Material Safety Data Sheet

Revision Issued: 12/31/06	Supercedes: 6/28/03	First Issued: 6/30/1980

Section I – Product and Company Identification

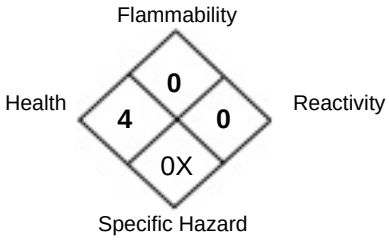
Product Name: **Nitric Acid**

PotashCorp MSDS No.: 32
ERG No.: 157

1101 Skokie Blvd., Northbrook, IL 60062
Phone (800) 241-6908 / (847) 849-4200

Suite 500, 122 – 1st Avenue South
Saskatoon, Saskatchewan Canada S7K7G3
Phone (800) 667-0403 from Canada
(800) 667-3930 from USA

Emergencies (800) 424-9300 (CHEMTREC)
Web Site www.potashcorp.com
Health Emergencies, Contact Your Local Poison Center



NFPA Code

Common Name: Nitric Acid	**Formula:** HNO_3	**Synonym:** Nitric Acid	**Uses:** Industrial

Section II – Composition / Information On Ingredients

Chemical Name	CAS No.	Exposure Limits								% by Weight
		OSHA PEL		TLV – TWA		STEL		CEIL		
		mg/m³	ppm	mg/m³	ppm	mg/m³	ppm	mg/m³	ppm	
Nitric Acid	7697-37-2		2(1)		2(1)		4(2)			50 - 70
Nitrogen Dioxide	10102-44-0		3		3		5		5	
Nitric Oxide	101102-43-9		25		25					
Nitrous Oxide	10024-97-2		50		50					

(1) 8 hours (2) 15 minutes

Section III – Hazard Identification

Potential Acute Health Effects:	Irritating and corrosive, may cause burns.		
Eyes and Skin:	Causes severe irritation, corneal burns and conjunctivitis. Causes severe corrosive burns or irritation.		
Inhalation:	Inhalation of gases or acid mist causes irritation or corrosive burns to the upper respiratory system, including nose, mouth and throat. Lung irritation, nitrogen oxide poisoning and pulmonary edema can also occur at elevated concentrations (over 200 PPM).		
Ingestion:	Is irritating and corrosive to mouth, teeth, throat, respiratory tract, and stomach.		
Potential Chronic Health Effects:	Symptoms from inhalation of Nitric Acid vapor and Nitrogen Oxides may be delayed. Do not breath these gases.		
CARCINOGENICITY LISTS	**IARC Monograph:** No	**NTP:** No	**OSHA:** No

Section IV – First Aid Measures

Eyes:	Immediately flush with large amounts of water for at least 15 minutes. Seek prompt medical attention.
Skin:	Immediately flush with large amounts of water for at least 15 minutes. Remove contaminated clothing. Seek prompt medical attention.
Ingestion:	Drink large amounts of water (or milk if available) to dilute acid. Do not induce vomiting. Do not use chemical antidotes or neutralizers. Seek prompt medical attention
Inhalation:	Carry victim to uncontaminated area & keep victim quiet. Provide artificial respiration if necessary. Seek prompt medical attention.

Section V – Fire Fighting Measures			
Flash Point:	Non-Flammable	**Autoignition Temperature:**	Not Applicable
Lower Explosive Limit:	Not Applicable	**Upper Explosive Limit:**	Not Applicable
Unusual Fire and Explosion Hazards:	Nitric acid is an oxidizer & can ignite certain combustible and organic materials. Nitration of wood and organics increases their flammability. Can react explosively with metallic powders, carbides, hydrogen sulfide & turpentine. Nitrogen oxides and/or hydrogen may be present.		
Extinguishing Media:	Use flooding quantities of water spray or other suitable agent for fires adjacent to non-leaking tanks or other containers of nitric acid. Fight fires from upwind to avoid hazardous gases emitted from decomposition. Do not use solid water streams near ruptured tanks or spills of nitric acid. Acid reacts violently with water and can splatter acid onto personnel		
Special Firefighting Procedures and Equipment:	Nitrogen Oxides may be present from vented or ruptured containers. If a solid water stream is added, violent splattering can occur, and considerable heat may be generated. Protective Equipment is recommended. Fight fires from upwind to avoid hazardous gases emitted from decomposition.		

Section VI – Accidental Release Measures	
Small Spill:	Dilute small spills or leaks with plenty of water spray.
Large Spill:	Neutralize residue with alkali such as soda ash, lime or limestone. Adequate ventilation required to eliminate any nitrogen oxides released. If soda ash or limestone is used, carbon dioxide will be emitted.
Release Notes:	If spill could potentially enter any waterway, including intermittent dry creeks, contact the local authorities. If in the U.S., contact the US COAST GUARD NATIONAL RESPONSE CENTER toll free number 800-424-8802. In case of accident or road spill notify: CHEMTREC IN USA at 800-424-9300; CANUTEC in Canada at 613-996-6666 CHEMTREC in other countries at (International code)+1-703-527-3887.
Comments:	See Section XIII for disposal information and Section XV for regulatory requirements. Large and small spills may have a broad definition depending on the user's handling system. Therefore, the spill category must be defined at the point of release by technically qualified personnel.

