

Infosafe No™	1CHMC	Issue Date : November 2017	RE-ISSUED by ACR
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Product Name : **NITRIC ACID 6 - 64%**

Classified as hazardous

## 1. Identification

<b>GHS Product Identifier</b>	NITRIC ACID 6 - 64%	
<b>Company Name</b>	AUSTRALIAN CHEMICAL REAGENTS (ACR) (ABN 19 008 264 211)	
<b>Address</b>	38 - 50 Bedford Street Gillman S.A. 5013 Australia	
<b>Telephone/Fax Number</b>	Tel: (08) 8440 2000 Fax: (08) 8440 2001	
<b>Recommended use of the chemical and restrictions on use</b>	Manufacture of ammonium nitrate (used for fertilizers, explosives and other chemical uses), manufacture of cyclohexanone, dinitrotoluene, and nitrobenzene; used as a nitrating agent in the preparation of explosives; in the production of metal nitrates, and aliphatic and aromatic nitrates; nitrocellulose; nitrochlorobenzene; and rocket propellants (in rocket fuel production); for metal treatments; and as a chemical in metallurgy (e.g. as an etching and pickling agent for stainless steels); used in the printing industry for photo-engraving; for ore flotation; reprocessing spent nuclear fuel; and laboratory reagent.	
<b>Other Names</b>	<u>Name</u>	<u>Product Code</u>
	NITRIC ACID 10% v/v	0510
	NITRIC ACID 10% w/v	5488
	NITRIC ACID 15% v/v Tech	2842
	NITRIC ACID 1N	1251
	NITRIC ACID 2% w/w	5445
	NITRIC ACID 20% v/v	0508
	NITRIC ACID 25% v/v	0509
	NITRIC ACID 2N	1027
	NITRIC ACID 30% v/v	5306
	NITRIC ACID 30% v/v AR	5504
	NITRIC ACID 30% w/v	5489
	NITRIC ACID 5% v/v	0506
	NITRIC ACID 50% v/v Tech	0941
<b>Other Information</b>	EMERGENCY CONTACT NUMBER: +61 08 8440 2000 Business hours: 8:30am to 5:00pm, Monday to Friday.	

Australian Chemical Reagents (ACR) does not warrant that this product is suitable for any use or purpose. The user must ascertain the suitability of the product before use or application intended purpose. Preliminary testing of the product before use or application is recommended. Any reliance or purported reliance upon Australian Chemical Reagents (ACR) with respect to any skill or judgement or advice in relation to the suitability of this product of any purpose is disclaimed. Except to the extent prohibited at law, any condition implied by any statute as to the merchantable quality of this product or fitness for any purpose is hereby excluded. This product is not sold by description. Where the provisions of Part V, Division 2 of the Trade Practices Act apply, the liability of Australian Chemical Reagents (ACR) is limited to the replacement of supply of equivalent goods or payment of the cost of replacing the goods or acquiring equivalent goods.

## 2. Hazard Identification

<b>GHS classification of the substance/mixture</b>	Skin Corrosion/Irritation: Category 1A Corrosive to Metals: Category 1
<b>Signal Word (s)</b>	DANGER
<b>Hazard Statement (s)</b>	H290 May be corrosive to metals. H314 Causes severe skin burns and eye damage.
<b>Pictogram (s)</b>	Corrosion



<b>Precautionary statement – Prevention</b>	P234 Keep only in original container. P260 Do not breathe fume/vapours. P264 Wash thoroughly after handling.
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<b>Precautionary statement – Response</b>	<p>P280 Wear protective gloves/protective clothing/eye protection/face protection.  P301+P330+P331 IF SWALLOWED: rinse mouth. Do NOT induce vomiting.  P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.  P363 Wash contaminated clothing before reuse.  P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.  P310 Immediately call a POISON CENTER or doctor/physician.  P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  P390 Absorb spillage to prevent material damage.</p>
<b>Precautionary statement – Storage</b>	<p>P405 Store locked up.  P406 Store in corrosive resistant container with a resistant inner liner.</p>
<b>Precautionary statement – Disposal</b>	<p>P501 Dispose of contents/container according to local, state and federal regulations.</p>

