

# Safety Data Sheet (SDS)

## Nitric Acid, 65-70% w/w

### SECTION 1: Identification

<b>Product Identifier:</b>	Instrument Quality Nitric Acid BASELINE Nitric Acid Technical Grade Nitric Acid	<b>Master Product Number(s):</b>	S010101 S020101 S040101
<b>EU Index Number:</b>	007-004-00-1		
<b>Synonyms:</b>	Aqua fortis; Azotic acid; Hydrogen nitrate; Nitryl hydroxide; Nitral; Engraver's acid		
<b>Chemical Names:</b>	FR Acide nitrique; DE Salpetersäure; NL Salpeterzuur; ES Ácido nítrico; IT Acido nitric		
<b>Identified Uses:</b>	For laboratory use only. Not for drug, food, or household use.		
<b>Manufacturer:</b>	SEASTAR CHEMICALS ULC 2061 Henry Avenue West, Sidney, BC V8L 5Z6 CANADA 1-250-655-5880		
<b>Emergency Number:</b>	CANUTEC (CAN): 1-613-996-6666 (24-hour)		

### SECTION 2: Hazard identification

#### GHS Classification in accordance with 29 CFR 1910 (OSHA HCS) / WHMIS HPR / Regulation (EC) No 1272/2008

For the full text of the H-Statement(s) and P-Statement(s) mentioned in this Section, see Section 16.

**Classification:** Skin corrosion – Category 1A  
Oxidizing liquid – Category 3  
Corrosive to metals – Category 1

#### GHS Label Elements

**Pictograms:**



**Signal Word:** Danger

**Hazard Statements:** **H314:** Causes severe skin burns and eye damage.

**H272:** May intensify fire; oxidizer.

**H290:** May be corrosive to metals.

**EUH071:** Corrosive to the respiratory tract.

**Precautionary Statements:** **P260:** Do not breathe fume/gas/mist/vapours/spray.

**P280:** Wear protective gloves/protective clothing/eye protection/face protection.

**P310:** Immediately call a POISON CENTER or doctor.

**P301+P330+P331:** IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

**P303+P361+P353:** IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.

**P305+P351+P338:** IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

### SECTION 3: Composition/information on ingredients

Chemical Name	Chemical Formula	Weight Percent <sup>1</sup>	CAS №	EINECS №
Nitric acid	HNO <sub>3</sub>	65-70% w/w	7697-37-2	231-714-2
Water	H <sub>2</sub> O	Balance	7732-18-5	231-791-2

<sup>1</sup>Weight Percent or percentage by mass (%): 100x (mass solute/mass total solution after mixing). Expressed as % w/w

### SECTION 4: First-aid measures

**In case of contact:**

**Inhalation:** Take proper precautions to ensure your own safety before attempting rescue (e.g. wear appropriate protective equipment, use the buddy system). Remove source of exposure or move person to fresh air and keep comfortable for breathing. Immediately call a Poison Centre or doctor. If breathing is difficult, trained personnel should administer emergency oxygen if

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advised to do so by a Poison Centre or doctor. Avoid mouth-to-mouth contact by using a barrier device. Symptoms of pulmonary edema can be delayed up to 48 hours after exposure.

**Skin:** Avoid direct contact. Wear chemical protective clothing, if necessary. Take off immediately all contaminated clothing, shoes and leather goods (e.g. watchbands, belts). Rinse skin with lukewarm, gently flowing water/shower for 30 minutes. Immediately call a Poison Centre or doctor. Store clothing under water and wash clothing before re-use (or discard).

**Eye:** Avoid direct contact. Wear chemical protective gloves, if necessary. Rinse eyes cautiously with lukewarm, gently flowing water for several minutes, while holding the eyelids open. Remove contact lenses, if present and easy to do. Continue rinsing for a total of 30 minutes. Take care not to rinse contaminated water into the unaffected eye or onto the face. Immediately call a Poison Centre or doctor.

