SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier
   Product name: NITRIC ACID 90% Fuming
   CAS-No.: 7697-37-2
   Product code: AR1138

1.2 Relevant identified uses of the substance or mixture and uses advised against
   Identified uses: Chemical for analysis and production.

1.3 Details of the supplier of the safety data sheet
   Company: Chem-Supply Pty Ltd
   Address: 38 - 50 Bedford Street, Gillman SA 5013 Australia
   Telephone number: (08) 8440 2000
   Fax number: (08) 8440 2001

1.4 Emergency Telephone Number
   Emergency phone: Monday - Friday 8:30am - 5:00pm ACST (08) 8440 2000
   After hours: CHEMCALL 1800127406 / +6449179888

1.5 Manufacturer
   Company: RCI LABSCAN LIMITED.
   Address: 24 Rama 1 Road, Pathumwan, Bangkok 10330 Thailand

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture
   Classification according to WHS Regulations (Australia)
   Oxidizing liquids (Category 2), H272
   Corrosive to metals (Category 1), H290
   Skin corrosion (Category 1A), H314
   For the full text of the H-Statements mentioned in this Section, see Section 16.

   Classification according to EU Directives 67/548/EEC or 1999/45/EC
   O Oxidizing R8
   C Corrosive R35
   For the full text of the R-phrases mentioned in this Section, see Section 16.

2.2 Label elements
   Pictogram

   Signal word: Danger
   Hazard statement(s)
   H272 May intensify fire; oxidizer.
   H290 May be corrosive to metals.
   H314 Causes severe skin burns and eye damage.
Precautionary statement(s)
P210 Keep away from heat.
P220 Keep/Store away from clothing/combustible materials.
P221 Take any precaution to avoid mixing with combustibles.
P234 Keep only in original container.
P260 Do not breathe dusts/fume/gas/mist/vapours/spray.
P264 Wash hand thoroughly after handling.
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.
P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a position 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.
P310 Immediately call a POISON CENTER or doctor/physician.
P363 Wash contaminated clothing before reuse.
P390 Absorb spillage to prevent material damage.
P405 Store locked up.
P406 Store in corrosive resistant/ container with a resistant inner liner.

2.3 Other hazards
None

SECTION 3: Composition/information on ingredients

3.1 Substances
Not applicable

3.2 Mixture
Nitric acid
Synonyms Nitrous fumes, Red fuming nitric acid

<table>
<thead>
<tr>
<th>CAS-No</th>
<th>EC-No</th>
<th>EC-Index-No</th>
<th>Formula</th>
<th>Molecular Weight</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>7697-37-2</td>
<td>231-714-2</td>
<td>007-004-00-1</td>
<td>HNO₃</td>
<td>63.01 g/mol</td>
<td>90</td>
</tr>
</tbody>
</table>

Hazardous ingredients according to WHS Regulations (Australia)

<table>
<thead>
<tr>
<th>Component</th>
<th>Concentration</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitric acid</td>
<td>90%</td>
<td>Oxidizing liquids (Category 2), H272</td>
</tr>
<tr>
<td>CAS-No</td>
<td>7697-37-2</td>
<td>Corrosive to metals (Category 1), H290</td>
</tr>
<tr>
<td>EC-No</td>
<td>231-714-2</td>
<td>Skin corrosion (Category 1A), H314</td>
</tr>
<tr>
<td>EC-Index-No</td>
<td>007-004-00-1</td>
<td></td>
</tr>
</tbody>
</table>

Hazardous ingredients according to Directive 1999/45/EC

<table>
<thead>
<tr>
<th>Component</th>
<th>Concentration</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitric acid</td>
<td>90%</td>
<td>O, Oxidizing, R8</td>
</tr>
<tr>
<td>CAS-No</td>
<td>7697-37-2</td>
<td>C, Corrosive, R35</td>
</tr>
<tr>
<td>EC-No</td>
<td>231-714-2</td>
<td></td>
</tr>
<tr>
<td>EC-Index-No</td>
<td>007-004-00-1</td>
<td></td>
</tr>
</tbody>
</table>

