

# 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

Company Identification:

Corco Chemical Corporation  
299 Cedar Lane  
Fairless Hills, PA 19030  
Phone: 215-295-5006  
Fax: 215-295-0781

24 Hour Emergency Telephone  
Number:

CHEMTREC (U.S.): 1-800-424-9300  
CHEMTREC (Outside U.S. 1-703-527-3887)

Trade Name:

Nitric Acid, ACS Reagent

Synonyms:

Aqua Fortis, Azotic Acid

Chemical Formula:

HNO<sub>3</sub> solution

Product Use:

Process chemical, Laboratory and  
scientific research and development

#### 2. HAZARD(S) IDENTIFICATION

Physical hazards :

Oxidizing liquids

Category 1

Health hazards :

Skin corrosion/irritation:

Category 1A

Serious eye damage/  
eye irritation

Category 1

Specific target organ toxicity, single exposure

Category 1  
(respiratory system)

Specific target organ toxicity, repeated exposure

Category 1  
(respiratory system, tooth)

OSHA hazard(s) - Not classified.

Label elements:



Signal word **Danger**

**Hazard statement:** May cause fire or explosion; strong oxidizer. Causes severe skin burns and eye damage. Causes serious eye damage. Causes damage to organs (respiratory system). Causes damage to organs (respiratory system, tooth) through prolonged or repeated exposure.

**Precautionary statement:**

**Prevention:** Take any precaution to avoid mixing with combustibles. Keep away from heat. Keep/Store away from clothing and other combustible materials. Do not breathe mist or vapor. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Wear protective gloves/protective clothing/eye protection/face protection.

**Response:** In case of fire, use water/water spray/water jet/carbon dioxide/sand/foam/alcohol resistant foam/chemical powder for extinction. If swallowed: Rinse mouth. Do NOT induce vomiting. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If inhaled: Remove person to fresh air and keep comfortable for breathing. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If on clothing: Rinse immediately contaminated clothing and skin with plenty of water before removing clothes. Immediately call a POISON CENTER or doctor/physician. In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.

**Storage:** Store locked up. Store in corrosive resistant container with a resistant inner liner.

**Disposal** Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

### **3. Composition/information on ingredients**

**CAS Number: 7697-37-2**

**EC Number: 231-714-2**

**Index Number: 007-004-00-1**

**Molecular Weight: 63 g/mol**

<u>Ingredient</u>	<u>CAS Number</u>	<u>EC Number</u>	<u>Percent</u>	<u>Hazardous</u>	<u>Chemical Characterization</u>
Nitric Acid	7697-37-2	231-714-2	65 - 70%	Yes	Substance
Water	7732-18-5	231-791-2	30 - 35%	No	Mixture

### **4. First-aid measures**

**Immediate first aid treatment reduces the health effects of this substance. In all cases, immediately call a POISON CENTER or doctor / physician.**

**Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give Oxygen. Call a physician.**

**Ingestion: DO NOT INDUCE VOMITING! Give large quantities of water or milk if available. Never give anything by mouth to an unconscious person. Get medical attention immediately.**

**Skin Contact: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Call a physician.**

**Eye Contact: Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.**

**General information: Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.**

### **5. Fire-fighting measures**

**Suitable extinguishing media** Water. Water fog. Foam. Dry chemical powder. Carbon dioxide (CO<sub>2</sub>).

**Unsuitable extinguishing media:** Do not use water jet as an extinguisher, as this will spread the fire.

**Specific hazards arising from the chemical:** May cause fire or explosion; strong oxidizer. Strong oxidizer - contact with other material may cause fire.

**Special 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.

**Fire-fighting equipment/instructions:**

**In case of fire:** Stop leak if safe to do so. In case of fire: Evacuate area. Fight fire remotely due to the risk of explosion. Move containers from fire area if you can do so without risk. For massive fire in cargo area, use unmanned hose holder or monitor nozzles, if possible. If not, withdraw and let fire burn out.

## 6. Accidental release measures

**Personal Precautions, Protective Equipment and Emergency Procedures:** Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering.

**Environmental Precautions and Methods and Materials for Containment and Cleaning Up:** Contain and recover liquid when possible. Do not let product enter drains. 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! 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:** Take any precaution to avoid mixing with combustibles. Keep away from heat. Do not breathe mist or vapor. 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. Avoid prolonged exposure. Wash hands thoroughly after handling. Avoid release to the environment.

**Conditions for safe storage, including any incompatibilities:**

Store locked up. Keep away from heat. Keep container tightly closed. Do not store near combustible materials. Keep out of the reach of children. Store in a cool, dry place out of direct sunlight.

