

Material Safety Data Sheet

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Version 1.2

According to 91/155/EEC

1 - Product and Company Information

Product Name	NITRIC ACID, 70%, REDISTILLED, 99.999+%
Product Number	225711
Company	Sigma-Aldrich Pte Ltd #08-01 Citilink Warehouse Singapore 118529 Singapore
Technical Phone #	65 271 1089
Fax	65 271 1571

2 - Composition/Information on Ingredients

Product Name	CAS #	EC no	Annex I Index Number
NITRIC ACID, >=70%	7697-37-2	231-714-2	007-004-00-1

Ingredient Name	Percent	CAS #	EC no	Annex I Index Number
NITRIC ACID	>= 70	7697-37-2	231-714-2	None

Symbols: O C

R-Phrases: 8 35

Contact with combustible material may cause fire. Causes severe burns.

WATER	<= 30	7732-18-5	231-791-2	None
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Formula HNO3

Molecular Weight 63.01 AMU

Synonyms Acide nitrique (French) * Acido nitrico (Italian) * Aqua fortis * Azotic acid * Azotowy kwas (Polish) * Hydrogen nitrate * Kyselina dusicne (Czech) * Nitric acid (ACGIH:OSHA) * Salpetersaure (German) * Salpeterzuuroplossingen (Dutch)

3 - Hazards Identification

SPECIAL INDICATION OF HAZARDS TO HUMANS AND THE ENVIRONMENT

Contact with combustible material may cause fire. Causes severe burns.

4 - First Aid Measures

AFTER INHALATION

If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.

AFTER SKIN CONTACT

In case of skin contact, flush with copious amounts of water for at least 15 minutes. Remove contaminated clothing and shoes.

Call a physician.

AFTER EYE CONTACT

In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

AFTER INGESTION

If swallowed, wash out mouth with water provided person is conscious. Call a physician. Do not induce vomiting.

5 - Fire Fighting Measures

CONDITIONS OF FLAMMABILITY

Vigorously supports combustion.

EXTINGUISHING MEDIA

Suitable: Use extinguishing media appropriate to surrounding fire conditions. Quench with large quantities of water. Use water spray to cool fire-exposed containers.

SPECIAL RISKS

Specific Hazard(s): Contact with other material may cause fire. May accelerate combustion. Emits toxic fumes under fire conditions.

Combustion Products: Nitrogen oxides

Combustion Gases: May react with metals, releasing flammable hydrogen gas.

SPECIAL PROTECTIVE EQUIPMENT FOR FIREFIGHTERS

Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

SPECIFIC METHOD(S) OF FIRE FIGHTING

Do not direct a solid stream of water or foam into burning molten material; this may cause spattering and spread the fire.

6 - Accidental Release Measures

PERSONAL PRECAUTION PROCEDURES TO BE FOLLOWED IN CASE OF LEAK OR SPILL

Evacuate area.

PROCEDURE(S) OF PERSONAL PRECAUTION(S)

Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.

METHODS FOR CLEANING UP

Absorb on sand or vermiculite and place in closed containers for disposal. Ventilate area and wash spill site after material pickup is complete.

7 - Handling and Storage

HANDLING

Directions for Safe Handling: Do not breathe vapor. Do not get in eyes, on skin, on clothing. Avoid prolonged or repeated exposure.

STORAGE

Conditions of Storage: Keep tightly closed.

Unsuitable: Do not store near, nor allow contact with, clothing and other combustible material.

Incompatible Materials: Avoid contact with organics Metals
Alkali Nitric acid and other strong oxidizing agents can cause
explosive type reactions when mixed with adsorbent resins.

8 - Exposure Controls / Personal Protection

ENGINEERING CONTROLS

Safety shower and eye bath. Use only in a chemical fume hood.

GENERAL HYGIENE MEASURES

Wash thoroughly after handling. Discard contaminated clothing and shoes.

EXPOSURE LIMITS

Country	Source	Type	Value
Poland		NDS	5 MG/M3
Poland		NDSch	10 MG/M3
Poland		NDSP	-

EXPOSURE LIMITS - DENMARK

Source	Type	Value
OEL	TWA	5 mg/m3 2 ppm

EXPOSURE LIMITS - GERMANY

Source	Type	Value
TRGS 900	OEL	5 mg/m3 2 ppm

Remarks: =1=

EXPOSURE LIMITS - NORWAY

Source	Type	Value
	OEL	5 mg/m3 2 ppm

EXPOSURE LIMITS - SWEDEN

Source	Type	Value
	LLV (Level	5 mg/m3 2 ppm

EXPOSURE LIMITS - SWITZERLAND

Source	Type	Value
OEL	OEL	5 mg/m3 2 ppm

EXPOSURE LIMITS - UNITED KINGDOM

Source	Type	Value
OEL	OEL	5.2 mg/m3 2 ppm
OEL	STEL	10 mg/m3 4 ppm

PERSONAL PROTECTIVE EQUIPMENT

Respiratory Protection: Government approved respirator.

