements

P210 Keep away from heat.
 P220 Keep and Store away from clothing and combustible materials.
 P221 Take any precaution to avoid mixing with combustibles.
 P234 Keep only in original container.
 P260 Do not breathe mist or vapors.
 P264 Wash thoroughly after handling.
 P271 Use only outdoors or in a well-ventilated area.
 P280 Wear protective gloves, protective clothing, eye protection and face protection.
 P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
 P310 Immediately call a POISON CENTER or doctor.
 P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
 P310 Immediately call a POISON CENTER or doctor.
 P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 P310 Immediately call a POISON CENTER or doctor.
 P363 Wash contaminated clothing before reuse.
 P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
 P310 Immediately call a POISON CENTER or doctor.
 P390 Absorb spillage to prevent material damage.
 P370+P378 In case of fire: Use water spray, water fog, or foam to extinguish.
 P403+P233 Store in a well-ventilated place. Keep container tightly closed.
 P405 Store locked up.
 P406 Store in corrosive resistant container with a resistant inner liner.
 P501 Dispose of contents and container in accordance with local and national regulations.

Other Hazards: None known.

3. Composition/information on ingredients

Ingredient	CAS Number	Percent	Hazardous Chemical
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Nitric Acid	7697-37-2	65-70%	Yes
Water	7732-18-5	30-35%	No

The specific identity and/or exact percentage of the composition has been withheld as a trade secret.

4. First-aid measures

Inhalation: Immediately remove victim to fresh air and keep at rest in a position comfortable for breathing. If breathing has stopped, administer artificial respiration. 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.

Skin contact: Immediately flush skin with plenty of water for 15 minutes while removing contaminated clothing and shoes. Get immediate medical attention. Launder clothing before re-use. (Discard contaminated shoes).

Eye contact: Immediately flush thoroughly with water for at least 20 minutes, while holding the eye lids open to be sure the material is washed out. Remove contact lenses if present and easy to do. Get immediate medical attention.

Ingestion: Do NOT induce vomiting. Rinse mouth with water. Never give anything by mouth to an unconscious or convulsing person. Keep the victim calm and warm. Get immediate medical attention.

Most important symptoms/effects, acute and delayed: Corrosive effects. Toxic if inhaled. May cause severe eye, skin, respiratory tract irritation and burns. May cause temporary blindness and severe eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision.

Indication of immediate medical attention and special treatment, if necessary: Immediate medical attention is required for all routes of exposure.

5. Fire-fighting measures

Suitable (and unsuitable) extinguishing media: Use water spray, water fog, or foam to extinguish. Do not use dry chemicals, carbon dioxide or halogenated extinguishing agents.

Specific hazards arising from the chemical: This product is a strong oxidizer and may react with flammable or combustible materials to cause a fire or explosion. Irritating, corrosive and/or toxic gases or fumes will be released during a fire.

Special protective equipment and precautions for fire-Fighters: In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus

with full face piece operated in the pressure demand or other positive pressure mode. Water spray may be used to keep fire exposed containers cool.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures: Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8.

Methods and materials for containment and cleaning up: Contain and recover liquid when possible. Neutralize with alkaline material (soda ash, lime,) then absorb with an inert material (e. g., vermiculite, dry sand, earth,) and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer! Do not let product enter drains. US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

7. Handling and storage

Precautions for safe handling: Do not breathe mist or vapor. Use with adequate ventilation. In case of insufficient ventilation, wear suitable respiratory equipment. Prevent contact with eye, skin, and clothing. Always wear impervious gloves, chemical safety goggles and protective clothing when handling this material. When using, do not eat, drink or smoke. Wash hands thoroughly after handling. Keep containers closed when not in use. Take any precaution to avoid mixing with combustibles.

When diluting, always add acid to water- not water to acid. Adding water to acid generates heat and will cause dangerous boiling and splashing.

Conditions for safe storage, including any incompatibilities: Store in a cool, dry, well ventilated location out of direct sunlight. Store in corrosive resistant container with a resistant inner liner. Do not store near combustible materials. Keep container tightly closed. Keep out of the reach of children.

