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Safety Data Sheet

1. IDENTIFICATION OF PRODUCT AND SUPPLIER

1.1 Product identifiers

Product name : NITRIC ACID 65 – 70%

1.2 Other means of identification

Azotic acid; Engraver's acid; Aqua fortis

1.3 Recommended use of the product and restrictions on use

Laboratory chemical, manufacture of nitrates and nitro compounds for fertilisers, dye intermediate, explosives

1.4 Details of supplier of the safety data sheet

Company : AGent Sales & Services Pty Ltd

Street address : 38 May Holman Drive, Bassendean, Western Australia 6054

Telephone : (+61 8) 6270 4500

Fax : (+61 8) 6270 4544

1.5 Emergency telephone number

Telephone : 1300 883 844

2. HAZARDS IDENTIFICATION

2.1 GHS Classification

3 Oxidising liquids (Category 3)
Corrosive to metals (Category 1)
Skin corrosion / irritation (Category 1A)
Serious eye damage / eye irritation (Category 1)
Specific target organ toxicity - single exposure (Category 3), Respiratory system

GHS Label elements, including precautionary statements

Pictogram :

Signal word : Danger

Hazard statement(s)

H272	May intensify fire; oxidiser.
H290	May be corrosive to metals.
H314	Causes severe skin burns and eye damage.
H335	May cause respiratory irritation.

Precautionary statement(s)

Prevention

P210	Keep away from all sources of ignition. No smoking.
P220	Keep / store away from clothing / organic material / combustible materials.

P221	Take any precaution to avoid mixing with combustibles / organic material.
P234	Keep only in original container.
P260	Do not breathe fume / gas / mist / vapours / spray.
P264	Wash hands thoroughly after handling.
P271	Use only outdoors or in well-ventilated area.
P280	Wear protective gloves / protective clothing / eye protection / face protection.

Response

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/shower.
P363	Wash contaminated clothing before re-use.
P304+P340+P310	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER or doctor/physician.
P305+P351+P338+P310	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/physician.
P370+P378	In case of fire: Use sand, dry chemical or alcohol-resistant foam to extinguish.
P390	Absorb spillage to prevent material damage.

Storage

P403+P233	Store in a well-ventilated place. Keep container tightly closed.
P405	Store locked up.
P406	Store in corrosive resistant container with a resistant inner liner.

Disposal

P501	Dispose of contents/ container to an approved waste disposal plant.

3.1 Other hazards

None.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Component	CAS Number	Classification	Concentration (%)
Nitric acid	7697-37-2	Ox. Liq 3; Met. Corr. 1; Skin Corr. 1A; Eye Dam. 1; STOT SE 3; H272; H290; H314; H335	65 - 70
Water	7732-18-5	-	Balance

For the full text of the H-Statements mentioned in this section, see Section 16

4. FIRST AID MEASURES

4.1 Description of First Aid measures

General advice

Contact the Poisons Information Centre (Phone: Australia 131 126; New Zealand 0800 764 766) or consult a doctor/physician. Show this safety data sheet to the doctor in attendance.

If inhaled

Remove victim from exposure to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Do NOT use mouth to mouth method. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Seek medical attention immediately.

In case of skin contact

Remove contaminated clothing. Immediately flush affected area with plenty of water for at least 15 minutes. Seek immediate medical attention. Wash clothing before reuse. Thoroughly clean or destroy contaminated shoes.

In case of eye contact

Immediately flush eyes with plenty of water for at least 15 minutes while holding eyelids open. Take care not to rinse contaminated water into the non-affected eye. Seek immediate medical attention.

If swallowed

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Seek immediate medical assistance.

4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in Section 2.2 and/or Section 11.

4.3 Indication of any immediate medical attention and special treatment needed

Treat symptomatically. Causes severe burns. Material is destructive to tissues of the mucous membranes and upper respiratory tract, eyes and skin. Inhalation may provoke the following symptoms: spasm, inflammation and oedema of the bronchi. Symptoms and signs of poisoning are: burning sensation, cough, wheezing, laryngitis, shortness of breath, headache, nausea, vomiting, pulmonary oedema. Effects may be delayed. Large doses may cause conversion of haemoglobin to methemoglobin, producing cyanosis, marked fall in blood pressure leading to collapse, coma and possibly death.

4.4 First Aid facilities

Eye wash facilities and safety shower should be available.