**Ingestion:** Rinse mouth. Immediately call a Poison Centre or doctor. Do NOT induce vomiting. If vomiting occurs naturally, lie on your side in the recovery position.

**First Aid Comments:** Provide general supportive measures (comfort, warmth, rest). Consult a doctor and/or the nearest Poison Control Centre for all exposures. Some first aid procedures recommended above require advanced first aid training. Protocols for undertaking advanced procedures must be developed in consultation with a doctor and routinely reviewed. All first aid procedures should be periodically reviewed by a doctor familiar with the material and its conditions of use in the workplace.

## SECTION 5: Fire-fighting measures

### Fire Hazard Summary:

Nitric acid does not burn. However, nitric acid is a strong OXIDIZING AGENT and is a serious fire and explosion hazard. Nitric acid can cause combustible materials such as wood, paper, cotton, wool, cloth, oils and grease to ignite spontaneously and will support, accelerate and intensify the burning of combustible materials in a fire. Nitric acid will not accumulate static charge, since it has a very high electrical conductivity. Since it does not burn, nitric acid will not be ignited by a static discharge. Can react with many metals, particularly in powdered form, to form extremely flammable hydrogen gas. Generates heat when mixed with water. During a fire, nitric acid decomposes with the release of corrosive nitrogen oxide gases. Explosive decomposition may occur under fire conditions and closed containers may rupture violently due to rapid decomposition, if exposed to fire or excessive heat for a sufficient period of time. Firefighter's normal protective equipment (Bunker Gear) will not provide adequate protection. Chemical protective clothing (e.g. chemical splash suit) and positive pressure self-contained breathing apparatus (NIOSH approved or equivalent) may be necessary.

### Extinguishing Media:

Nitric acid does not burn. Extinguish fire using extinguishing agent suitable for the surrounding fire and not contraindicated for use with nitric acid. Nitric acid is an oxidizer. Therefore, flooding quantities of water spray or fog should be used to fight fires involving nitric acid.

DO NOT use dry chemical powders containing sodium bicarbonate, potassium bicarbonate, sodium carbonate, calcium carbonate, ammonium phosphate, or ammonium sulfate. Nitric acid may react violently with these extinguishing agents.

### Combustion and Thermal Decomposition Products:

Liquid decomposes to a limited extent when heated, producing corrosive nitrogen oxides.

## SECTION 6: Accidental release measures

### Spill Precautions:

Restrict access to area until completion of clean-up. Ensure clean-up is conducted by trained personnel only. Remove or isolate flammable and combustible materials. Ventilate area. Dangerous levels of nitrogen oxides may form during spills of nitric acid. Consider evacuation of down-wind areas. Wear adequate personal protective equipment. Extinguish or remove all ignition sources. Notify government occupational health and safety and environmental authorities.

### Clean-up:

Do not touch spilled material. Prevent material from entering sewers, waterways or confined spaces. Keep materials that can burn away from spilled material. Stop or reduce leak if safe to do so. Contain spill with earth, sand, or absorbent material that does not react with spilled material. Do not use sawdust or other organic materials, which will react with nitric acid creating a fire or health hazard.

**SMALL SPILLS:** Soak up spill with absorbent material that does not react with spilled chemical. Put material in suitable, covered, labelled containers. Flush area with large quantities of water. Contaminated absorbent material will pose the same hazards as

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the spilled product.

Only trained personnel should attempt to neutralize spills. Neutralizing spill with sodium bicarbonate, sodium carbonate or calcium carbonate will produce large amounts of carbon dioxide gas. Ensure adequate ventilation.

LARGE SPILLS: Evacuate area. Contact fire and emergency services and supplier for advice.

## SECTION 7: Handling and storage

### Handling:

This material is a STRONG OXIDIZER. It is toxic if inhaled, corrosive to the skin, can cause serious eye damage and is irritating to the respiratory tract. Before handling, it is extremely important that engineering controls are operating and that protective equipment requirements and personal hygiene measures are being followed. People working with this chemical should be properly trained regarding its hazards and its safe use. Maintenance and emergency personnel should be advised of potential hazards.

