SAFETY DATA SHEET

According to Globally Harmonized System of Classification and Labelling of Chemicals (GHS)

1. IDENTIFICATION

   Product name:              NITRIC ACID 65%
   Recommended use:          Chemical for analysis and production.
   Manufacturer/Supplier:    RCI LABSCAN LIMITED.
                            24 Rama 1 Road, Pathumwan, Bangkok 10330 Thailand
   Telephone No:             (662) 613-7911-4
   Fax No:                  (662) 613-7915
   Emergency Telephone No:   (662) 613-7911-4

2. HAZARDS IDENTIFICATION

   DANGER : May intensify fire; oxidizer. Causes severe skin burns and eye damage. May be corrosive to metals.

3. COMPOSITION/INFORMATION

   Chemical name:            NITRIC ACID
   Synonym:                 Nitrous fumes, Red fuming nitric acid.
   CAS-No                   7697-37-2
   EC-No                    231-714-2
   EC-Index-No              007-004-00-1
   Formula                  HNO₃
   Molecular Weight         63.01 g/mol
   Weight %                 65
4. 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. Obtain medical attention. If signs of poisoning appear, treat as for inhalation.
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 of patient is mouth to mouth or mouth to nose. Use suitable instruments/apparatus. Obtain medical attention. Never give anything by mouth to an unconscious person.
Administer: After swallowing: make victim drink several liter of water, avoid vomiting (risk of perforation). Immediately call in physician. Do not attempt to neutralize.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media:
In adaption to materials stored in the immediate neighborhood.
Specific hazards:
Non-combustible. Hydrogen may form upon contact with metals (danger of explosion). Ambient fire may liberate hazardous vapors. The following may develop in event of fire: nitrogen oxide. Corrosive. Causes severe burns.
Special protective equipment for fire fighters:
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.
Specific methods:
Contain escaping vapors with water. Prevent fire-fighting water from entering surface water or ground water.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions: 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.
Environmental precautions: Contain or absorb leaking liquid with sand or earth, consults an expert. Prevent liquid entering sewers, basements and workpits. If substance has entered a water course or sewer or contaminated soil or vegetation, advise police.
Methods for cleaning up: Spillage: May react with combustible substances creating fire or explosion hazard and formation of toxic fumes. Take necessary action
PRODUCT NAME: NITRIC ACID 65%

to avoid static electricity discharge (which might cause ignition of organic vapors). 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 steel drums. Dispose of promptly.

7. HANDLING AND STORAGE

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. Do not leave any cleaning rags lying in the open.

Storage: 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.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

National occupational exposure limits: OEL 2 ppm (5mg/m³), TWA 2 ppm (5 mg/m³), STEL 4 ppm (10 mg/m³)

Engineering measures to reduce exposure: The product should only be used in ventilation hoods and fans.

Personal protection equipment:
- Respiratory protection: Required when vapor/aerosols are generated. Respiratory protection: combination filter E – (P2).
- Hand protection: Handle with gloves. In case full contact wear gloves from viton material. In case splash contact wear gloves from natural latex material. The select protective gloves have to satisfy the specifications of EU Directive 89/686 EEC and standard EN 374 derived from it.
- Eye protection: Goggles giving complete protection to eyes.
- Skin and body protection: Chemical resistant apron / corrosive protective clothing, heavy duty work shoes.

Hygiene measures: Keep working clothes separately. Keep away from food, drink and animal feeding stuffs.
PRODUCT NAME: NITRIC ACID 65%

9. PHYSICAL AND CHEMICAL PROPERTIES

Form: Liquid
Color: Colorless
Odor: Pungent
pH Value: (20ºC) <1
Boiling point/range: 119.6 ºC
Melting point/range: -29.1 ºC
Flash point: Not Available
Ignition temperature: Not Available
Explosion limits:
- lower Not Available
- upper Not Available
Vapor Pressure: (20ºC) ~ 9.4 hPa
Relative Density: (20ºC) 1.39 g/ml
Relative Vapor Density: Not Available
Solubility in Water: (20ºC) Soluble
Partition coefficient (n-octanol/water): Not Available