## 8. Exposure controls/personal protection

For Nitric Acid: OSHA Permissible Exposure Limit (PEL): 2 ppm (TWA), 4 ppm (STEL) ACGIH Threshold Limit Value (TLV): 2 ppm (TWA); 4 ppm (STEL)

**Ventilation System:** 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.

**Personal Respirators (NIOSH Approved):** 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.

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

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

**General hygiene considerations:** When using, do not eat, drink or smoke. Avoid contact with eyes. Wash hands before breaks and immediately after handling the product. Handle in accordance with good industrial hygiene and safety practice.

## 9. Physical and chemical properties

Appearance:	Clear to pale yellow solution
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:	ca. -3C (ca. 27F)
Boiling Point / Boiling Range:	ca. 101C (ca. 214F)
Flash Point:	Not applicable
Evaporation Rate (BuAC=1):	No information found
Flammability:	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 and / or Chemical Stability:** Stable under ordinary conditions of use and storage,

**Possibility of Hazardous Reactions and Conditions to Avoid:** Heat and incompatibles.

**Incompatible Materials:** Strong bases, metallic powders, carbides, Hydrogen Sulfide, turpentine, and combustible organics.

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

## 11. Toxicological information

**Emergency Overview:** POISON! DANGER! CORROSIVE. LIQUID AND MIST CAUSE SEVERE BURNS TO ALL BODY TISSUE. OXIDIZER. CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE. MAY BE FATAL IF SWALLOWED. HARMFUL IF INHALED. INHALATION MAY CAUSE LUNG AND TOOTH DAMAGE.

**Potential Health Effects:**

Nitric Acid is extremely hazardous; it is corrosive, reactive, an oxidizer, and a poison.

**Inhalation:** Corrosive! May cause irritation of the nose, throat, and respiratory tract including coughing and choking. Higher concentrations or prolonged exposure to vapors of nitric acid may lead to pneumonia or pulmonary edema.

**Ingestion:** Corrosive! Swallowing Nitric Acid can cause immediate pain and burns of the mouth, throat, esophagus and gastrointestinal tract.

**Skin Contact:** Corrosive! Can cause redness, pain, and severe skin burns.



**Eye Contact: Corrosive!** Vapors are irritating and may cause severe damage to the eyes. Splashes may cause severe burns and permanent eye damage.

**Chronic Exposure:** Long-term exposure to concentrated vapors may cause erosion of teeth. Long-term exposures seldom occur due to the corrosive properties of the acid.

**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.

**Specific Target Organ Toxicity - Single Exposure (Globally Harmonized System):**  
No data available.

**Specific Target Organ Toxicity - Repeated Exposure (Globally Harmonized System:)** No data available.

**Numerical Measures of Toxicity: Cancer Lists: NTP Carcinogen**

<b>Ingredient</b>	<b>Known</b>	<b>Anticipated</b>	<b>IARC Category</b>
Nitric Acid (7697-37-2)	No	No	None
Water (7732-18-5)	No	No	None

**Acute Toxicity**

For Nitric Acid:

Oral (human) LDLo: 430 mg/kg  
Inhalation, rat, LC50: 67 ppm (NO<sub>2</sub>)/4H  
Investigated as a mutagen, reproductive effecter.

## 12. Ecological information

**Ecotoxicity:** The product may affect the acidity (pH-factor) in water with risk of harmful effects to aquatic organisms. LC50 - Asterias rubens - 100 - 330 mg/l - 48 h

**Persistence and Degradability:** No data available.

**Bioaccumulative Potential:** No bioaccumulation expected.

**Mobility in Soil:** No data available.

**Other adverse effects:** 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.

### 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:** UN2031

**UN Proper Shipping Name:**

NITRIC ACID, other than red fuming, with at least 65% but not more than 70%, Nitric Acid

**Packing Group:** II

DOT / IMDG / IATA



**Land Transport ADR/RID and GGVS/GGVE (Cross Border / Domestic)**  
**Transport Hazard Class(es):** 8, 5.1



Maritime Transport IMDG/GGVSea  
Transport Hazard Class(es): 8, 5.1  
Marine Pollutant: No

Air Transport ICAO-TI and IATA-DGR  
Transport Hazard Class(es): 8, 5.1

Transport in Bulk According to Annex II of MARPOL 73/78 and the IBC Code

Special Precautions for User: No additional information

## 15. Regulatory information

US federal regulations All components are on the U.S. EPA TSCA Inventory List.  
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)

NITRIC ACID (CAS 7697-37-2) LISTED

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

SARA 302 Extremely hazardous substance

No

SARA 311/312 Hazardous chemical

No

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):**

Listed substance

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
Europe	European Inventory of Existing Commercial Chemical Substances (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	Yes
(PICCS)		
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

**Disclaimer - The information in the sheet was written based on the best knowledge and experience currently available. 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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