Hand Protection: Wear heavy rubber gloves.

Eye Protection: Chemical safety goggles.

Special Protective Measures: Rubber apron.

9 - Physical and Chemical Properties

Appearance	Physical State: Clear liquid
	Color: Colorless

Property	Value	At Temperature or Pressure
pH	< 1	20 °C
BP/BP Range	100 °C	760 mmHg
MP/MP Range	N/A	
Flash Point	N/A	
Flammability	N/A	
Autoignition Temp	N/A	
Oxidizing Properties	N/A	
Explosive Properties	N/A	
Explosion Limits	N/A	
Vapor Pressure	8 mmHg	20 °C
SG/Density	1.4 g/cm ³	
Partition Coefficient	N/A	
Viscosity	N/A	
Vapor Density	1 g/l	
Saturated Vapor Conc.	N/A	
Evaporation Rate	N/A	
Bulk Density	N/A	
Decomposition Temp.	N/A	
Solvent Content	N/A	
Water Content	N/A	
Surface Tension	N/A	
Conductivity	N/A	
Miscellaneous Data	N/A	
Solubility	N/A	

10 - Stability and Reactivity

STABILITY

Stable: Stable.

Conditions of Instability: May discolor on exposure to light.

Materials to Avoid: Avoid contact with water, bases, organic compounds. May set fire to wood or paper Avoid contact with metals., Avoid contact with alkali, Alkali metals, Finely powdered metals, Galvanized iron, Organic materials Nitric acid and other strong oxidizing agents can cause explosive type reactions when mixed with adsorbent resins.

HAZARDOUS DECOMPOSITION PRODUCTS

Hazardous Decomposition Products: Nitrogen oxides.

HAZARDOUS POLYMERIZATION

Hazardous Polymerization: Will not occur

11 - Toxicological Information

RTECS NUMBER: QU5775000

ACUTE TOXICITY

LDLO

Oral

Human

430 mg/kg

SIGNS AND SYMPTOMS OF EXPOSURE

Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin.

Inhalation may result in spasm, inflammation and edema of the larynx and bronchi, chemical pneumonitis, and pulmonary edema.

Symptoms of exposure may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and vomiting. Large doses may cause: conversion of hemoglobin to methemoglobin, producing cyanosis; marked fall in blood pressure, leading to collapse, coma, and possibly death.

ROUTE OF EXPOSURE

Skin Contact: Causes severe burns.

Skin Absorption: May be harmful if absorbed through the skin.

Eye Contact: Causes severe burns.

Inhalation: Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract. Highly toxic by inhalation.

Ingestion: Toxic if swallowed.

TARGET ORGAN INFORMATION

Lungs. Teeth. G.I. System. Cardiovascular system.

CHRONIC EXPOSURE - TERATOGEN

Species: Rat

Dose: 21150 MG/KG

Route of Application: Oral

Exposure Time: (1-21D PREG)

Result: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).

CHRONIC EXPOSURE - REPRODUCTIVE HAZARD

Species: Rat

Dose: 2345 MG/KG

Route of Application: Oral

Exposure Time: (18D PREG)

Result: Effects on Newborn: Biochemical and metabolic.

12 - Ecological Information

No data available.

13 - Disposal Considerations

SUBSTANCE DISPOSAL

Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Contact a licensed professional waste disposal service to dispose of this material. Observe all federal, state, and local environmental regulations.

14 - Transport Information

RID/ADR

UN#: 2031

Class: 8

PG: I

Proper Shipping Name: Nitric acid

IMDG

UN#: 2031

Class: 8

PG: I

Subrisk: 5.1

Proper Shipping Name: Nitric acid

Marine Pollutant: No
Severe Marine Pollutant: No

IATA

UN#: 2031
Class: 8
PG: I
Subrisk: 5.1
Proper Shipping Name: Nitric acid
Inhalation Packing Group I: No

15 - Regulatory Information

CLASSIFICATION AND LABELING ACCORDING TO EU DIRECTIVES

ANNEX I INDEX NUMBER: 007-004-00-1

NOTA: B

INDICATION OF DANGER: O C

Oxidizing. Corrosive.

R-PHRASES: 8 35

Contact with combustible material may cause fire. Causes severe burns.

S-PHRASES: 23 26 36 45

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

COUNTRY SPECIFIC INFORMATION

Germany

WGK: 1

SWITZERLAND

SWISS POISON CLASS: 2

16 - Other Information

WARRANTY

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. Copyright 2004 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.

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