Unprotected persons should avoid all contact with this chemical including contaminated equipment. Immediately report leaks, spills or failures of the engineering controls. If nitric acid is released, immediately put on a suitable respirator and leave the area until the severity of the release is determined. In case of leaks or spills, escape-type respiratory protective equipment should be available in the work area.

Be aware of typical signs and symptoms of poisoning and first aid procedures. Any signs of illness should be reported immediately to supervisory personnel. Seek medical attention for all exposures even if an exposure did not seem excessive. Symptoms of a severe exposure can be delayed.

Avoid contact with all incompatible materials. Nitric acid is a strong acid, a strong oxidizer and is very reactive. It is not combustible but it readily enhances the combustion of other substances. Nitric acid may react violently or explosively with many organic and inorganic chemicals. Flammable hydrogen gas is released on contact with many common metals, particularly metal in powdered form. Significant heat is generated upon contact with water. See Section 10 for more information.

Avoid generating vapours or mists. Prevent the release of vapours or mists into the workplace. If possible, use closed handling systems for processes involving this material. If a closed handling system is not possible, use the smallest possible amounts in a well-ventilated area, separate from the storage area. Ensure that handling systems are corrosion-resistant.

Inspect containers for damage or leaks before handling. Label containers. Handle containers carefully to avoid damage. Keep containers tightly closed when not in use to avoid spillage, vapour release or contamination of the contents. Never return unused or contaminated material to its original container.

Cautiously, dispense into sturdy containers made of compatible materials. Use corrosion-resistant transfer equipment when dispensing. Secondary protective containers must be used when this material is being carried. When diluting, always add acid to cold water slowly 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.

Always assume that empty containers contain hazardous residues. Never reuse empty containers, even if they appear to be clean. Do not perform any welding, cutting, soldering, drilling or other hot work on an empty vessel, container or piping until all material has been cleared.

Have suitable emergency equipment for fires, spills and leaks readily available. Practice good housekeeping. Maintain handling equipment. Comply with applicable regulations.

### Storage:

Store in a cool, dry, well-ventilated area, out of direct sunlight and away from heat. Keep quantities stored as small as possible. Store away from incompatible materials such as flammable materials, oxidizing materials, reducing materials, and strong bases. See Section 10 for more information.

Use corrosion-resistant structural materials, lighting and ventilation systems in the storage area. Wood and other organic/combustible materials should not be used on floors, structural materials and ventilation systems in the storage area. Storage area should be clearly identified, clear of obstruction and accessible only to trained and authorized personnel. Keep storage area separate from work areas. Post warning signs.

Inspect all incoming containers to make sure they are properly labelled and not damaged. Always store in original labelled container. Protect the label and keep it visible. Keep containers tightly closed when not in use and when empty. Protect from damage. Store containers at a convenient height for handling, below eye level if possible. Inspect storage area regularly for deficiencies, including damaged or leaking containers, signs of corrosion or poor housekeeping.

Keep absorbents for leaks and spills readily available. Contain spills or leaks by storing in trays made from compatible materials.

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Provide raised sills or ramps at doorways or create a trench which drains to a safe location. Keep empty containers in separate storage area. Assume that empty containers contain hazardous residues. Keep tightly closed.

Store oxidizing materials according to the occupational health and safety regulations and fire and building codes which will describe the kind of storage area and the type of storage containers for a specified amount of the substance. Have appropriate fire extinguishers available in and near the storage area.

## SECTION 8: Exposure controls/personal protection

### General Exposure Precautions:

NOTE: Exposure to this material can be controlled in many ways. The measures appropriate for a particular worksite depend on how this material is used and on the extent of exposure. This general information can be used to help develop specific control measures. Ensure that control systems are properly designed and maintained. Comply with occupational, environmental, fire, and other applicable regulations.