### 3. Composition/information on ingredients

<b>Chemical Characterization</b>	Liquid				
<b>Ingredients</b>	<u>Name</u>	<u>CAS</u>	<u>Proportion</u>	<u>Hazard Symbol</u>	<u>Risk Phrase</u>
	Water	7732-18-5	35-94 %		
	Nitric acid	7697-37-2	6-65 %		

### 4. First-aid measures

<b>Inhalation</b>	Remove from exposure, rest and keep warm. If breathing has stopped, apply artificial respiration. If breathing is difficult, give oxygen. Do not allow victim to move about unnecessarily. Symptoms of pulmonary oedema can be delayed up to 48 hours after exposure. Do NOT use direct mouth-to-mouth method if victim ingested or inhaled the substance; use alternative respiratory method or apply artificial respiration. Seek urgent medical assistance.
<b>Ingestion</b>	Rinse mouth thoroughly with water immediately. Give water to drink. DO NOT induce vomiting. Avoid vomiting (risk of perforation!). Do not attempt to neutralize. Seek immediate medical assistance.
<b>Skin</b>	If spilt on large areas of skin or hair, immediately drench with running water and remove clothing. Continue to wash skin and hair with plenty of water (and soap if material is insoluble) until advised to stop by the Poisons Information Centre or a doctor. Remove contaminated clothing, rings, watches, etc. if possible - DO NOT attempt to do so if they are adhering to the skin. Seek urgent medical assistance.
<b>Eye contact</b>	If in eyes, hold eyelids apart and flush the eye continuously with running water. Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes. Seek immediate medical assistance.
<b>First Aid Facilities</b>	Maintain eyewash fountain and drench facilities in work area.
<b>Advice to Doctor</b>	Treat symptomatically as for strong acids. If exposure has been severe and/or the symptoms marked, monitor in hospital for 48 hours, because of the possibility of delayed pneumonitis and pulmonary oedema.
<b>Protection for First Aiders</b>	WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Take proper precautions to ensure your own safety before attempting rescue (e.g. wear appropriate protective equipment, use the 'buddy' system).
<b>Other Information</b>	For advice, contact a Poisons Information Centre (Phone eg Australia 13 1126; New Zealand 0800 764 766) or a doctor.

### 5. Fire-fighting measures

<b>Hazards from Combustion Products</b>	Corrosive, irritating and highly toxic gases of nitrogen oxides. (May react with many metals, particularly in powdered form, to form extremely flammable hydrogen gas.)
<b>Specific Methods</b>	When material is not involved in fire: Do not use water on material itself. Small fire: Use CO2, dry chemical, dry sand or flooding quantities of water. If safe to do so, move undamaged containers from the fire area. Large fire: Flood fire with large quantities of water while knocking down vapours with water fog - If insufficient water supply, knock down vapours only. Cool containers with flooding quantities of water until well after the fire is out. Avoid getting water inside the containers.

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<b>Specific hazards arising from the chemical</b>	Does not burn but may produce poisonous and/or corrosive fumes upon heating. Heat of reaction may be enough to ignite combustible materials. Will react with water possibly violently releasing flammable, poisonous and/or corrosive gases and runoff. Contact with metals may evolve flammable hydrogen gas. Fire may produce irritating, poisonous and/or corrosive gases. Runoff may pollute waterways. Containers may explode when heated or contaminated with water.
<b>Hazchem Code</b>	2R
<b>Precautions in connection with Fire</b>	Wear SCBA and acid-resistant chemical splash suit. Structural firefighter's uniform is NOT effective for these materials.