For the full text of the H-Statements and R-Phrases mentioned in this Section, see Section 16
SECTION 4: First aid measures

4.1 Description of first aid measures

**General advice**
Show this safety data sheet to the doctor in attendance.

**Inhalation**
Move to fresh air in case of accidental inhalation of vapors. Keep patient warm. In case of shortness of breath, give oxygen. Apply artificial respiration only if patient is not breathing or under medical supervision. No artificial aspiration mouth to mouth or mouth to nose. Use suitable instruments/apparatus.

**Skin contact**
Remove contaminated clothing and wash affected skin with soap and water. Dab with polyethylene glycol 400. If signs of poisoning appear, treat as for inhalation. Obtain medical attention. Wash contaminated clothing before reuse.

**Eye contact**
If the substance has got into the eyes, immediately wash out with plenty of water at least 15 minutes. Obtain medical attention.

**Ingestion**
Rinse mouth. Do not induce vomiting. Keep patient warm. In case of shortness of breath, give oxygen. Apply artificial respiration only if patient is not breathing or under medical supervision. No artificial aspiration mouth to mouth or mouth to nose. Use suitable instruments/apparatus. Obtain medical attention. Never give anything by mouth to an unconscious person.

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 section 11.

4.3 Indication of any immediate medical attention and special treatment needed

After swallowing: make victim drink water (two glasses at the most), avoid vomiting, risk of perforation. Immediately call in physician. Do not attempt to neutralize.

SECTION 5: Firefighting measures

5.1 Extinguishing media

**Suitable extinguishing media**
In adaption to materials stored in the immediate neighborhood.

5.2 Special hazards arising from the substance or mixture

Non-combustible. Ambient fire may liberate hazardous vapors. Hydrogen may form upon contact with metals (danger of explosion). The following may develop in event of fire: nitrogen oxide.

5.3 Advice for firefighters

Do not stay in dangerous zone without self-contained breathing apparatus. In order to avoid contact with skin, keep a safety distance and wear suitable protective clothing.

5.4 Hazchem Code

2P

5.5 Further information

Contain escaping vapors with water. Prevent fire-fighting water from entering surface water or ground water.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Evacuate personnel to safe areas. Do not breathe vapors or spray mist. Wear a positive-pressure supplied-air respirator, flame retardant antistatic protective clothing. Shut off leaks if without risk. Keep people away from and upwind of spill/leak.
6.2 Environmental precautions
Contain or absorb leaking liquid with sand or earth, consult an expert. Prevent liquid entering sewers, basements and workpits. If substance has entered a water course or sewer or contaminated soil, advise police.

6.3 Methods and materials for containment and cleaning up
Spillage: soak up with inert absorbent material (e.g. sand, silica gel). Prevent liquid entering sewers, basements and workpits; vapor may create explosive atmosphere. Transfer to covered drums. Dispose of promptly.

6.4 Reference to other sections
For disposal see Section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling
Content may be under pressure. Due to the chemical properties of nitric acid, nitrogen oxides may develop on exposure to light. Provision of good ventilation in the working area. The floor must be acid resistant. Suitable material: Glass, stainless steel, iron, aluminium, polyvinyl chloride, polytetrafluoro ethylene PTFE (Teflon). Unsuitable material: Copper, nickel alloys, nickel, silver, tin and some iron alloys. Do not leave container open. Do not transport together with incompatible substances. Filter the solutions only with glass wool, glass chips, or ceramic filters. Do not use any filtration materials made of paper which risks ignition after drying.

7.2 Conditions for safe storage, including any incompatibilities
Keep tightly closed at room temperature in a dry, cool and well-ventilated place. Keep out of direct sunlight and away from heat, water and incompatible materials. Requirements for containers, no metal containers. Keep at a distance from sources of ignition (e.g. electrical devices, open flames, heat sources, sparks). Keep away from combustible materials.