5. FIRE FIGHTING MEASURES

5.1 Suitable extinguishing media

Non-combustible liquid. Use water spray, sand, alcohol-resistant foam, dry chemical or carbon dioxide. Use water spray to cool unopened containers. Cool containers exposed to flames with water until well after the fire is out.

5.2 Special hazards arising from the chemical

Oxidiser: Contact with combustible material may cause fire. These substances will accelerate burning when involved in a fire. Some will react explosively with hydrocarbons (fuels). Some may decompose explosively when heated or involved in a fire. Runoff may create fire or explosion hazard. Thermal decomposition can lead to release of irritating gases and vapours.

5.3 Special protective equipment and precautions for fire fighters

Fire fighters should wear a positive-pressure self-contained breathing apparatus (SCBA) and protective fire-fighting clothing (includes fire-fighting helmet, coat, trousers, boots and gloves) or chemical splash suit.

5.4 Hazchem code

2R

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. Avoid breathing vapours, mist or gas. Increase ventilation. Ventilate closed spaces before entering them. Eliminate all sources of ignition. Evacuate personnel to safe areas. Keep out of low areas.
For personal protection see Section 8.

6.2 Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided. If contamination of sewers or waterways has occurred, advise local emergency services. Observe all local and national regulations.

6.3 Methods and materials for containment and cleaning up

Slippery when spilt. Avoid accidents, clean up immediately. Wear protective equipment to prevent skin and eye contact and breathing in vapours. Work up wind or increase ventilation. Dike far ahead of spill for later disposal. Soak up spilled product using absorbent non-combustible material such as sand or soil. Avoid using sawdust or cellulose. When saturated, collect the material and transfer to a suitable, labelled chemical waste container and dispose of promptly as hazardous waste. Never return spills to original containers for re-use. Neutralize spill area and washings with soda ash or lime.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Ensure an eye bath and safety shower are available and ready for use. Observe good personal hygiene practices and recommended procedures. Wash thoroughly after handling. Take precautionary measures against static discharges by bonding and grounding equipment. Avoid contact with eyes, skin and clothing. Do not inhale product vapours. Avoid prolonged or repeated exposure. Keep away from clothing and other combustible materials. Do not taste or swallow. Do not eat, drink or smoke when using the product. Use caution when combining with water; DO NOT add water to acid, ALWAYS add acid to water while stirring to prevent release of heat, steam and fumes.

7.2 Conditions for safe storage, including any incompatibilities

Store in a cool, dry, well-ventilated area. Keep containers tightly closed when not in use. Inspect regularly for deficiencies such as damage or leaks. Protect against physical damage. Store away from incompatible materials as listed in Section 10. Keep away from heat and sources of ignition. Do not store near combustible materials.

This material is classified as a Dangerous Goods Class 8 Corrosive and Subsidiary Risk 5.1 Oxidiser by the criteria of the ADG Code and must be stored and handled in accordance with the relevant regulations.

This material is a Scheduled Poison S6 and must be stored, maintained and used in accordance with the relevant regulations.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

8.1 Control parameters

Occupational Exposure Limits

Chemical Name	Reference	TWA – Peak Limitation		STEL		Carcinogen Category	Notices
		ppm	mg/m³	ppm	mg/m³		
Nitric acid (7697-32-2)	ASCC	2	5.2	4	10	-	-

As published in “*Workplace Exposure Standards for Airborne Contaminants, December 2011”* by SWA.

These Workplace Exposure Standards are guides to be used in the control of occupational health hazards. All atmospheric contamination should be kept to as low a level as is workable. These workplace exposure standards should not be used as fine dividing lines between safe and dangerous concentrations of chemicals. They are not a measure of relative toxicity.

Biological Limits
None allocated for this product.

8.2 Exposure controls

Appropriate engineering controls
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.
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. Adequate ventilation should be provided so that exposure limits are not exceeded. If achieving safe exposure levels does not require engineering controls, then a detailed and documented risk assessment using the relevant Personal Protective Equipment (PPE) (refer to PPE section below) as a basis must be carried out to determine the minimum PPE requirements

Personal protective equipment (PPE)

The selection of PPE is dependent on a risk assessment. The risk assessment should consider the work situation, the physical form of the chemical, the handling methods and environmental factors.

Eye/face protection
Tightly fitting safety goggles with full face-shield. See Australian Standards (AS/NZS 1336 & 1337).

Skin protection
Wear elbow length protective gloves, protective clothing and safety footwear and splash apron appropriate for the risk of exposure. See Australian Standards (AS 2161 & 2919 and AS/NZS 3765/2210). Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use. Wash and dry hands.