## 6. Accidental release measures

<b>Spills &amp; Disposal</b>	Do not touch or walk through spilled material. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Stop leak if safe to do so - Prevent entry into waterways, drains or confined areas. Vapour-suppressing foam may be used to control vapours - Water spray may be used to knock down or divert vapour clouds. <b>DO NOT GET WATER INSIDE CONTAINERS.</b> Small Spill: Cover with DRY earth, sand or other non-combustible material followed by a plastic sheet to minimize spreading or contact with rain. Use clean non-sparking tools to collect material and place it into loosely-covered plastic containers for later disposal.
<b>Personal Precautions</b>	Evacuate the area of all non-essential personnel. Avoid substance contact. Avoid generation of dusts: do not inhale dusts. Ensure supply of fresh air in enclosed rooms. Avoid inhalation of fumes.
<b>Personal Protection</b>	Wear appropriate protective clothing and equipment - Refer to section 8.
<b>Clean-up Methods - Small Spillages</b>	Absorb or contain liquid with sand, earth or spill control material. Shovel up using non sparking tools and place in a labelled, sealable container for subsequent safe disposal. Put leaking containers in a labelled drum or overdrum.
<b>Clean-up Methods - Large Spillages</b>	Seek expert advice on handling and disposal.
<b>Environmental Precautions</b>	Do not discharge to the environment or sewer system. Prevent further leaking if safe to do so. If product contaminates rivers and lakes or drains inform respective authorities.

## 7. Handling and storage

<b>Precautions for Safe Handling</b>	Avoid ingestion and inhalation of gas/fumes/vapour/spray. Avoid contact with skin and eyes, clothing and other combustible materials. Keep container tightly closed and locked up. Work under fume extractor. Use only with adequate ventilation. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Wash thoroughly after handling. Immediately change contaminated clothing and wash promptly. Discard contaminated shoes. Keep away from incompatibles such as reducing agents, combustible materials, metals, alkalis. Do not use with metal spatula or other metal items. May corrode metallic surfaces. Do not empty into drains, dispose of this material and its container in a safe way. 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.
<b>Conditions for safe storage, including any incompatibilities</b>	Corrosive materials should be stored in a separate safety storage cabinet or room. Store in tightly closed containers, in a cool, dry, well-ventilated area with acid resistant floors and good drainage. Store away from incompatible substances, alkalis, combustible materials, organic materials and metals - may corrode metallic surfaces. Keep container closed when not in use. Inspect periodically for damage or evidence of leaks or corrosion. Protect from physical damage, direct sunlight, heat, water and moisture. Do not wash out container and use it for other purposes. Containers of this material may be hazardous when empty since they retain product residues (vapours, liquid); observe all warnings and precautions listed for the product.
<b>Corrosiveness</b>	Nitric acid (5-70%) is corrosive (corrosion rate greater than 1.25 mm/year) to most metals at 21 °C, including carbon steel (e.g. types 1010, 1020, 1075 and 1095), type 3003 aluminium, 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), aluminium 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. Aluminium alloys (types 1100 and 3003) can only be used for very high concentrations of nitric acid (80-100%).

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Corrosivity to Non-Metals: Nitric acid (5-100%) at 21 °C attacks plastics, such as acrylonitrile-butadiene-styrene (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%) 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%)). Nitric acid (concentrations up to 50%) 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.

