SAFETY DATA SHEET

PRODUCT NAME:	NITRIC ACID 64%

Issue Date: 14 November 2025

SECTION 1: IDENTIFICATION

Product Name: Nitric Acid 64%
Other Names: Hydrogen Nitrate, Engravers Acid, Aqua Fortis
Product Code: CNA20, ZNITRA
Uses: Manufacture of organic and inorganic nitrates and nitro compounds for fertilisers, dye intermediates and many organic chemicals. Used for etching and cleaning metals. Operators should be trained in procedures for safe use of this material.
Supplier: HamChem Hamilton Chemicals Ltd, 75 Ruffell Rd, Hamilton
Phone: 079744971 Web: www.hamchem.co.nz Email: info@hamchem.nz

- **In emergency dial 111, and then ask for Fire, Ambulance or Police as necessary.**
- **In case of poisoning phone National Poisons Centre – 0800 764 766**

SECTION 2: HAZARD IDENTIFICATION

GHS Classifications
Corrosive to Metals – Category 1
Acute Toxicity (Inhalation) – Category 4
Skin Corrosion – Category 1B
Serious Eye Damage – Category 1
Specific Target Organ Toxicity (Repeated Exposure) – Category 2

Signal Word: Danger

Hazard Statements
H290 May be corrosive to metals
H314 Causes severe skin burns and eye damage
H332 Harmful if inhaled
H318 Causes serious eye damage
H373 May cause damage to organs through prolonged or repeated exposure

Prevention Statements
P234 Keep only in original packaging
P260 Do not breathe dust/fume/mist/vapours/spray.
P271 Use only outdoors or in a well-ventilated area.
P264 Wash hands thoroughly after handling
P280 Wear protective gloves/clothing and eye/face protection.

Response Statements
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 to fresh air and keep comfortable for breathing.

P310 Immediately call a POISON CENTRE or Doctor
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do so, continue rinsing.
P310 Immediately call a POISON CENTRE or Doctor/Physician
P390 Absorb spillage to prevent material damage.
P314 Get medical advice/attention if you feel unwell

Storage Statements
P405 Store locked up.

Disposal Statement
P501 Dispose of contents and container to approved waste facility in accordance with relevant legislation.

SECTION 3: COMPOSITION & INFORMATION ON INGREDIENTS

Chemical Entity	CAS No.	Proportion (% w/w)
Nitric Acid	7697-37-2	> 63
Water	7732-18-5	to 100

SECTION 4: FIRST AID MEASURES

If swallowed: If the Person is awake: Keep the person calm. Immediately give them a small amount of water or milk to drink: (1/4 to 1/2 cup for a child or 1 to 2 cups for an adult). Do NOT make them vomit. Call your regional POISON CENTRE (0800 764766). If possible, bring the product container to the phone. If the person is having difficulty breathing, keep the person calm. Help the person into a position so that breathing is as easy as possible. Quickly ring the emergency services telephone number to call an ambulance.

If on skin: If skin or hair contact occurs: Remove any source of further contamination (such as contaminated clothing). Flush the affected area with water as soon as possible. Continue to flush until: All of the substance is removed AND signs and symptoms have gone away. Do NOT scrub the skin roughly. Do NOT use any solvent (e.g. soap, acetone, turpentine). Call your regional POISON CENTRE (0800 764766). If possible, bring the product container to the phone. *If the Skin Looks Burned***:** Treat the skin the same as a thermal (heat) burn. Clean the skin gently with cool water. Apply ice or a cold compress. Do NOT apply ice to hands or feet as this may cut off circulation. If the skin is very painful, infected, or a large area is affected, take the person to a Medical Centre or Hospital.

If inhaled: Protect yourself first. Keep the person calm. Remove them to fresh air and rest. Do NOT give them anything to drink. Call your regional POISON CENTRE (0800 764766). If the person is having difficulty breathing help the person into a position so that breathing is as easy as possible. Quickly ring the emergency services telephone number to call an ambulance.

If in eyes: If in eyes: Flush the eye with running water for at least 30 minutes. If you have difficulty flushing the eye(s), go to a Medical Centre or Hospital immediately for help in flushing. Consider calling an ambulance. Immediately after flushing you will need to have a medical examination of the eye performed at a Medical Center or Hospital to check for any damage.