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination or type ABEK respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. See Australian Standards (AS/NZS 1715 & 1716).

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Form : Liquid Colour : Clear, colourless to yellow
Odour:	Irritating
Odour Threshold:	No data available
pH:	<1
Melting Point:	No data available
Boiling Point/Range:	122ºC @ 101.3 kPa
Decomposition Temperature:	-42°C
Evaporation Rate:	No data available
Flash Point:	Not applicable
Flammability Limits:	Not applicable
Specific Gravity:	1.398
Vapour Density (air=1):	No data available
Vapour Pressure:	4.9 kPa @ 50°C
% Volatiles:	No data available
Solubility in water:	Miscible with water

10. STABILITY AND REACTIVITY

10.1 Reactivity

Highly reactive. Fumes in air. Contact with water could cause exothermic reaction.

10.2 Chemical stability

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.

10.3 Possibility of hazardous reactions

Highly reactive - may react violently or explosively and/or ignite spontaneously with many organic and inorganic chemicals, combustible and easily oxidisable materials. May react violently or explosively with most metals particularly powdered metals, alkali metals or alkaline earth metals and/or cause fire, with generation of extremely flammable hydrogen gas. May react violently or explosively with organic chemicals and/or ignite spontaneously. May react violently or explosively with non-metals, non-metal hydrides or reducing agents 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 sulphides to produce toxic and flammable hydrogen sulphide gas and toxic sulphur dioxide gas. May ignite and/or explode with carbides, fluorine, phosphorus halides or other phosphorus compounds. Mixtures with metal cyanides produce a violent reaction, with formation of very toxic and flammable hydrogen cyanide. 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.

10.4 Conditions to avoid

Heat and high temperatures, light, air, confined spaces, combustibles, organic compounds, and incompatible materials.

10.5 Incompatible materials

Most metals particularly powdered metals (e.g. antimony, bismuth, 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, non-metallic oxides, organic chemicals (e.g., alcohols, acids, anhydrides, aldehydes, ketones, amines, ethers, turpentine, hydrocarbons, alkanethiols, nitriles, nitrides, organic nitro compounds, acetylidenes, nitroalkanes and nitroaromatics), combustible materials, flammable liquids, oxidisable substances, hydrogen peroxide, chromic acid, non-metals (e.g. arsenic, boron, finely divided carbon, phosphorus or silicon), non-metal hydrides (e.g. arsine, phosphine, tetraborane) or reducing agents (e.g. potassium phosphinate), crotonaldehyde, hydrazine and derivatives, dimethylhydrazine, divinyl ether, pyrocatechol, ammonia, aniline, diborane, furfuryl alcohol or terpenes, sulphides, carbides, halogens, fluorine, halogen compounds, phosphorus halides or other phosphorus compounds, metal cyanides, non-metallic halides, sulphur halides, and lithium silicide.

10.6 Hazardous decomposition products

Toxic nitrogen oxides fumes and hydrogen nitrate. Will react with water or steam to produce heat and toxic and corrosive fumes.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity
LC_{50} Inhalation, rat is 919 ppm/1h
LD oral, human is 430 mg/kg (Lowest published lethal dose, NIOSH)

Skin corrosion/irritation
Causes severe skin burns

Serious eye damage/eye irritation
Causes serious eye damage. Risk of blindness.

Respiratory or skin sensitisation
No data available

Germ cell mutagenicity
No data available

Carcinogenicity
No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

Reproductive toxicity
No data available.

Specific target organ toxicity (STOT) - single exposure
The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with respiratory tract irritation.

Specific target organ toxicity (STOT) - repeated exposure
No data available

Aspiration hazard
No data available

Health Effects
No adverse health effects expected if the product is handled in accordance with this Safety Data Sheet and the product label. Symptoms or effects that may arise if the product is mishandled and overexposure occurs are:

Eye contact :	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.
Skin contact :	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.
Ingestion :	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 and diarrhoea. 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. Large doses may cause conversion of haemoglobin to methemoglobin, producing cyanosis, marked fall in blood pressure, leading to collapse, coma, and possibly death. Because of immediate pain when taken into the mouth, strong mineral acids are not often swallowed.

Inhalation : Inhalation may provoke the following symptoms: spasm, inflammation and oedema of the bronchi and larynx, pneumonitis, pulmonary oedema, Symptoms and signs of poisoning are burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, vomiting, pulmonary oedema. Effects may be delayed for up to 24 or 48 hours after exposure.