**Storage Regulations** Refer Australian Standard AS 3780-1994 'The storage and handling of corrosive substances'.

**Storage Temperatures** Store at a temperature between 15 and 23 °C.

**Recommended Materials** Store in a metallic or coated fibreboard drum using a strong polyethylene inner package.

## 8. Exposure controls/personal protection

Occupational exposure limit values	Name	STEL		TWA		Footnote
		mg/m <sup>3</sup>	ppm	mg/m <sup>3</sup>	ppm	
	Nitric acid	10	4	5.2	2	
<b>Other Exposure Information</b>	A time weighted average (TWA) has been established for Nitric acid (Safe Work Australia) of 5.2 mg/m <sup>3</sup> , (2 ppm). The corresponding STEL level is 10 mg/m <sup>3</sup> , (4 ppm). The STEL (Short Term Exposure Limit) is an exposure value that should not be exceeded for more than 15 minutes and should not be repeated for more than 4 times per day. There should be at least 60 minutes between successive exposures at the STEL. The exposure value at the TWA is the average airborne concentration of a particular substance when calculated over a normal 8 hour working day for a 5 day working week.					
<b>Appropriate engineering controls</b>	Provide sufficient ventilation to ensure that the working environment is below the TWA (time weighted average). Where vapours or mists are generated, particularly in enclosed areas, and natural ventilation is inadequate, a flame proof exhaust ventilation system is required. Refer to AS 1940-The storage and handling of flammable and combustible liquids and AS 2430-Explosive gas atmospheres for further information concerning ventilation requirements.					
<b>Respiratory Protection</b>	Where ventilation is not adequate, respiratory protection may be required. Avoid breathing vapours or mists. Select and use respirators in accordance with AS 1716 - Respiratory Protective Devices and be selected in accordance with AS 1715 - Selection, Use and Maintenance of Respiratory Protective Devices. When mists or vapours exceed the exposure standards then the use of the following is recommended: Approved respirator with organic vapour and dust/mist filters. Filter capacity and respirator type depends on exposure levels.					
<b>Eye Protection</b>	The use of a face shield, chemical goggles or safety glasses with side shield protection as appropriate. Must comply with Australian Standards AS 1337 and be selected and used in accordance with AS 1336.					
<b>Hand Protection</b>	Hand protection should comply with AS 2161, Occupational protective gloves - Selection, use and maintenance. Recommendation: Excellent: Heavy weight (0.28 - 0.33 mm) butyl rubber or neoprene gloves. Unsupported Viton. Good: Neoprene gloves Fair: PVC or rubber gloves. Poor: Nitrile rubber gloves					
<b>Personal Protective Equipment</b>	Final choice of personal protective equipment will depend on individual circumstances and/or according to risk assessments undertaken.					
<b>Footwear</b>	Safety boots in industrial situations is advisory, foot protection should comply with AS 2210, Occupational protective footwear - Guide to selection, care and use.					
<b>Body Protection</b>	Clean clothing or protective clothing should be worn. Clothing for protection against chemicals should comply with AS 3765 Clothing for Protection Against Hazardous Chemicals. Viton over Butyl apron. Impervious protective clothing.					
<b>Hygiene Measures</b>	Always wash hands before smoking, eating or using the toilet. Wash contaminated clothing and other protective equipment before storing or re-using.					

## 9. Physical and chemical properties

<b>Form</b>	Liquid
<b>Appearance</b>	Clear, colourless to slightly yellowish liquid. Hygroscopic (absorbs moisture from the air).
<b>Odour</b>	Disagreeable, pungent, acrid, suffocating odour.

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<b>Melting Point</b>	-20 °C (50%)
<b>Boiling Point</b>	114.7-116.4 °C (50%).
<b>Solubility in Water</b>	Miscible (soluble) in all proportions.
<b>Solubility in Organic Solvents</b>	Soluble in diethyl ether. Reacts with many organic solvents (e.g. alcohols, ketones, ethers and esters).
<b>Specific Gravity</b>	1.41 (68%); 1.31 (50%); 1.2489 (40% @ 20 °C); 1.1822 (30% @ 20 °C); 1.1170 (20% @ 20 °C).
<b>pH</b>	<1 (0.1 M solution, 20 °C); strong acid.
<b>Vapour Pressure</b>	Partial Pressure: 0.37-0.4 kPa (2.78-3 mm Hg) 70% at 20 °C; 0.547 kPa (4.1 mm Hg) 70% at 25 °C; 0.036-0.04 kPa (0.27-0.3 mm Hg) 50% at 20 °C; 0.052 kPa (0.39 mm Hg) 50% at 25 °C.
<b>Vapour Density (Air=1)</b>	The highest known value is 2.3 (Air = 1) (Nitric acid, fuming). Weighted average: 1.12 (Air = 1) (30%).
<b>Odour Threshold</b>	0.29-0.98 ppm (cited as 0.75 to 2.5 mg/m <sup>3</sup> ) (detection). Warning Properties: NOT RELIABLE - Odour threshold about the same magnitude as TWA. Irritation has been reported at 60.6 ppm (cited as 155 mg/m <sup>3</sup> ) (30 times greater than TWA).
<b>Viscosity</b>	0.761 cps @ 25 °C.
<b>Volatile Component</b>	100 %vol @ 21 °C (as water and acid)
<b>Partition Coefficient: n-octanol/water</b>	Log P(oct) = 0.21 (estimated).
<b>Flammability</b>	Not combustible. Can react with most metals to liberate flammable hydrogen gas which can form explosive mixtures with air. Heat of reaction with reducing agents or combustibles may cause ignition.
<b>Molecular Weight</b>	63.01 (100%)
<b>Oxidising Properties</b>	Will cause a moderate increase in the burning rate of combustible materials with which it comes into contact.
<b>Saturated Vapour Concentration</b>	3700-3900 ppm (0.37-0.39%) (70% at 20 °C); 5400 ppm (0.54%) (70% at 25 °C, calculated); 400 ppm (0.04%) (50% at 20 °C); 500 ppm (0.05%) (50% at 25 °C, calculated).
<b>Other Information</b>	The yellow colour is due to the release of nitrogen dioxide on exposure to light.