7.3 Specific end use(s)
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters
Exposure limit (Safe Work Australia)
TWA: 2 ppm (5.2 mg/m³)
STEL: 4 ppm (10 mg/m³)

8.2 Exposure controls
Appropriate engineering controls
The product should only be used in ventilation hoods and fans.

Individual protection measures (Personal protective equipment, PPE)
Eye/face protection
Goggles giving complete protection to eyes.

Skin protection
Chemical resistant apron / corrosive protective clothing, heavy duty work shoes. Handle with gloves
- Splash contact wears gloves from butyl rubber material.
The select protective gloves have to satisfy the specifications of EU Directive 89/686 EEC and standard EN 374 derived from it.

Respiratory protection
In case of insufficient ventilation, wear suitable respiratory equipment. Required when vapor/aerosols are generated filter E-P2 (EN 141 or EN 14387).
Environmental exposure controls
Prevent liquid entering sewers, basements and workpits.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance: From Liquid: Color</td>
<td>Colorless to yellow</td>
</tr>
<tr>
<td>Odour</td>
<td>Pungent</td>
</tr>
<tr>
<td>pH</td>
<td>&lt;1 at 20°C</td>
</tr>
<tr>
<td>Melting point/range</td>
<td>-65.2 ºC</td>
</tr>
<tr>
<td>Boiling point/range</td>
<td>96.2 ºC</td>
</tr>
<tr>
<td>Flash point</td>
<td>Not Available</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>Not Available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>Not Available</td>
</tr>
<tr>
<td>Explosion limits: lower</td>
<td>Not Available</td>
</tr>
<tr>
<td>Explosion limits: upper</td>
<td>Not Available</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>~56 hPa at 20°C</td>
</tr>
<tr>
<td>Relative Vapor Density</td>
<td>Not Available</td>
</tr>
<tr>
<td>Density</td>
<td>1.48 g/ml at 20°C</td>
</tr>
<tr>
<td>Water solubility</td>
<td>Soluble at 20°C (development of heat)</td>
</tr>
<tr>
<td>Partition coefficient (n-octanol/water)</td>
<td>log Pow: -2.3</td>
</tr>
<tr>
<td>Auto-Ignition temperature</td>
<td>Not Available</td>
</tr>
<tr>
<td>Decomposition Temperature</td>
<td>Not Available</td>
</tr>
<tr>
<td>Viscosity</td>
<td>Not Available</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>Not Explosive</td>
</tr>
<tr>
<td>Oxidizing properties</td>
<td>May intensify fire; oxidizer.</td>
</tr>
</tbody>
</table>

SECTION 10: Stability and reactivity

10.1 Reactivity
Strong oxidizing agent.

10.2 Chemical stability
Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions
Risk of explosion in contact with: alcohols, fluorine, reducing agents, oxidizing agents, organic substances, acetone, acetonitrile, alkali acetylides, formic acid, aminopropandiol, aminothiazole/acid, aniline (self-ignition possible), antimony hydride, hydrogen arsenide, cotton, benzidine, benzene, calcium phosphide, cellulose, chlorobenzene, 4-chloronitroaniline, cyclohexanol, cyclohexylamine, cyclopentadiene, 1,2-dichloroethane, dichloromethane, diethyl ether (anhydrous), dimethylhydrazine, dinitrobenzene, dimethyl sulfide, dioxane; divinyl ether, acetic acid, acetic anhydride, ethylene glycol (heat), 5-ethyl-2-methylpyridine (heat), formic aldehyde, 2-formamido-1-phenyl-1,3-propanediol, glycerol/sulfuric acid, rubber, fuels, hexanol, hydrazine, hydrazones, potassium chloride + organic substances, potassium permanganate + alcohol, coal, hydrocarbons, copper, lithium silicide, organic solvents, manganese (rarely), metal cyanides, metal powders, mesitylene (heat), methylocyclohexanone, methylethylypyridine (rarely), nitrobenzene/ sulphuric acid, nitrochloroaniline, nitromethane, nitrotoluene, organic substances + sulphuric acid, petroleum, phosphorus trichloride, hydrogen phosphide, phthalic anhydride/sulphuric acid, pyrocatechol, mercury nitrate/ ethanol, sulphur dioxide (rarely), hydrogen telluride, tetraborane, thiacyanates, titanium, toluene, triazine/trifluoroacetic anhydride, hydrogen peroxide/mercury oxide, p-xylol (rarely), cellulose containing products, tin (rarely), sugars.

