



PURITAN PRODUCTS

Custom Formulated and Specialty Chemicals

2290 Avenue A, Bethlehem, PA 18017

Effective Date: 4/16/2010

NON-EMERGENCY TELEPHONE
610-866-4225

24-HOUR CHEMTREC EMERGENCY TELEPHONE
800-424-9300

Material Safety Data Sheet

AQUA REGIA, 2-1-5

(NITRIC 20%/HCL 5%)

1. Product Identification: MIXED ACID CONTAINING NITRIC ACID AND HYDROCHLORIC ACID

Synonyms: None
CAS No: N/A
Molecular Weight: N/A
Chemical Formula: N/A

2. Composition/Information on Ingredients

<u>Ingredient</u>	<u>CAS No</u>	<u>Percent</u>	<u>Hazardous</u>
Nitric Acid	7697-37-2	1 - 25%	Yes
Hydrochloric Acid	7647-01-0	1 - 10%	Yes
Water	7732-18-5	65 - 98%	No

3. Hazards Identification

Emergency Overview

POISON! DANGER! CORROSIVE!

CORROSIVE. LIQUID AND MIST CAUSE SEVERE BURNS TO ALL BODY TISSUE. MAY BE FATAL IF SWALLOWED OR INHALED. INHALATION MAY CAUSE LUNG AND TOOTH DAMAGE.

Potential Health Effects

Nitric acid is extremely hazardous; it is a corrosive and a poison. In concentrated solutions it is an oxidizer. Hydrochloric acid is a corrosive.

Mixtures of nitric acid and hydrochloric acid may form aqua regia releasing toxic nitrosyl chloride (yellow to reddish-brown) gas.

Inhalation:

Corrosive! Inhalation of vapors can cause breathing difficulties and lead to pneumonia and pulmonary edema, which may be fatal. Other symptoms may include coughing, choking, and irritation of the nose, throat, and respiratory tract.

Ingestion:

Corrosive! Swallowing nitric acid and hydrochloric 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. Concentrated solutions cause deep ulcers and stain skin a yellow or yellow-brown color.

Eye Contact:

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

Chronic Exposure:

Long-term exposure to concentrated vapors may cause erosion of teeth and lung damage. 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.

4. First Aid Measures

Immediate first aid treatment reduces the health effects of this substance.

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. Thoroughly clean shoes before reuse. Get medical attention immediately.

Eye Contact:

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

5. Fire Fighting Measures

Fire:

Not combustible, but concentrating the mixture may form a strong oxidizer and its heat of reaction with reducing agents or combustibles may cause ignition. Can react with metals to release flammable hydrogen gas.

Explosion:

Upon concentrating, may react explosively with combustible organic or readily oxidizable materials such as: alcohols, turpentine, charcoal, organic refuse, metal powder, hydrogen sulfide, etc. Reacts with most metals to release hydrogen gas which can form explosive mixtures with air.

Fire Extinguishing Media:

Water spray may be used to keep fire exposed containers cool. Do not get water inside container.

Special Information:

If mixture is concentrated, may increase the flammability of combustible, organic and readily oxidizable materials. In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

6. Accidental Release Measures

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. 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! 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

Store in a cool, dry, ventilated storage area with acid resistant floors and good drainage. Protect from physical damage. Keep out of direct sunlight and away from heat, water, and incompatible materials. Do not wash out container and use it for other purposes. When diluting, the acid should always be added slowly to water and in small amounts. Never use hot water and never add water to the acid. Water added to acid can cause uncontrolled boiling and splashing. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:

For Nitric Acid:

OSHA Permissible Exposure Limit (PEL): 2 ppm (TWA)

ACGIH Threshold Limit Value (TLV): 2 ppm (TWA); 4 ppm (STEL)

For Hydrochloric Acid:

OSHA Permissible Exposure Limit (PEL): 5 ppm (Ceiling)

ACGIH Threshold Limit Value (TLV): 5 ppm (STEL/Ceiling)

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, wear a supplied air, full-facepiece respirator, airlined hood, or full-facepiece self-contained breathing apparatus. 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.

9. Physical and Chemical Properties

Appearance:

Clear, colorless solution.

Boiling Point:

ca. 101°C (ca. 214°F)

Odor:

Pungent odor.

Melting Point:

ca. -3°C (ca. 27°F)

Solubility: Infinitely soluble.	Vapor Density (Air=1): No information found.	Specific Gravity: 1.14	Vapor Pressure (mm Hg): No information found.
pH: <1	Evaporation Rate (BuAc=1): No information found.	% Volatiles by volume @ 21°C (70°F): 100 (as water and acid)	

10. Stability and Reactivity

Stability:
Stable under ordinary conditions of use and storage. Containers may burst when heated.