### Engineering Controls:

Engineering methods to control hazardous conditions are preferred. Methods include mechanical ventilation (dilution and local exhaust), process or personnel enclosure, control of process conditions, and process modification (e.g., substitution of a less hazardous material). Administrative controls and personal protective equipment may also be required. Because of the high potential hazard associated with this substance, stringent control measures such as enclosure or isolation may be necessary.

Use a corrosion-resistant local exhaust ventilation system separate from other exhaust ventilation systems. Exhaust directly to the outside. Supply sufficient replacement air to make up for air removed by exhaust system. Treatment of exhaust emissions to prevent environmental contamination may be required.

NOTE: Do not use organic or combustible materials such as wood in the construction of ventilation or control systems.

### Personal Protective Equipment:

If engineering controls and work practices are not effective in controlling exposure to this material, then wear suitable personal protective equipment including approved respiratory protection. Have appropriate equipment available for use in emergencies such as spills or fire.

If respiratory protection is required, institute a complete respiratory protection program including selection, fit testing, training, maintenance and inspection. Refer to the CSA Standard Z94.4-11, "Selection, Use and Care of Respirators," available from the Canadian Standards Association.

**Eye / Face protection:** Wear chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166. A face shield may also be necessary.

**Skin protection:** Wear impervious gloves and appropriate protective clothing. Choose body protection according to the amount and concentration of the substance at the work place. Have a safety shower/eye-wash readily available in the immediate work area.

### Resistance of Materials for Protective Clothing:

RECOMMENDED (resistance to breakthrough longer than 8 hours): Butyl rubber; Neoprene rubber; Viton®; Viton®/Butyl rubber; Barrier® - PE/PA/PE; Silver Shield® - PE/EVAL/PE; Saranex®, ChemMAX®; Frontline® 500; Microchem® 4000; Trelchem® HPS and VPS; Zyttron® 300 and 500.

CAUTION, use for short periods only (resistance to breakthrough within 1 to 4 hours): Polyvinyl chloride (PVC).

NOT RECOMMENDED for use (resistance to breakthrough less than 1 hour and/or poor degradation rating): Natural rubber; Nitrile rubber; Polyvinyl alcohol (PVAL).

### Inhalation / Ventilation:

Up to 25 ppm: Any self-contained breathing apparatus with a full facepiece; or Any supplied-air respirator with a full facepiece.

Emergency or planned entry into unknown concentrations or IDLH conditions: Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode; or Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus.

Escape: Any appropriate escape-type, self-contained breathing apparatus.

**Personal Hygiene:** Remove contaminated clothing immediately. Keep contaminated clothing thoroughly wet or immersed in water in closed containers. Discard or launder before re-wearing. Inform laundry personnel of contaminant's hazards. Do not eat

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or drink in work areas. Wash hands thoroughly after handling this material. Maintain good housekeeping.

## Control Parameters

Chemical Name	Limit Value Type	Exposure Limit Value	Source
Nitric acid	TLV-TWA	2 ppm	USA ACGIH
	PEL-T-TWA, REL-TWA	2 ppm (5 mg/m <sup>3</sup> )	USA OSHA, USA NIOSH
	TLV-STEL, REL-STEL	4 ppm	USA ACGIH, USA NIOSH
Water	None listed.	None listed.	Not applicable