11.2 Information on possible routes of exposure

Serious local effects by all routes of entry: inhalation, ingestion, skin and/or eye contact.

11.3 Additional Information

RTECS: QU5775000

12. ECOGICAL INFORMATION

12.1 Ecotoxicity

Avoid contaminating waterways.

Toxicity to fish:
LC_{50} (Gambusia affinis, mosquito fish) = 72 mg/L, 96h
LC_{50} (Rainbow trout) = 2,800 mg/L, 96h

12.2 Persistence and degradability

No data available.

12.3 Bioaccumulative potential

No data available.

12.4 Mobility in soil

No data available.

12.5 Other adverse effects

No data available.

13. DISPOSAL CONSIDERATIONS

13.1 Disposal methods and containers

Dispose of in accordance with all local, state and federal regulations. All empty packaging should be disposed of in accordance with Local, State, and Federal Regulations or recycled/reconditioned at an approved facility.

13.3 Special precautions for landfill or incineration

Contact a specialist disposal company or the local waste regulator for advice.

14. TRANSPORT INFORMATION

Classified as a Dangerous Goods by the criteria of the ADG Code for transport by road or rail
Classified as a Dangerous Goods by the criteria of the IMDG Code for transport by sea
Classified as a Dangerous Goods by the criteria of the IATA Code for transport by air

14.1 UN number

ADG : 2031 **IMDG :** 2031 **IATA :** 2031

14.2 Proper shipping name

ADG : NITRIC ACID
IMDG : NITRIC ACID
IATA : NITRIC ACID

14.3 Transport hazard class(es)

ADG : 8 Corrosive (5.1) **IMDG :** 8 Corrosive (5.1) **IATA :** 8 Corrosive (5.1)

14.4 Packing group

ADG : II **IMDG :** II **IATA :** II

14.5 Environmental hazards

ADG : No **IMDG Marine Pollutant :** No **IATA :** No

14.6 Special precautions for users

No data

14.7 Hazchem code

ADG : 2R **IMDG EMS :** F-A, S-Q

14.8 Dangerous goods initial emergency response guide (SAA/SNZ HB76:2010)

40

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations

Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP)
S6 Poison

Carcinogen classification under WHS Regulations 2011, Schedule 10
Not listed

Notification status
AICS On the inventory, or in compliance with the inventory.

16. OTHER INFORMATION

Key / legend to abbreviations and acronyms used in the MSDS

ADG	Australian Dangerous Goods
ASCC	Australian Safety and Compensation Council
DEC	Department of Environment and Conservation
GHS	Globally Harmonised System of Classification & Labelling of Chemicals
NIOSH	National Institute for Occupational Safety and Health
NOHSC	National Occupational Health and Safety Commission
RTECS	Registry of Toxic Effects of Chemical Substances.
SUSDP	Standard for the Uniform Scheduling of Drugs and Poisons
Eye Dam.	Serious eye damage
Met. Corr.	Corrosive to metals
Ox. Liq.	Oxidising liquids
Skin Corr.	Skin corrosion
STOT SE3	Specific target organ toxicity (single exposure) - Category 3
H272	May intensify fire; oxidiser
H290	May be corrosive to metals
H314	Causes severe skin burns and eye damage
H335	May cause respiratory irritation
TWA	Time weighted average
STEL	Short term exposure level
SWA	Safe Work Australia
Peak Limitations	A ceiling concentration that should not be exceeded over a measurement period, which should be as short as possible, but not exceeding 15 minutes
LD_{50}	Lethal dose 50. The single dose of a substance that causes the death of 50% of an animal population from exposure to the substance by any route other than inhalation
LC_{50}	Lethal concentration that kills 50% of an animal population within a specified time
TD Lo	The lowest dose of a substance known to have produced signs of toxicity
RTECS	Registry of Toxic Effects of Chemical Substances
g/L	Grams per litre
g/cm^3	Grams per cubic centimetre
mg/m^3	Milligrams per cubic metre
mg/kg	Milligrams per kilogram
pH	Relates to hydrogen ion concentration - this value will relate to a scale of 0 - 14, where 0 is highly acidic and 14 is highly alkaline
WHS	Work Health and Safety

Literature references

“Workplace Exposure Standards for Airborne Contaminants, December 2011” by SWA Work Health and Safety Regulations 2011

“Registry of Toxic Effects of Chemical Substances”. Ed. D. Sweet, US Dept. of Health & Human Services: Cincinatti, 2012.

Reason(s) for Issue:

Revised primary SDS
Alignment to GHS requirements

Disclaimer

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