10. STABILITY AND REACTIVITY

Reaction Stability: Strong oxidizing agent. Unsuitable working materials: metals, metal alloys. Aqueous solution reacts strongly acidic. The substance itself does not burn, but in contact with combustible substances it increases the risk of fire and can fuel any existing fire substantially. The substance can react dangerously with: acrylonitrile; antimony, arsenic, boron, germanium, bromine pentafluoride, copper (I)-nitride, concentrated lyes, mellitic acid, reducing agents, sulphur halogenides, selenium, thiopene, uranium, uranium disulphide, bismuth, iron (II)-oxide (powder), xylidine, crotonaldehyde, magnesium, amines, ammonia, combustible substances, ethylenamine, fufuryl alcohol, hydrogen iodide, methylthiopene, sodium, sodium hydride, potassium, phosphonium iodide, pyridine, hydrogen sulphide, hydrogen selenide, terpine (catalyst), toluidine, concentrated sulphuric acid, chlorine trifluoride, sodium hypochlorite, nitrous gases, sulphur halogenides, lithium, phosphor (warmth), thiols, sawdust, glycercol/ hydrochloric acid, polypropylene, glycercol/ hydrofluoric acid, magnesium phosphides, formic acid.

Stability: Stable under recommended storage conditions.
Conditions to avoid: Heat.
Materials to avoid: Organic combustible substances, oxidizable substances, organic solvents, alcohols, ketones, aldehydes, anhydrides, amines, anilines, nitriles, organic nitro compounds, hydrazine and derivatives, acetylamine, Metals (generation of hydrogen), metal alloys, metallic oxides, alkali metals, alkaline earth.
PRODUCT NAME: NITRIC ACID 65%

metals, ammonia, alcalis, acids, hydrides, halogens, halogens compounds, nonmetallic oxides, nonmetallic halides, nonmetallic hydrogen compounds, nonmetals, phosphides, nitrdes, lithium silicide, hydrogen peroxide.

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

11. TOXICOLOGICAL INFORMATION

Acute toxicity: LC₅₀ (inhalation, rat): 0.13 mg/l / 4 h (nitrogen dioxide)
LDLo (oral, human): 430 mg/kg

Sensitization: Strong corrosive substance. After inhalation of vapors: burns of mucous membranes, coughing, and dyspnoea. Inhalation may lead to the formation of oedemas in the respiratory tract. After skin contact: burns. After eyes contact: burns. Risk of blindness. After swallowing: tissues damage (mouth, oesophagus and gastrointestinal tract) strong pain (risk of perforation), bloody vomiting, death.

Chronic toxicity: Bacterial mutagenicity: Ames test is negative.

Further toxicological information: The product should be handled with the care usual when dealing with chemicals.

12. ECOLOGICAL INFORMATION

Biologic degradation: Methods for the determination of biodegradability are not applicable to inorganic substances.

Behavior in environmental compartments: Distribution; log P(oct) -2.3(experimental). No bioaccumulation is to be expected (log P o/w <1).

Ecotoxicity: Biological 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.

Fish toxicity: Gambusia affinis LC₅₀: 72 mg/l / 96h

Further ecologic data: Do not allow to enter waters, waste water or soil.
PRODUCT NAME: NITRIC ACID 65%

13. DISPOSAL CONSIDERATIONS

**Products:** 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.

**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.

14. TRANSPORT INFORMATION

**Transport over land ADR/RID**

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<th>Packing group:</th>
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<td>Proper shipping name:</td>
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**River transport AND/ADNR**

(Not examined)

**Sea transport IMDG**

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<td>Marine pollutant:</td>
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**Air transport ICAO-TI, PAX and IATA-DGR**

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15. REGULATORY INFORMATION

**Contains:** NITRIC ACID 65%

**GHS - Labelling:**

- **Hazard statement(s):**
  - H272: May intensify fire; oxidizer.
  - H314: Causes severe skin burns and eye damage.
  - H290: May be corrosive to metals.

- **Precautionary statement(s):**
  - P210: Keep away from heat.
  - P220: Keep/Store away from clothing/combustible materials.
  - P234: Keep only in original container.
PRODUCT NAME: NITRIC ACID 65%

P260: Do not breathe vapours.  
P264: Wash hand thoroughly after handling.  
P280: Wear protective gloves/protective clothing/eye protection/face protection.  
P363: Wash contaminated clothing before reuse.  
P390: Absorb spillage to prevent material damage.  
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.  
P370 + P378: In case of fire: Use water or CO₂ for extinction.  
P405: Store locked up.

Labelling according to EC Directives

R - phrase(s):  
R35 - Causes severe burns.

S - phrase(s):  
S23 - Do not breathe vapor.  
S26 - In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.  
S36 - Wear suitable protective clothing.  
S45 - In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

16. OTHER INFORMATION

Recommended restrictions: Take notice of labels and safety data sheets before working.

Reason for alteration: Changed, updated and corrected in this safety data sheet following Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

Reference: Globally Harmonized System of Classification and Labelling of Chemicals (GHS).  

Further information: Contact RCI Labscan Limited.

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 a 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.