## SECTION 9: Physical and chemical properties

<b>Physical State:</b>	Liquid	<b>Vapour Pressure:</b> (Partial pressure at 20 °C)	70% w/w: 0.37 - 0.4 kPa (2.78 - 3 mmHg)
<b>Colour:</b>	Clear to yellow		
<b>Molecular Weight:</b>	HNO <sub>3</sub> : 63.01 g/mol H <sub>2</sub> O: 18.02 g/mol		
<b>Odour:</b>	Strong – acrid odour	<b>Vapour Density:</b>	2.17 (air=1) (calculated)
<b>Odour Threshold:</b>	0.29 - 0.98 ppm (detection)	<b>Density: (at 20 °C)</b>	65% w/w: 1.3913 g/mL
<b>pH:</b>	1.0 (0.1 M solution)		68% w/w: 1.4048 g/mL
<b>Melting/Freezing Point:</b>	70% w/w: -41 °C (-42 °F)		70% w/w: 1.4134 g/mL
<b>Boiling Point:</b>	68% w/w: 120.5 °C (248.9 °F) 70% w/w: 119.3 °C (246.74 °F)	<b>Solubility:</b>	Soluble in all proportions in water. Reacts with many organic solvents (e.g. alcohols, ketones, ethers, esters).
<b>Flash Point:</b>	Not combustible (does not burn).		
<b>Evaporation Rate:</b>	No information available.	<b>Partition Coefficient:</b>	Log P(oct) = 0.21 (est.)
<b>Flammability:</b>	Not applicable	<b>Auto-ignition Temperature:</b>	Not applicable
<b>Lower Flammable (Explosive) Limit (LFL/LEL):</b>	Not applicable	<b>Decomposition Temperature:</b>	No information available.
<b>Upper Flammable (Explosive) Limit (UFL/UEL):</b>	Not applicable	<b>Viscosity:</b>	No information available.

## SECTION 10: Stability and reactivity

### Chemical Stability:

Normally stable. Nitric acid has a tendency to slowly decompose at room temperature to form nitrogen oxides, which may colour the acid yellow or red. The decomposition is accelerated by exposure to light and increases in temperature.

### Reactivity:

The National Fire Prevention Association (NFPA) lists nitric acid (40% w/w or less) as a Class 1 Oxidizer and nitric acid (more than 40% w/w but less than 80% w/w) as a Class 2 Oxidizer. Class 1 Oxidizers do not moderately increase the burning rate of combustible materials with which they come into contact. Class 2 Oxidizers cause a moderate increase in the burning rate of combustible materials with which they come into contact.

### Incompatibility – Materials to be Avoided:

NOTE: Chemical reactions that could result in a hazardous situation (e.g. generation of flammable or toxic chemicals, fire or detonation) are listed here. Many of these reactions can be done safely if specific control measures (e.g. cooling of the reaction) are in place. Although not intended to be complete, an overview of important reactions involving common chemicals is provided to assist in the development of safe work practices.

Nitric acid is a strong acid and a strong oxidizing agent and is very reactive. Nitric acid is frequently involved in reactive incidents.

MOST METALS particularly POWDERED METALS (e.g. antimony, bismuth, germanium, manganese or titanium), ALKALI METALS (e.g. lithium or sodium) or ALKALINE EARTH METALS (e.g. magnesium or calcium) - may react violently or explosively, and/or cause fire, with generation of extremely flammable hydrogen gas.

ORGANIC CHEMICALS (e.g., alcohols, acids, anhydrides, aldehydes, ketones, amines, ethers, hydrocarbons, alkanethiols, nitriles,

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nitroalkanes and nitroaromatics) – may react violently or explosively, and/or ignite spontaneously.

NON-METALS (e.g. arsenic, boron, finely divided carbon, phosphorus or silicon), NON-METAL HYDRIDES (e.g. arsine, phosphine, stibine or tetraborane) or REDUCING AGENTS (e.g. potassium phosphinate) - may react violently or explosively and ignite.

CROTONALDEHYDE, HYDRAZINE, DIMETHYLHYDRAZINE, DIVINYL ETHER, PYROCATECHOL - ignite spontaneously (hypergolic) on contact with concentrated nitric acid, the ignition delay being 1 millisecond (ms).

AMMONIA, ANILINE, DIBORANE, FURFURYL ALCOHOL or TERPENES - mixtures are self-igniting.

SULFIDES (e.g. sodium or potassium sulfide) - toxic and flammable hydrogen sulfide gas and toxic sulfur dioxide gas may be generated.

CARBIDES (e.g. cesium carbide), FLUORINE, PHOSPHORUS HALIDES (e.g. phosphorus trichloride) or OTHER PHOSPHORUS COMPOUNDS (e.g. cadmium phosphide) – may ignite and/or explode.