The substance can react dangerously with: amines, ammonia, combustable substances, potassium, lithium, sodium, reducing agents, acrylonitrile, formic acid, antimony, arsenic, boron, bromine pentafluoride, butanol,
chlorine trifluoride, crotonaldehyde, iron (II)-oxide (powder), ethylaniline, furfuryl alcohol, germanium, glycerol / hydrochloric or hydrofluoric acid, hydrogen iodide, copper (I)-nitride, magnesium (heat), magnesium phosphides, melilitic acid, methyl thiophene, sodium hydride, sodium hypochlorite, phenylenediamine, phosphonium iodide, polypropylene, pyridine, sawdust, sulphur halogenides, conc. sulphuric acid, hydrogen sulphide, selenium, hydrogen selenide, thiols, thiophene, toluidine, triethylamine, uranium, uranium disulphide, bismuth, xylidine.

10.4 Conditions to avoid
Heat.

10.5 Incompatible materials
Organic combustible substances, oxidizable substances, organic solvents, alcohols, ketones, aldehydes, anhydrides, amines, anilines, nitriles, organic nitro compounds, hydrazine and derivatives, acetylidane, metals (generation of hydrogen), metal alloys, metallic oxides, alkali metals, alkaline earth metals, ammonia, alkalis, acids, hydrides, halogens, halogens compounds, nonmetallic oxides, nonmetallic halides, nonmetallic hydrogen compounds, nonmetals, phosphides, nitrides, lithium silicide, hydrogen peroxide.

10.6 Hazardous decomposition products
Hydrogen, nitrous gases (Hazardous decomposition products from under contact with metals). Danger of explosion.

SECTION 11: Toxicological information

11.1 Information on toxicological effects
Mixture
Acute toxicity
LD$_{50}$ (oral, human): 430 mg/kg
LC$_{50}$ (inhalation, rat): 0.13 mg/l / 4 h (nitrogen dioxide)

Acute oral toxicity
Symptoms: tissues damage (mouth, oesophagus and gastrointestinal tract) strong pain (risk of perforation), bloody vomiting, death.

Acute inhalation toxicity
Symptoms: burns of mucous membranes, coughing, and dyspnoea. Inhalation may lead to the formation of oedemas in the respiratory tract.

Skin corrosion/irritation
Severe burns.

Serious eye damage/eye irritation
Burns, Risk of blindness.

Respiratory or skin sensitization
Not Available

Germ cell mutagenicity
Bacterial mutagenicity; Ames test is negative.

Carcinogenicity
Not Available

Reproductive toxicity
Not Available

Teratogenicity
Not Available
Specific target organ toxicity (STOT) - single exposure
Not Available

Specific target organ toxicity (STOT) - repeated exposure
Not Available

Aspiration hazard
Not Available

Further information
Strong corrosive substance. The product should be handled with the care usual when dealing with chemicals.