## 10. Stability and reactivity

<b>Chemical Stability</b>	Stable under normal conditions of storage and handling. Slow decomposition occurs at room temperature (accelerated by exposure to light, air, organic matter and increases in temperature) with formation of nitrogen oxides, which may colour the acid yellow or red. Containers may burst when heated.
<b>Conditions to Avoid</b>	Heat and high temperatures, light, air, moisture, confined spaces, combustibles, organic compounds, and incompatible materials.
<b>Incompatible Materials</b>	Most metals particularly powdered metals (e.g. antimony, bismuth, germanium, manganese or titanium), metal alloys, alkali metals (e.g. lithium or sodium) or alkaline earth metals (e.g. magnesium or calcium), strong bases, metallic oxides, nonmetallic oxides, organic chemicals (e.g., water or steam, alcohols, acids, anhydrides, aldehydes, ketones, amines, ethers, turpentine, hydrocarbons, alkanethiols, nitriles, nitrides, organic nitro compounds, acetylidenes, nitroalkanes and nitroaromatics), combustible materials, flammable liquids, oxidizable substances, hydrogen peroxide, chromic acid, 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), crotonaldehyde, hydrazine and derivatives, dimethylhydrazine, divinyl ether, pyrocatechol, ammonia, aniline, diborane, furfuryl alcohol or terpenes, sulfides (e.g. hydrogen sulfide, sodium or potassium sulfide), carbides (e.g. cesium carbide), halogens, fluorine, halogen compounds, phosphorus halides (e.g. phosphorus trichloride) or other phosphorus compounds (e.g. cadmium phosphide), metal cyanides (e.g. sodium cyanide, potassium cyanide or calcium cyanide), nonmetallic halides, sulfur halides (e.g. sulfur dichloride or disulfur dibromide), and lithium silicide.
<b>Hazardous Decomposition Products</b>	Toxic nitrogen oxides fumes and hydrogen nitrate. Will react with water or steam to produce heat and toxic and corrosive fumes.
<b>Possibility of hazardous reactions</b>	Highly reactive - may react violently or explosively and/or ignite spontaneously with many organic and inorganic chemicals, combustible and easily oxidizable materials. May react violently or explosively with 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) and/or cause fire, with generation of extremely flammable hydrogen gas. Extremely reactive or incompatible with alkalis. May react violently or explosively with organic chemicals (e.g., alcohols, acids, anhydrides,