Note to Physician: For acute or short-term repeated exposures to strong acids: Airway problems may arise from laryngeal oedema and inhalation exposure. Treat with 100% oxygen initially. Intravenous lines should be established immediately in all cases where there is evidence of circulatory compromise. Strong acids produce a coagulation necrosis characterised by formation of a coagulum (eschar) as a result of the desiccating action of the acid on proteins in specific tissues.

Ingestion: Immediate dilution (milk or water) within 30 minutes post ingestion is recommended. DO NOT attempt to neutralise the acid since exothermic reaction may extend the corrosive injury. Be careful to avoid further vomit since re-exposure of the mucosa to the acid is harmful. Limit fluids to one or two glasses in an adult. Charcoal has no place in acid management. Some authors suggest the use of lavage within 1 hour of ingestion.

Skin: Skin lesions require copious saline irrigation. Treat chemical burns as thermal burns with non-adherent gauze and wrapping. Eye: Eye injuries require retraction of the eyelids to ensure thorough irrigation of the conjuctival cul-de-sacs. Irrigation should last at least 20-30 minutes. DO NOT use neutralising agents or any other additives. Several litres of saline are required. Cycloplegic drops, (1% cyclopentolate for short-term use or 5% homatropine for longer term use) antibiotic drops, vasoconstrictive agents or artificial tears may be indicated dependent on the severity of the injury. Steroid eye drops should only be administered with the approval of a consulting ophthalmologist). [http://www.toxinz.com/specset.aspx?id=1150642&synonymID=&desc=Nitric+Acid]

SECTION 5: FIRE FIGHTING MEASURES

Extinguishing media: Small fire: Carbon dioxide, dry chemical, dry sand, alcohol-resistant foam.
Large fire: Water spray, fog, or alcohol-resistant foam.

Fire fighting: Alert Fire Brigade and tell them location and nature of hazard. Wear full body protective clothing with breathing apparatus. Prevent, by any means available, spillage from entering drains or water courses. Consider evacuation (or protect in place). Fight fire from a safe distance, with adequate cover. Extinguishers should be used only by trained personnel. Use water delivered as a fine spray to control fire and cool adjacent area. Do not get water inside containers, containers may explode. Avoid spraying water onto liquid pools. If safe to do so, remove containers from path of fire. If fire gets out of control withdraw personnel and warn against entry. Equipment should be thoroughly decontaminated after use.

Fire/explosion hazard: Will not burn. Heating may cause expansion or decomposition leading to violent rupture of containers. Heat affected containers remain hazardous. May emit irritating, poisonous or corrosive fumes. Decomposes on heating and produces toxic fumes of nitrogen oxides (NOx) and nitric acid.

Fire incompatibility: Nitric acid is an oxidizer and may increase the intensity of fire involving organics or materials that can be oxidized. Reacts vigorously with alkali. Avoid reaction with organic materials/compounds, powdered metals, reducing agents and hydrogen sulfide (H2S). Will react with water or steam to produce heat and toxic and corrosive fumes.

Personal Protective Equipment: Breathing apparatus. Chemical splash suit.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Minor Spills: Wear fully protective PVC clothing, respiratory protection and eye/face protection. Evacuate the area. Clean up all spills immediately. Avoid all contact with any organic matter including fuel, solvents, sawdust, paper or cloth and other incompatible materials. Avoid breathing dust or vapours and all contact with skin and eyes. Control personal contact by using protective equipment. Contain and absorb spill with dry sand, earth, inert material or vermiculite. Scoop up solid residues and seal in labelled drums for disposal. Use soda ash or slaked lime to neutralise/decontaminate area.

Major Spills: DO NOT touch the spill material. Restrict access to area. Clear area of personnel and move upwind. Alert Fire Brigade and tell them location and nature of hazard. Wear full body protective clothing with breathing apparatus. Prevent, by any means available, spillage from entering drains or water course. Increase ventilation. Contain spill with sand, earth or other clean, inert materials. Avoid any contamination by organic matter. Collect product into labelled containers for disposal Neutralise remaining liquid with Sodium Carbonate or mild caustic. Decontaminate equipment and launder all protective clothing before storage and re-use. If contamination of drains or waterways occurs advise emergency services.