8. Exposure controls/personal protection

Chemical Name	Exposure Limits
Nitric Acid	2 ppm TWA, 4 ppm STEL ACGIH TLV 2 ppm TWA OSHA PEL
Water	None Established

Appropriate Engineering Controls: A system of local and / or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the

contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, Industrial Ventilation, A Manual of Recommended Practices, most recent edition, for details.

Respiratory Protection: If the exposure limit is exceeded and engineering controls are not feasible, wear a supplied air, full face piece respirator, air-lined hood, or full face piece self-contained breathing apparatus. Breathing air quality must meet the requirements of the OSHA respiratory protection standard (29CFR1910.134). Nitric Acid is an oxidizer and should not come in contact with cartridges and canisters that contain oxidizable materials, such as activated charcoal. Canister-type respirators using sorbents are ineffective.

Eye Protection: Use chemical safety goggles and full face shield where splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

Skin Protection: Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

9. Physical and chemical properties

Appearance: Clear to pale yellow solution

Physical state: Liquid

Form: Aqueous solution

Color: Clear to pale yellow

Odor: Suffocating, acrid

Odor Threshold: Not determined

pH: 0.1(1.0N solution)

% Volatiles by volume @ 21C (70F): 100 (as water and acid)

Melting Point/Freezing Point: ca. -3C (ca. 27F)

Boiling Point / Boiling Range: ca. 101C (ca. 214F)

Flash Point: Not applicable

Evaporation Rate (BuAC=1): No information found

Flammability (solid, gas): Not applicable

Upper / Lower Flammability or Explosive Limits: Not applicable

Vapor Pressure (mm Hg): 48 @ 20C (68F)

Vapor Density (Air=1): 2-3

Relative Density: 1.419 g/cc for 69 – 70% Nitric Acid solution

Solubility: Infinitely soluble

Partition Coefficient: n-octanol / water: No data available

Auto-ignition Temperature: No data available

Decomposition Temperature: No data available

Viscosity: 2.0 cPs

10. Stability and reactivity

Reactivity: Not available.

Chemical stability: Stable under ordinary conditions of use and storage.

Possibility of hazardous reactions: Hazardous polymerization does not occur.

Conditions to avoid: None under normal conditions.

Incompatible materials: Strong bases, metallic powders, carbides, Hydrogen Sulfide, turpentine, and readily utilizable materials including flammable and combustible materials.

Hazardous decomposition products: When heated to decomposition, emits toxic Nitrogen oxides fumes and Hydrogen Nitrate.

11. Toxicological information

Potential Health Effects:

Inhalation: Toxic if inhaled. Inhalation of mists or vapors may cause severe irritation and burns of the nose, throat and upper respiratory tract. Higher concentrations can cause burns, pulmonary edema and death.

Skin Contact: Causes severe skin irritation and burns with redness, ulceration, pain, dermatitis, and scarring. Concentrated solutions cause deep ulcers and discolor skin.

Eye Contact: Vapors cause irritation. Splashes cause severe pain, eye damage, and permanent blindness.

Ingestion: Swallowing Nitric Acid can cause immediate pain and burns of the mouth, throat, esophagus and gastrointestinal tract. May cause nausea, vomiting, and diarrhea. Swallowing may be fatal.

Chronic Exposure: Prolonged inhalation may cause lung damage. Repeated exposure may cause damage to the tissues of the mucous membranes, upper respiratory tract, eyes and skin.

Aggravation of Pre-existing Conditions: Persons with pre-existing skin disorders, eye disease, or cardiopulmonary diseases may be more susceptible to the effects of this substance.

Carcinogenicity: None of the components of this product are listed as a carcinogen or suspected carcinogen by OSHA, IARC, and NTP.

Reproductive Effects: Reproductive harm is not expected from this product.

Mutagenic Effects: Not expected to cause mutagenic activity.