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aldehydes, ketones, amines, ethers, hydrocarbons, alkanethiols, nitriles, nitroalkanes and nitroaromatics) and/or ignite spontaneously. May react violently or explosively with non-metals (e.g. arsenic, boron, finely divided carbon, phosphorus or silicon), non-metalhydrides (e.g. arsine, phosphine, stibine or tetraborane) or reducing agents (e.g. potassium phosphinate) and ignite. Ignites spontaneously (hypergolic) on contact with crotonaldehyde, hydrazine, dimethylhydrazine, divinyl ether, pyrocatechol, the ignition delay being 1 millisecond (ms). Mixtures with ammonia, aniline, diborane, furfuryl alcohol or terpenes are self-igniting. Reacts with sulfides (e.g. sodium or potassium sulfide) to produce toxic and flammable hydrogen sulfide gas and toxic sulfur dioxide gas. May ignite and/or explode with carbides (e.g. cesium carbide), fluorine, phosphorus halides (e.g. phosphorus trichloride) or other phosphorus compounds (e.g. cadmium phosphide). Mixtures with metal cyanides (e.g. sodium cyanide, potassium cyanide or calcium cyanide) produce a violent reaction, with formation of very toxic and flammable hydrogen cyanide. Interaction with sulfur halides (e.g. sulfur dichloride or disulfur dibromide) is violent, with generation of the corresponding hydrogen halide. Reacts with water or steam to produce heat and toxic, corrosive and flammable vapours. The acid must be added slowly to water with stirring to avoid possible splattering.

**Hazardous Polymerization**

Will not occur.

## 11. Toxicological Information

<b>Ingestion</b>	May be fatal if swallowed. Corrosive! Swallowing can cause immediate pain and burns to the lips, mouth, tongue, teeth, throat, oesophagus, and digestive system, severe abdominal pain, nausea, vomiting, bloody vomiting, diarrhoea and death if ingested. May cause perforation of the digestive tract. May cause severe and permanent damage to the digestive tract. Liquid or spray mist may produce tissue damage to mouth. The uptake of large quantities of nitrites/nitrates, in general produces methaemoglobinaemia. Because of immediate pain when taken into the mouth, strong mineral acids are not often swallowed. Ingestion is not a typical route of occupational exposure. The lowest located lethal dose in humans is 430 mg/kg.
<b>Inhalation</b>	Corrosive. May be fatal if inhaled. Inhalation of vapours or mists may produce severe irritation and chemical burns to the respiratory tract and the digestive system, and may cause burning pain in the nose and throat, coughing, sneezing, wheezing, choking, and difficulty breathing. Inhalation of mist can cause cause harmful corrosive effects including lesions of the nasal septum. Severe exposure to nitric acid fumes and/or vapours may cause acute pulmonary oedema, asphyxia, chemical pneumonitis, spasm, inflammation, oedema of the larynx and bronchi, upper airway obstruction caused by oedema, or chronic obstructive lung disease, bronchopneumonia, cardiac failure, delayed pulmonary fibrosis, and death. Aspiration may lead to pulmonary oedema. Symptoms of pulmonary oedema (chest pain and shortness of breath) can be delayed for up to 24 or 48 hours after exposure. May affect behaviour and urinary system. Other symptoms may include nausea, and vomiting.
<b>Skin</b>	Corrosive to the skin. Liquid and mist cause severe burns to all body tissue. Symptoms may include severe irritation, itching, pain, reddening, blistering, scaling, deep, penetrating ulcers, a change in skin colour from yellow to brown and permanent scarring, depending on the concentration of the solution and the duration of contact.
<b>Eye</b>	Corrosive. Contact may cause severe eye burns, and permanent injury, including blindness, depending on the concentration of the solutions and duration of contact. Liquid or spray mist may produce tissue damage to eyes. Vapours are irritating and may cause damage to the eyes. Symptoms may include inflammation, redness, watering, and itching.
<b>Carcinogenicity</b>	Chronic overexposure to vapour, fumes or aerosols may produce adverse effects on the lungs and erosion of the teeth. Acid mists, strong inorganic: Classified by the International Agency for Research on Cancer (IARC) as a Group 1. Group 1 - The agent is carcinogenic to humans.
<b>Chronic Effects</b>	Repeated or prolonged inhalation of vapours and mists can cause respiratory irritation, with the possible development of lung injury (e.g. chronic bronchitis), and more severe exposure results in a chemical pneumonitis and pulmonary oedema which may be fatal. Symptoms may or may not be delayed. Severe over-exposure can result in death. It may also affect behaviour (headache, dizziness, drowsiness, muscle contraction or spasticity, weakness, loss of coordination, mental confusion), and urinary system (kidney failure, decreased urinary output after several hours of uncorrected circulatory collapse). Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation, skin burns and ulcerations. Repeated skin contact with low concentrations of acid solutions, mists or vapour can cause skin irritation, redness, swelling and pain (dermatitis). Repeated exposure to nitric acid vapours, mists or aerosols may cause discolouration and/or erosion of teeth (dental enamel).