Emergency Response Planning Guidelines

Chemical (CAS No.)	ERPG-1	ERPG-2	ERPG-3	LEL
7697-37-2	1ppm*	10ppm	78ppm	

***Odour should be detectable near ERPG-1**

ERPG-3 is the maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to 1 hour without experiencing or developing life-threatening health effects.

ERPG-2 is the maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to 1 hour without experiencing or developing irreversible or other serious health effects or symptoms which could impair an individual's ability to take protective action.

ERPG-1 is the maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to 1 hour without experiencing other than mild transient health effects or perceiving a clearly defined, objectionable odour.

LEL – Lower explosive limit warning.

SECTION 7: HANDLING & STORAGE

Procedure for handling: Operators should be trained in procedures for safe use of this material. Avoid generating and breathing mist. DO NOT allow clothing wet with material to stay in contact with skin. Avoid all personal contact, including inhalation. Wear full protective clothing/respiratory protection including gloves and impervious footwear when risk of exposure occurs. Use in a well-ventilated area. WARNING: To avoid violent reaction, ALWAYS add material to water and NEVER water to material. Avoid contact with incompatible materials. When handling, DO NOT eat, drink or smoke. Keep containers securely sealed when not in use. Avoid physical damage to containers. Always wash hands with soap and water after handling. Work clothes should be laundered separately. Launder contaminated clothing before re-use or discard. Use good occupational work practice. Observe manufacturer's storing and handling recommendations. Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.

Suitable container: Original packaging. HDPE plastic drum, corrosive-resistant containers. Check that containers are clearly labelled.

Storage incompatibility: Segregate from reducing agents, metals and powdered metals. Segregate from alkalis, oxidising agents and chemicals readily decomposed by acids, i.e. cyanides, sulfides, carbonates. Avoid contamination of water, foodstuffs, feed or seed.

Storage requirements: Store in original containers. Keep containers securely sealed as supplied. Store in a cool, well-ventilated area. Keep dry. Store under cover and away from light. Store away from incompatible materials and foodstuff containers. DO NOT stack on wooden floors or pallets. Protect containers from physical damage. Check regularly for leaks. Observe manufacturer's storage and handling recommendations. Floors should be covered or coated with acid resistant material.

SECTION 8: EXPOSURE CONTROLS & PERSONAL PROTECTION

Exposure standards: TWA (ppm) – 2; TWA (mg/m³) – 5.2; STEL (ppm) – 4; STEL (mg/m³) – 10

Engineering controls: DO NOT handle directly. Wear gloves and use suitable corrosive resistant equipment. Use in a well-ventilated area. Provide adequate ventilation in warehouse or closed storage areas.
If exposure to workplace fume/spray/vapour is not controlled, respiratory protection is required.

Personal protective equipment: VENTILATION SYSTEM
A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. 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. Refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Personal Respirators: In the absence of adequate ventilation or where workplace exposure limits are exceeded, respiratory protection is required. A full facepiece respirator with an acid gas cartridge approved for Nitric acid is recommended. For more information see Australian/New Zealand Standard, AS/NZS 1715:2009 and AS/NZS 1716:2012. If in doubt, seek expert occupational hygiene advice. If exposure exceeds 25 ppm, use an approved self-contained breathing apparatus with a full facepiece.

Skin Protection: Impervious, gauntlet length gloves or elbow length PVC gloves. Neoprene gloves. Refer to AS/NZS 2161.1:2000 Occupational Protective Gloves – Selection, use and maintenance. Protective safety footwear or PVC boots.

Eye Protection: Tightly fitting chemical safety goggles. Full face shield may be required for supplementary but never for primary protection of eyes. Refer to Personal eye protection Part 1: Eye and face protectors for occupational applications, Australian/New Zealand Standard: AS/NZS 1337.1:2010. Maintain eye wash fountain in work area.

Other: Impervious protective clothing buttoned to the neck and wrist and washable hat and PVC apron. In case of emergency: Full protective suit. Ensure there is ready access to an emergency shower. Ensure that there is ready access to eye wash unit.