Hazardous Decomposition Products:
When heated to decomposition, emits toxic nitrogen oxides, hydrochloric acid, and nitrosyl chloride. Will react with water or steam to produce heat and toxic and corrosive fumes.

Hazardous Polymerization:
Will not occur.
Incompatibilities:
If mixture is concentrated may become a dangerous oxidizing agent, solutions containing nitric acid are incompatible with most substances, especially strong bases, metallic powders, carbides, hydrogen sulfide, turpentine, and combustible organics.

Conditions to Avoid:
Light and heat.

11. Toxicological Information

Nitric acid: Inhalation rat LC50: 244 ppm (NO₂)/30M; Investigated as a mutagen, reproductive effector. Oral (human) LDLo: 430 mg/kg.
Hydrochloric acid: Inhalation rat LC50: 3124 ppm /1H; Oral rabbit LD50: 900mg/kg. Investigated as a tumorigen, mutagen, reproductive effector.

-----\Cancer Lists\-----

---NTP Carcinogen---			
<u>Ingredient</u>	<u>Known</u>	<u>Anticipated</u>	<u>IARC Category</u>
Nitric Acid (7697-37-2)	No	No	None
Hydrochloric Acid (7647-01-0)	No	No	3
Water (7732-18-5)	No	No	None

12. Ecological Information

Environmental Fate:
When released into the soil, this material is not expected to biodegrade and may leach into groundwater.

Environmental Toxicity:
This material may be toxic to aquatic life. LC50 Shrimp: 100-300 ppm/48-hr/salt water; LC100 trout: 10 mg/l/24-hr; TLm mosquito fish: 282 ppm/96-hr.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste facility. Although not a listed RCRA hazardous waste, this material may exhibit one or more characteristics of a hazardous waste and require appropriate analysis to determine specific disposal requirements. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with

federal, state and local requirements.

14. Transport Information

Domestic (Land, D.O.T.)

Proper Shipping Name: Corrosive liquid, acid, inorganic, n.o.s. (nitric acid and hydrochloric acid)

Hazard Class: 8

UN/NA: UN3264 Packing Group: II

15. Regulatory Information

-----\Chemical Inventory Status\-----

Ingredient	--Canada--								
	TSCA	EC	Japan	Australia	Korea	DSL	NDSL	Phil.	
Nitric Acid (7697-37-2)	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	
Hydrochloric Acid (7647-01-0)	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	
Water (7732-18-5)	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	

-----\Federal, State & International Regulations\-----

Ingredient	-SARA 302-		-----SARA 313-----		CERCLA	-RCRA-	-TSCA-
	RQ	TPQ	List	Chemical Catg.		261.33	8(d)
Nitric Acid (7697-37-2)	1000	1000	Yes	No	1000	No	No
Hydrochloric Acid (7647-01-0)	5000	500*	Yes	No	5000	No	No
Water (7732-18-5)	No	No	No	No	No	No	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No SARA 311/312: Acute: Yes
Chronic: Yes Fire: No Pressure: No Reactivity: No (Mixture / Liquid)

16. Other Information

NFPA Ratings:

Health: 3 Flammability: 0 Reactivity: 0 Other: Oxidizer

Label Hazard Warning:

POISON! DANGER! CORROSIVE!

CORROSIVE. LIQUID AND MIST CAUSE SEVERE BURNS TO ALL BODY TISSUE. MAY BE FATAL IF SWALLOWED OR INHALED. INHALATION MAY CAUSE LUNG AND TOOTH DAMAGE.

Label Precautions:

Do not get in eyes, on skin, or on clothing.

Do not breathe vapor or mist.

Use only with adequate ventilation.

Wash thoroughly after handling.

Keep from contact with clothing and other combustible materials.

Do not store near combustible materials.

Store in a tightly closed container.

Remove and wash contaminated clothing promptly.

Label First Aid:

In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In all cases get medical attention immediately.

THE ABOVE INFORMATION IS BELIEVED TO BE CORRECT BUT DOES NOT PURPORT TO BE ALL INCLUSIVE AND SHALL BE USED ONLY AS A GUIDE. PURITAN PRODUCTS INC. SHALL NOT BE HELD LIABLE FOR ANY DAMAGE RESULTING FROM HANDLING OR FROM CONTACT WITH THE ABOVE PRODUCT.