METAL CYANIDES (e.g. sodium cyanide, potassium cyanide or calcium cyanide) - mixture produces a violent reaction, with formation of very toxic and flammable hydrogen cyanide.

SULFUR HALIDES (e.g. sulfur dichloride or disulfur dibromide) - interaction is violent, with generation of the corresponding hydrogen halide.

<b>Conditions to avoid:</b>	Air, light, high temperatures.
<b>Hazardous Decomposition Products:</b>	Nitrogen oxides.
<b>Hazardous Polymerization:</b>	Does not occur.

## Corrosivity to Metals:

Nitric acid (5 - 70% w/w) is corrosive (corrosion rate greater than 1.25 mm/year) to most metals at 21°C (70°F), including carbon steel (e.g. types 1010, 1020, 1075 and 1095), type 3003 aluminum, cast iron (e.g. gray, ductile and high nickel cast iron), nickel, nickel-base alloys (e.g. Monel and Hastelloy B and D), copper, copper-nickel, bronze (unspecified), aluminum bronze, silicon bronze, brass (unspecified), admiralty brass, naval brass and lead. It attacks (corrosion rate less than or equal to 0.5 mm/year to greater than or equal to 1.27 mm/year) some 400 series stainless steels at 21°C. Stainless steels with high chromium content (most 300 series) exhibit excellent or good resistance to nitric acid concentrations ranging from 0-65% up to the boiling point. Types 304, 304L, R12S, 2RE10 (high chromium and nickel content) and 7-Mo duplex stainless steel are particularly recommended for use with nitric acid. High-silicon cast iron (Duriron) and high-chromium cast iron, higher chromium nickel alloys (e.g. G-30 and 690), nickel-base alloys (e.g. Hastelloy C and Incoloy 825), tantalum, titanium, zirconium, gold and platinum-type metals also have excellent resistance to nitric acid. Aluminum alloys (types 1100 and 3003) can only be used for very high concentrations of nitric acid (80-100%).

## Corrosivity to Non-Metals:

Nitric acid (5 - 100% w/w) at 21°C attacks plastics, such as acrylonitrile-butadienestyrene (ABS), nylon, styrene-acrylonitrile, polystyrene and polyurethane; and elastomers, such as nitrile Buna N (NBR), natural rubber, isoprene, neoprene, chloroprene, polyester, styrene butadiene (SBR), polyurethane, chlorinated polyethylene, ethylene-propylene, ethylene-propylene terpolymer and low density polyethylene. Nitric acid (5 - 100% w/w) does not attack plastics, such as Teflon, and other fluorocarbons; and elastomers such as Viton and other fluorocarbons (e.g. Kalrez and Chemraz (up to 50% w/w)). Nitric acid (concentrations up to 50% w/w) does not attack plastics, e.g. polyvinyl chloride (PVC), chlorinated polyvinyl chloride (CPVC), polypropylene, thermoset polyester (Bisphenol A-fumarate and Isophthalic acid), high density polyethylene and ultra high molecular weight polyethylene and elastomers e.g. butyl rubber.

## SECTION 11: Toxicological information

### Acute Toxicity:

**Oral LD50:** No information available.

**Dermal LD50:** No information available.

**Inhalation LC50:** 260 mg/m<sup>3</sup>/30M (rat); 130 mg/m<sup>3</sup>/4H (rat)

**Other Information:** RTECS# QU5775000

### Exposure Routes:

**Inhalation:** May be fatal if inhaled. Nitric acid readily forms a high vapour concentration at room temperature. It is very corrosive and can release other corrosive and toxic gases upon contact with air, organic materials or metals, thus posing a very serious inhalation hazard. Symptoms of exposure include dryness and/or burning pain in the nose and throat, cough, chest pain, shortness of breath, and difficulty breathing. A severe exposure can result in a potentially fatal accumulation of fluid in the lungs (pulmonary edema). Symptoms of pulmonary edema (tightness in the chest and shortness of breath) can be delayed for up to 24



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or 48 hours after exposure and are aggravated by physical exertion. The presence of nitrogen oxide gases contributes significantly to the harmful effects observed following nitric acid exposure. However, the strongly corrosive nitric acid is a severe respiratory irritant on its own. Nitric acid vapour can be transformed to an aerosol in the moist air of the respiratory tract. The aerosol droplets are generally deposited in the upper respiratory tract. However, if particulate substances are inhaled at the same time, the particles can carry the nitric acid into the lower respiratory tract.