SECTION 9: PHYSICAL & CHEMICAL PROPERTIES

Appearance:	Clear, colourless to slightly yellow liquid
Odour:	Sharp, strong odour
Solubility in water:	Miscible
pH (20°C):	ca. 1
Relative Vapour Density (Air = 1):	Not available
Lower Explosive Limit:	Not applicable
Autoignition Temperature:	Not applicable
State:	Liquid
Boiling Range:	ca. 86
Specific Gravity:	1.4
Vapour Pressure (kPa, 20°C):	Not available
Evaporation Rate:	Not applicable
Flash point (°C):	Not applicable
Upper Explosive Limit (%):	Not applicable
Decomposition Temp (°C):	Not available
Viscosity:	ca. 2 cP (@20 deg C)

SECTION 10: STABILITY & REACTIVITY

Chemical Stability: Product is stable under normal conditions of use, storage and temperature.

Conditions to Avoid: Avoid excessive heat, direct sunlight, static discharges, moisture, and temperature extremes. CAUTION: dilution hazard; do not add water to acid. Adding water to acid generates intense heat, violent boiling, spattering, steam. Do not store in unsealed containers.

Incompatible Materials: Incompatible with most substances, especially strong bases, alkali metals, metallic powders, carbides, hydrogen sulphide, turpentine, acetic anhydride, acetonitrile, acrylonitrile and combustible organics. Keep containers dry and tightly closed to avoid moisture absorption and contamination. HIGHLY CORROSIVE. Corrosive to most metals. Darkens to brownish colour on ageing and exposure to light.

Hazardous Decomposition Products: Thermal decomposition can lead to release of nitrogen oxides.

Hazardous Reactions: Hazardous polymerisation will not occur.

SECTION 11: TOXICOLOGICAL INFORMATION

Potential Acute Health Effects: This product is corrosive, harmful if inhaled and causes damage to the respiratory system and causes tooth erosion. Harmful effects may be delayed.

Swallowed: Considered an unlikely route of entry in commercial/industrial environments. The material is extremely corrosive if swallowed and is capable of causing burns to mouth, throat, oesophagus, with extreme discomfort, pain and may be toxic.

Eye: The liquid is extremely corrosive to the eyes and contact may cause rapid tissue destruction and is capable of causing severe damage with loss of sight. The vapour is extremely discomforting to the eyes and is capable of causing pain and severe conjunctivitis. Corneal injury may develop, with possible permanent impairment of vision, if not promptly and adequately treated. The material may produce severe irritation to the eye causing pronounced inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.

Skin: The liquid is extremely corrosive to the skin and contact may cause tissue destruction with severe burns. Bare unprotected skin should not be exposed to this material. The vapour is highly discomforting to the skin. The material may cause severe skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin. Repeated exposures may produce severe ulceration.

Inhaled: The vapour is extremely discomforting and corrosive to the upper respiratory tract and lungs and the material presents a hazard from a single acute exposure or from repeated exposures over long periods.

Inhalation hazard is increased at higher temperatures. Reactions may occur following a single acute exposure or may only appear after repeated exposures. Reactions may not occur on exposure but response may be delayed with symptoms only appearing many hours later. The material may produce respiratory tract irritation, and result in damage to the lung including reduced lung function. Mild exposure may result in delayed pneumonia after exposure. High acute exposure may cause cyanosis and acute pulmonary oedema.

Chronic Health Effects: The material is considered to be harmful by all exposure routes. Bare unprotected skin should not be exposed to this material. Principal routes of exposure are usually by skin contact, eye contact and inhalation of vapour.

Toxicity: Oral (human) LDLo: 430 mg/kg; Inhalation (rat) LC50: 2500 ppm/1h *; Unreported (man) LDLo: 110 mg/kg

Irritation: Skin: Rabbit, Corrosive. Eyes: Corrosive. [NZ EPA CCID]

Carcinogenic effects: Not classified or listed by IARC, NTP, NIOSH or California Prop65.

Mutagenic effects: Not available.

Reproductive or developmental effects: Not available.

Aspiration hazard: No data available.