Acute Toxicity:

Nitric Acid: Inhalation rat LC50- >2.65 mg/L/4hr

12. Ecological information

Exotoxicity:

Product	Species	Test Results
Nitric acid	Rainbow trout	>1000 mg/L 96 hr LC50

This product may be hazardous for the environment due to its low pH. Releases to the environment should be avoided.

Persistence and Degradability: No data available.

Bioaccumulative Potential: No bioaccumulation expected.

Mobility in Soil: No data available.

Other adverse effects: None known.

13. Disposal considerations

Disposal instructions: Neutralize with soda ash/slaked lime and discharge to sewer with lots of water. Collect and reclaim or dispose in sealed containers at licensed waste disposal site. This material and its container must be disposed of as hazardous waste. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. If discarded, this product is considered a RCRA ignitable waste, D001. Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazardous waste code D001: Waste Flammable material with a flash point <140 F
D002: Waste Corrosive material [pH <=2 or >=12.5, or corrosive to steel] Waste from residues / unused products Dispose of in accordance with local regulations.

Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions). Contaminated packaging Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transportation information

	UN Number	Proper shipping name	Hazard Class	Packing Group	Environmental Hazard
US DOT	UN2031	NITRIC ACID*	8, 5.1	II	Not applicable
IMDG	UN2031	NITRIC ACID	8, 5.1	II	Not applicable
IATA	UN2031	NITRIC ACID	8, 5.1	II	Not applicable

* **Hazardous Substance (49CFR172.101):** Nitric Acid (RQ1,000 lbs)- (1,428 lbs. product)

Transport in Bulk According to Annex II of MARPOL 73/78 and the IBC Code: Not applicable

Special Precautions for User: Not applicable

15. Regulatory information

US federal regulations

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)
Not regulated.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)
Not on regulatory list.

CERCLA Hazardous Substance List (40 CFR 302.4)

This product has a Reportable Quantity (RQ) of 1,428 lbs. (based on the RQ for Hydrochloric acid of 1,000 lbs present at 65-70%). Releases above the RQ must be reported to the National Response Center. Many states have more stringent release reporting requirements. Report spills required under federal, state and local regulations.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories:

SARA 311/312

Refer to Section 2 for OSHA Hazard Classification.

Section 313 Toxic Chemicals: This product contains the following chemicals subject to SARA Title III Section 313 Reporting requirements:

Nitric Acid 7697-37-2 65-70%

SARA 302 Extremely hazardous substance

Nitric Acid (1,000 lbs)

Other federal regulations:

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

NITRIC ACID (CAS 7697-37-2)

Safe Drinking Water Act (SDWA)

Not regulated.

Drug Enforcement Administration (DEA). List 2, Essential Chemicals (21 CFR 1310.02(b) and 1310.04(f)(2) and Chemical Code Number

Not listed.

Drug Enforcement Administration (DEA). List 1 & 2 Exempt Chemical Mixtures (21 CFR 1310.12(c))

Not regulated.

DEA Exempt Chemical Mixtures Code Number

Not regulated.

Food and Drug Administration (FDA)

Not regulated.

US state regulations California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

US. Massachusetts RTK - Substance List

NITRIC ACID (CAS 7697-37-2)

US. New Jersey Worker and Community Right-to-Know Act

NITRIC ACID (CAS 7697-37-2) 500 LBS

US. Pennsylvania RTK - Hazardous Substances

NITRIC ACID (CAS 7697-37-2)

US. Rhode Island RTK

NITRIC ACID (CAS 7697-37-2)

US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT):

Not listed.

International Inventories:

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
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 this product complies with the inventory requirements administered by the governing country(s)

16. Other information

Date of Current Revision: 11/7/19

Revision Summary: Updated all sections.

Date of Previous Revision: 10/30/19

Disclaimer - The information in the SDS is based on the data available at the time. While believed to be accurate, Corco does not claim it to be all inclusive. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. It is not intended to provide product performance or applicability information, and no express or implied warranty of any kind is made with respect to the product, the underlying product data, or the information contained herein. We will not provide advice on such matters, or be responsible for any injury or damage resulting from the use of the product described herein.

Revised: 11/7/19