**Skin:** Nitric acid is corrosive to the skin. Corrosive substances are capable of producing severe burns, blisters, ulcers, and permanent scarring, depending on the concentration of the solution and the duration of contact. Concentrated solutions produce burns, lower concentrations cause a change in skin colour from yellow to brown, and dilute solutions cause mild irritation and skin hardening.

**Eye:** Nitric acid can cause serious eye damage. Substances that cause serious eye damage are capable of producing severe eye burns and permanent injury, including blindness, depending on the concentration of the solutions and duration of contact.

**Ingestion:** Nitric acid is corrosive and can cause burns to the lips, tongue, throat, esophagus, and stomach if swallowed. Symptoms may include difficulty swallowing, intense thirst, abdominal pain, nausea, vomiting, and diarrhea. Death could result. Because of the immediate pain experienced when taken into the mouth, strong mineral acids are not often swallowed.

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**Germ Cell Mutagenicity:** Nitric acid is not known to be a mutagen.

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**Carcinogenicity:** Nitric acid is not known to be a carcinogen.

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**Reproductive Toxicity:** Nitric acid is not known to cause reproductive toxicity.

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**Additional Information:** Long-term exposure may cause skin and respiratory irritation, with possible development of lung injury (e.g. chronic bronchitis). Exposure to nitric acid vapours, mists or aerosols may cause dental erosion. To the best of our knowledge, the chronic toxicity of this substance has not been fully investigated.

## SECTION 12: Ecological information

**Ecotoxicity:** Mosquito fish (*Gambusia affinis*): LC50 = 72 mg/L/96H

**Persistence and degradability:** Nitric acid will be gradually neutralized by hardness minerals (calcium and magnesium) in water. The nitrate ion may persist longer but will ultimately be consumed as a plant nutrient.

**Bioaccumulative potential:** Bioaccumulation is not anticipated for inorganic compounds that are miscible with water.

**Mobility in soil:** No information available.

**Results of PBT and vPvB assessment:** Not applicable for inorganic substances.

## SECTION 13: Disposal considerations

Review federal, regional and local government requirements prior to disposal. Authorities may not permit disposal of waste nitric acid until certain neutralization standards have been achieved. Store material for disposal as indicated in Section 7. Disposal by secure landfill may be acceptable.

## SECTION 14: Transport information

### CANADIAN TRANSPORTATION OF DANGEROUS GOODS (TDG) SHIPPING INFORMATION

**Proper Shipping Name:** NITRIC ACID, other than red fuming, with at least 65%, but not more than 70% nitric acid

<b>UN No:</b> UN2031	<b>Class(es):</b> 8 (5.1)	<b>Hazard Label(s):</b> 8+5.1	<b>Packing Group:</b> II
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### US DEPARTMENT OF TRANSPORT (DOT) HAZARDOUS MATERIALS SHIPPING INFORMATION (49 CFR)

**Proper Shipping Name:** NITRIC ACID other than red fuming, with at least 65 percent, but not more than 70 percent nitric acid

<b>UN No:</b> UN2031	<b>Class(es):</b> 8	<b>Hazard Label(s):</b> 8+5.1	<b>Packing Group:</b> II
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### European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR)

**Proper Shipping Name:** NITRIC ACID, other than red fuming, with at least 65%, but not more than 70% nitric acid

<b>UN No:</b> UN2031	<b>Class(es):</b> 8	<b>Hazard Label(s):</b> 8+5.1	<b>Packing Group:</b> II
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**Hazard Identification No:** 85