## 12. Ecological information

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<b>Ecological Information</b>	Toxic for aquatic organisms. Toxic effect on fish and plankton. Harmful effect due to pH shift. Forms corrosive mixtures with water even if diluted. Does not cause biological oxygen deficit. Hazard for drinking water supplies. The following applies to nitrates in general: may contribute to the eutrophication of water supplies. Hazard for drinking water.
<b>Mobility</b>	Distribution: log p(o/w): -2.3 (anhydrous substance).
<b>Environmental Fate</b>	Terrestrial: 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.
<b>Bioaccumulative Potential</b>	No bioaccumulation is to be expected (log P(o/w) <1).
<b>Environmental Protection</b>	Do not allow to enter waters, waste water, or soil!
<b>Acute Toxicity - Fish</b>	The following applies to nitrates in general: LC50 > 500 mg/l.

### 13. Disposal considerations

<b>Disposal Considerations</b>	Dispose of according to relevant local, state and federal government regulations.
<b>Waste Disposal</b>	Small quantities may be diluted & carefully neutralised with soda ash or slaked lime. After dilution and neutralisation, disposal may be possible through the sewer system after consultation with your local authority. Larger quantities should be disposed of through a registered Waste Disposal Authority or agent.

### 14. Transport information

<b>Transport Information</b>	Dangerous goods of Class 8 (Corrosive) are incompatible in a placard load with any of the following: Class 1, Class 4.3, Class 5, Class 6, if the Class 6 dangerous goods are cyanides and the Class 8 dangerous goods are acids, Class 7; and are incompatible with food and food packaging in any quantity.
<b>U.N. Number</b>	2031
<b>UN proper shipping name</b>	NITRIC ACID
<b>Transport hazard class(es)</b>	8
<b>Hazchem Code</b>	2R
<b>Packing Group</b>	II
<b>EPG Number</b>	8D1
<b>IERG Number</b>	40

### 15. Regulatory information

<b>Regulatory Information</b>	Listed in the Australian Inventory of Chemical Substances (AICS). HUMAN HEALTH TIER II ASSESSMENT FOR Nitric acid NICNAS
<b>Poisons Schedule</b>	S6

### 16. Other Information

<b>Literature References</b>	'Standard for the Uniform Scheduling of Medicines and Poisons No. 15', Commonwealth of Australia, November 2016. Lewis, Richard J. Sr. 'Hawley's Condensed Chemical Dictionary 13th. Ed.', Rev., John Wiley and Sons, Inc., NY, 1997. National Road Transport Commission, 'Australian Code for the Transport of Dangerous Goods by Road and Rail 7th. Ed.', 2007. Safe Work Australia, 'National Code of Practice for the Preparation of Safety Data Sheets for Hazardous Chemicals', 2011. Standards Australia, 'SAA/SNZ HB 76:2010 Dangerous Goods - Initial Emergency Response Guide', Standards Australia/Standards New Zealand, 2010. Safe Work Australia, 'Approved Criteria for Classifying Hazardous Substances [NOHSC:1008 (2004)]'. Safe Work Australia, 'Hazardous Substances Information System, 2005'. Safe Work Australia, 'National Code of Practice for the Labelling of Safe Work Hazardous Substances (2011)'.
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Infosafe No™	1CHMC	Issue Date : November 2017	RE-ISSUED by ACR
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Product Name : **NITRIC ACID 6 - 64%**

Classified as hazardous

**Contact  
Person/Point**

Safe Work Australia, 'National Exposure Standards for Atmospheric Contaminants in the Occupational Environment [NOHSC:1003(1995) 3rd Edition]'.  
Paul McCarthy Ph. (08) 8440 2000

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**Empirical Formula &  
Structural Formula**

Empirical Formula: H-N-O3 (100%).

Structural Formula: H-O-N(O)=O (100%).

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