Specific target organ toxicity: This material presents a hazard from a single acute exposure or from repeated or prolonged exposure. Target organs include the respiratory system, eyes, skin and teeth.
Reports of lethal acute exposure to Nitric acid have been documented [NCBI –Acute exposure Guideline Levels for Selected Airborne Chemicals: Vol. 14]. Effects may be delayed.
Chronic exposure may be associated with changes in pulmonary function, chronic bronchitis, conjunctivitis, and overt symptoms resembling acute viral respiratory tract infection. Discoloration and erosion of dental enamel can occur. [NZ EPA CCID].

Sensitisation (respiratory/contact): No data available.

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity: There is little information on ecotoxicity, however, available information suggests that this product will not have severe environmental effects. If introduced into waterways, the resulting decrease in pH may cause adverse effects.

Toxicity Data: Mosquito fish: TLm (median tolerance limit), 96h: 72 ppm (fresh water). Cockle, 48h, LC50 = 330-1000 ppm (salt water). Crustacean, Green or European shore crab (Carcinus maenas), Avg Species LC50: 180mg/L.

Persistence and Degradability: Not readily biodegradable. However, Nitric acid will dissociate in water to form hydrogen ions and nitrate ions.

Mobility: Mobility in soil and water is potentially high. During transport through the soil, nitric acid will dissolve some of the soil material, in particular, the carbonate-based materials. The acid will be neutralized to some degree with adsorption of the proton also occurring on clay materials. However, significant amounts of acid are

expected to remain for transport down toward the ground water table. Upon reaching the ground water table, the acid will continue to move, now in the direction of the ground water flow.

Bioaccumulation: The bioconcentration potential of Nitric acid is low.

BOD and COD: No data available.

Products of Biodegradation: N/A

SECTION 13: DISPOSAL CONSIDERATIONS

Product: Recycle wherever possible. Special hazard may exist - specialist advice may be required. The product may be treated so that it is no longer hazardous by a means other than dilution. This includes depositing in a landfill in such a manner that it will not lead to any adverse health effects to any person or exceed any TEL (tolerable exposure limit) set by the Authority for this substance. This substance must not come into contact with class 1, 2, 3, or 4 substances or any ignition source in the vicinity of the disposal site capable of igniting the substance or where combustion will not lead to any person being exposed to more blast overpressure or heat radiation than that described in Regulation 7 of the Hazardous Substances (Disposal) Regulations 2001. Treatment in a biological wastewater treatment system with prior approval and arrangement is also permissible providing that the substance is rendered non-hazardous and does not pose any adverse effects to human health or the environment. Alternatively consult an approved Waste Management company for disposal options. Do not dispose with household rubbish.

Packaging: Recycle wherever possible. Special hazard may exist - specialist advice may be required. Packaging should be rendered incapable of containing any material. Puncture containers to prevent re-use and bury at an authorised landfill. Empty containers may be decontaminated. Alternatively, consult an approved Waste Management company for disposal options or dispose of at an approved waste disposal facility. Observe all label safeguards until containers are cleaned and destroyed. Where possible retain label warnings and SDS and observe all notices pertaining to the product. Must not be disposed of in household rubbish.

SECTION 14: TRANSPORT INFORMATION

UN Number:	2031
Proper Shipping name:	Nitric Acid, other than red fuming with not more than 70%
Dangerous Goods Class:	8 - Corrosive
Packing group:	II
Hazchem Code:	2R

SECTION 15: REGULATORY INFORMATION

EPA Approval Code: HSR001578 – Nitric Acid, >10-<65% aqueous solution

HSNO Hazard Classifications: 8.1A, 6.1D (I), 8.2B, 8.3A, 6.9B

SECTION 16: OTHER INFORMATION

Key to abbreviations:

LC50	Is the concentration which kills half of the test animals under controlled conditions. This value applies to vapours/dusts/mists and gases.
LD50	Is the dose which kills half of the test animals by ingestion.
LDLo	Is the lowest dose of a material in reported to have caused death in animals or humans. The exposure may be acute or chronic. This is also called the lowest dose causing death, lowest detected lethal concentration, and lethal dose low.

End of SDS.

HamChem Ltd, 75 Ruffell Road, Hamilton, New Zealand. Phone: 07-974-4971 Email: info@hamchem.nz Web: www.hamchem.nz