### International Maritime Dangerous Goods (IMDG)

**Proper Shipping Name:** NITRIC ACID other than red fuming, with at least 65% but not more than 70% nitric acid

<b>UN No:</b> UN2031	<b>Class(es):</b> 8 (5.1)	<b>Hazard Label(s):</b> 8+5.1	<b>Packing Group:</b> II
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<b>Marine Pollutant:</b> ---	<b>EMS:</b> F-A, S-Q	<b>Segregation Group:</b> Category D
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## International Air Transport Association (IATA)

**Proper Shipping Name:** NITRIC ACID other than red fuming, with  $\geq 65\%$  but  $\leq 70\%$  nitric acid

**UN No:** UN2031

**Class(es):** 8 (5.1)

**Hazard Label(s):** 8+5.1

**Packing Group:** II

Concentration terms above are Weight Percent or percentage by mass (%). % w/w is expressed as % by transport authorities.

## SECTION 15: Regulatory information

**OSHA Hazards:** CAS #7697-37-2 meets criteria for hazardous material, as defined by 29 CFR 1910.1200.

### SARA:

**302:** This material contains Nitric acid (CAS# 7697-37-2), which is subject to the reporting requirement of 1,000 lbs RQ.

**313:** This material contains Nitric acid (CAS# 7697-37-2), which is subject to the reporting requirements of Section 313 of SARA Title III.

**311/312:** This material contains Nitric acid (CAS# 7697-37-2).

### Right To Know Lists:

**Massachusetts:** CAS# 7697-37-2 is listed, 50 lbs RQ.

**Pennsylvania:** CAS# 7697-37-2 is listed, E (environmental hazard).

**New Jersey:** CAS# 7697-37-2 is listed, RTK# 1356.

**California Prop. 65:** CAS# 7697-37-2 is not subject to this act. CAS# 10024-97-2 (Nitrous oxide, decomposition product) is subject to this act, type of toxicity: developmental, female. CAS# 7732-18-5 is not subject to this act.

### Inventory Status:

**Canada DSL/NDSL Inventory List:** CAS# 7697-37-2 is listed. CAS# 7732-18-5 is listed.

**US TSCA Inventory List:** CAS# 7697-37-2 is listed. CAS# 7732-18-5 is listed.

**EC Inventory List:** CAS# 7697-37-2 is listed, EC# 231-714-2. CAS# 7732-18-5 is listed, EC# 231-791-2.

## SECTION 16: Other information

### Full text of H-Statement(s) and P-Statement(s):

**H314:** Causes severe skin burns and eye damage.

**H272:** May intensify fire; oxidizer.

**H290:** May be corrosive to metals.

**EUH071:** Corrosive to the respiratory tract.

**P210:** Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

**P220:** Keep away from clothing and other combustible materials.

**P234:** Keep only in original container.

**P260:** Do not breathe fume/gas/mist/vapours/spray.

**P264:** Wash thoroughly after handling.

**P280:** Wear protective gloves/protective clothing/eye protection/face protection.

**P310:** Immediately call a POISON CENTER or doctor.

**P301+P330+P331:** IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

**P303+P361+P353:** IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.

**P363:** Wash contaminated clothing before reuse.

**P304+P340:** IF INHALED: Remove person to fresh air and keep comfortable for breathing.

**P305+P351+P338:** IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

**P370+P378:** In case of fire: Use most appropriate extinguishing media for the surrounding fire, such as flooding quantities of water spray or fog, for extinction.

**P390:** Absorb spillage to prevent material damage.

**P405:** Store locked up.

**P501:** Dispose of contents/container according to federal, regional and local government requirements.



# SDS: Nitric Acid, 65-70% w/w

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## National Fire Protection Association Hazard Identification (NFPA):

Health: 4

Flammability: 0

Reactivity: 0

Special Hazard: OXIDIZING MATERIAL



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**Revision Date:** 06-2017, Supersedes 07-2015, 07-2014, 03-2014, 02-2013, 12-2010

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