SECTION 12: Ecological information

Mixture

12.1 Toxicity
Toxicity to fish LC\textsubscript{50} Gambusia affinis: 72 mg/l/96h

12.2 Persistence and degradability
Not Available

12.3 Bioaccumulative potential
Partition coefficient (n-octanol/water) log Pow: -2.3(experimental).
No bioaccumulation is to be expected (log P o/w <1)

12.4 Mobility in soil
Not Available

12.5 Other adverse effects
Harmful effect on 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. Do not allow to enter waters, waste water or soil.

SECTION 13: Disposal considerations

13.1 Waste treatment methods
Product
There are no uniform EC Regulations for the disposal of chemicals or residues. Chemical residues generally count as special waste. The disposal of the latter is regulated in the EC member countries through corresponding law and regulations. We recommend that you contact either the authorities in charge or approved waste disposal companies which will advise you on how to dispose of special waste or burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Observe all federal, state, and local environmental regulations.

Contaminated packaging
Disposal in compliance with official regulations. Handle contaminated packaging as hazardous waste in the same way of the substance itself. If not officially specified differently, non-contaminated packaging may be treated like household waste or recycled.

SECTION 14: Transport information

Land Transport (ADG Code)
UN Number 2031
UN proper shipping name NITRIC ACID
Transport hazard class(es) 8 (5.1)
<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hazchem Code</td>
<td>2P</td>
</tr>
<tr>
<td>Packing group</td>
<td>I</td>
</tr>
<tr>
<td>Environmental hazards</td>
<td>No</td>
</tr>
<tr>
<td>Special precautions for user</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Sea transport (IMDG)**

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN Number</td>
<td>2031</td>
</tr>
<tr>
<td>UN proper shipping name</td>
<td>NITRIC ACID</td>
</tr>
<tr>
<td>Transport hazard class(es)</td>
<td>8 (5.1)</td>
</tr>
<tr>
<td>Packing group</td>
<td>I</td>
</tr>
<tr>
<td>Marine pollutant</td>
<td>No</td>
</tr>
<tr>
<td>Special precautions for user</td>
<td>Yes</td>
</tr>
<tr>
<td>EmS</td>
<td>F-A S-Q</td>
</tr>
</tbody>
</table>

**Air transport (IATA)**

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN Number</td>
<td>2031</td>
</tr>
<tr>
<td>UN proper shipping name</td>
<td>NITRIC ACID</td>
</tr>
<tr>
<td>Transport hazard class(es)</td>
<td>8 (5.1)</td>
</tr>
<tr>
<td>Packing group</td>
<td>I</td>
</tr>
<tr>
<td>Environmental hazards</td>
<td>No</td>
</tr>
<tr>
<td>Special precautions for user</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**River transport (AND/ADNR)**

(Not examined)

### SECTION 15: Regulatory information

This safety datasheet complies with the requirements of the Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

#### 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

<table>
<thead>
<tr>
<th>Regulatory Information</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poisons Schedule</td>
<td>S6</td>
</tr>
</tbody>
</table>

**15.2 Chemical Safety Assessment**

For this product, a chemical safety assessment was not carried out.

### SECTION 16: Other information

**Full text of H-statements referred to under sections 2 and 3**

- **H272** May intensify fire; oxidizer.
- **H290** May be corrosive to metals.
- **H314** Causes severe skin burns and eye damage.

**Full text of R-phrases referred to under sections 2 and 3**

- **C** Corrosive.
- **O** Oxidizing
- **R8** Contact with combustible material may cause fire.
- **R35** Causes severe burns.

**Recommended restrictions**

Take notice of labels and safety data sheets for the working.

**Reference**

Globally Harmonized System of Classification and Labelling of Chemicals (GHS).
Labelling according to Code of Practice for the Labelling of Workplace Hazardous Chemicals (Safe Work Australia).
Institute for Occupational Safety and Health of the German Social Accident Insurance in Sankt Augustin/Germany, Source: IFA for Databases on hazardous substances (GESTIS).

Further information
Contact Chem – Supply Pty Ltd Ph. (08) 8440 2000.

Revision Date
06/12/2017

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process unless specified in the text.