Section VII – Handling and Storage	
Ventilation:	Provide ventilation sufficient to maintain exposure below TWA/TLV/PEL. Provide sufficient ventilation to reduce acid mists and Nitrogen Oxide concentrations below permissible exposure limits.
Handling:	Safety showers and eyewash facilities should be available near all nitric acid handling equipment. Use protective equipment outlined in Section VIII.
Storage:	Label Warning Statement(s): Danger! Liquid is Corrosive, causes severe burns. Liquid is Oxidizer and may cause fire with combustibles. Vapor may cause Nitrogen Oxide poisoning.

Section VIII – Exposure Controls/ Personal Protection	
Engineering Controls:	Packaging and unloading areas and open processing equipment may require a mechanical exhaust system.
Personal Protection:	
Eye Protection:	At a minimum, chemical safety goggles, and full-face shield. Do Not Wear Contact Lenses.
Protective Clothing:	At a minimum, wear a hard hat, acid-resistant apron, impervious protective clothing, boots and gauntlet gloves for routine product use. For increased protection include acid-resistant trousers and jacket.
Respiratory Protection:	For concentrations above the exposure limits use full face supplied air respirator approved by NIOSH for nitric acid or nitrogen oxide gases or mists. Vapors /mists cause eye irritation or damage. NOTE: cartridge or canister respirators are not suitable for nitrogen oxide use.
Other Protective Clothing or Equipment:	Provide safety shower and eye wash facility at sites of handling and storage.

Section IX – Physical and Chemical Properties

Appearance/Color/Odor:	This material is at normal conditions a liquid, colorless to light yellow with a pungent odor.	**Boiling Point:**	83ºC(181.4ºF) at 1 atm
Melting Point/Range:	-42ºC (-44ºF)(100%)	**Boiling Point Range:**	Not Applicable
Solubility in Water:	$1x10^6$ mg/L at 25ºC (highly soluble)	**Vapor Pressure (mmHg):**	42 - 62 mmHg at 25ºC (low volatility)
Specific Gravity:	1.33 (54 wt. %); 1.42 (72 wt. %) at 60ºF	**Molecular Weight:**	63.01 for 100% Nitric Acid
Vapor Density:	Not Applicable	**% Volatiles:**	Not Applicable
Bulk Density:	1.51 g/mL at 25ºC	**Evaporation Rate:**	Not Applicable
pH:	1.0 at 0.1 M	**Freezing Point:**	Not Applicable
Viscosity:	Not Available	**Density:**	15.1 g/mL @ 25^0C (100%)

Section X – Stability and Reactivity

Stability:	This product is stable under normal ambient conditions of temperature and pressure
Hazardous Polymerization:	Will not occur
Conditions to Avoid:	None
Materials to Avoid (Incompatibles):	Avoid contact with most metals, metallic powders, carbides, hydrogen sulfide, turpentine, organic acids, combustibles (wood, paper, cotton) and other organics and readily-oxidized materials.
Hazardous Decomposition Products:	Nitrogen oxides and possibly hydrogen under certain conditions of contact with metals.

Section XI – Toxicological Information

Significant Routes of Exposure:	Eyes, Gastrointestinal Tract, Respiratory Tract, Skin	
Toxicity to Animals:	**Acute Oral Toxicity:**	No data available
	Acute Inhalation Toxicity:	4 hour single dose - (rat) LC_{50} = 65 - 67 ppm NO_2.
	Acute Toxicity: Other Routes:	No data available
	Acute Dermal Toxicity:	No data available
	Repeated Dose Toxicity:	Via inhalation: 4 hrs/day, 5 days/week, 6 month (Mouse, rat, guinea pig) – No significant effects at 4 ppm. Highly toxic by inhalation as described by OSHA. Based on toxicity data for other acids (i.e., sulfuric and phosphoric), not expected to be toxic by oral exposure as defined by OSHA.
	Eye & Skin Irritation/Corrosion:	Corrosive
Special Remarks on Toxicity to Animals:	No significant increase in pulmonary congestion in mice, rats and guinea pigs at 4 mg/kg.	
	Developmental Toxicity/Teratogenicity:	No data available
	Bacterial Genetic Toxicity In-Vitro: Gene Mutation:	*S. typhimurium* [OECD Guideline 471 (Ames test)] – Negative.
	Non-Bacterial Genetic Toxicity In-Vitro: Chromosomal Aberration:	No data available
	Toxicity to Reproduction:	No data available
	Carcinogenicity:	No data available
Other Effects on Humans:	No other effects known	
Special Remarks on Chronic Effects on Humans	Symptoms from inhalation of Nitric Acid vapor and Nitrogen Oxides may be delayed. Do not breath these gases.	
Special Remarks on Other Effects on Humans:	Human Experience – Acute accidental inhalation: Acute respiratory injury leading to death following exposure to 60% nitric acid solution.	

Section XII – Ecological Information

	Acute Toxicity to Fish:	(A. *dispar* (freshwater fish)) 96-hr. semistatic - LC_{50}= pH 3.71,(*S. gairdneri* (rainbow trout)) 7-day semistatic LC_{50} = pH - 4.0
	Chronic Toxicity to Fish:	No data available
	Acute Toxicity to Aquatic Invertebrates:	No data available
	Chronic Toxicity to Aquatic Invertebrates:	No data available
	Acute Toxicity to Aquatic Plants:	(N. *palea* (diatom)) 28-day growth in lab culture tube - Inhibited growth of diatoms at 6.3 mg/L.
	Toxicity to Bacteria:	Subartic field study - Total biomass was dependant on pH. Moderately toxic to aquatic organisms based on algae data and on fish data for other acids (i.e., sulfuric acid, phosphoric acid) as defined by USEPA.
	Toxicity to Terrestrial Plants:	No data available
Environmental Fate:	**Stability in Water:**	Dissociates into its respective ions ($H+$; NO_3 -)
	Stability in Soil:	No data available
	Transport and Distribution:	Transportation: Dissolves carbonates; nitrate ions taken up by plants stimulate growth.
Toxicity:	Inorganic material. Dangerous to aquatic life in high concentrations. May promote eutrophication in waterways.	
Degradation Products:	**Biodegradation:**	No data available
	Photodegradation:	Does not bioaccumulate.

Section XIII – Disposal Considerations

Product Disposal:	Nitric Acid should be cautiously diluted into water and neutralized with an Alkali. Neutralized waste must be disposed of in accordance with applicable federal, state and local disposal regulations. Waste may have to be disposed of by an approved contractor.
General Comments:	If neutralized waste contains water dissociable nitrate compounds in aqueous solution, it is subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986.

Section XIV – Transportation Information

	USDOT	**TDG - Canada**
Proper Shipping Name:	RQ, Nitric Acid	Nitric Acid
Hazard Class:	8	8, (9.2)
Identification Number:	UN2031	UN2031
Packing Group (Technical Name):	II	II,RQ
Labeling / Placarding:	Corrosive	Corrosive
Authorized Packaging:	Rail: Stainless Steel DOT 103, 104, 105, 109, 111, 112, 114 or 115, 120 Trucks: Stainless Steel MC 307, 310, 311, 312, DOT 407, 412	
Notes:	MARKING: Nitric Acid (rail) If product exceed the CERCLA Reportable Quantity, the notation "RQ" shall be added before or after the basic shipping description.	

Section XV – Regulatory Information

UNITED STATES: SARA Hazard Category:

This product has been reviewed according to the EPA Hazard Categories promulgated under Section 311 and 312 of the Superfund Amendment and reauthorization Act of 1986 (SARA title III) and is considered, under applicable definitions, to meet the following categories:

Fire:	No	Pressure Generating:	No	Reactivity:	No	Acute:	Yes	Chronic:	No

40 CFR Part 355 - Extremely Hazardous Substances:	Nitric Acid
40 CFR Part 370 - Hazardous Chemical Reporting:	Applicable
All intentional ingredients listed on the TSCA inventory.	

SARA Title III Information: This product contains the following substances subject of the reporting requirements of Title III (EPCRA) of the Superfund amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

Chemical	CAS NO.	Percent by Weight	CERCLA RQ (lbs)[1]	SARA (1986) Reporting		
				311	312	313
Nitric Acid	7697-37-2	50-70% [2]	1539 (65%) [3]	Yes	Yes	Yes
			1786 (56%) [4]	Yes	Yes	Yes

[1] CERCLA RQ for Nitric Acid is 1000 lbs (100% basis).
[2] Use range maximum or annual weighted average concentration of material actually received for reporting determination.
[3] 132 gallons
[4] 158 gallons

CERCLA/Superfund, 40 CFR Parts 117, 302: If this product contains components subject to substances designated as CERCLA reportable Quantity (RQ) Substances, it will be designated in the above table with the RQ value in pounds. If there is a release of RQ Substance to the environment, notification to the National response Center, Washington D.C. (1-800-424-8802) is required.

CANADA:

WHMIS Hazard Symbol and Classification:	This product is WHMIS controlled. Class: C, D1a,E
Ingredient Disclosure List:	This product does contain ingredient(s) on this list
Environmental Protection:	All intentional ingredients are listed on the DSL (Domestic Substance List).

EINECS#: (Nitric Acid) 231-714-2 (Nitrogen Dioxide) 233-272-6 (Nitric Oxide) 233-271-0 (Nitrous Oxide) 233-032-0

California: Prop 65: This is not a chemical known to cause cancer, nor is it listed.

Section XVI – Other Information

NFPA Hazard Ratings: **Health:** 4 **Fire:** 0 **Reactivity:** 0 **Special Hazards:** OX

0 = Insignificant **1 = Slight** **2 = Moderate** **3 = High** **4 = Extreme**

COMMENTS:

Section(s) changed since last revision: New Format, I