Issue date: 9/28/2009
Revision date: 3/13/2024

Safety Data Sheet

1. Chemical product and company identification

Product name : NITRIC ACID 1.38

Company information

Name of manufacturer	:	KANTO CHEMICAL CO., INC.
Address	:	2-1, Nihonbashi, Muromachi 2-Chome, Chuo-Ku, Tokyo, 103-0022, Japan
Name of section	:	Electronic materials division technical department
Telephone number	:	+81-3-6214-1080
Facsimile number	:	+81-3-3241-1043
Mail address	:	el-info@kanto.co.jp
Reference No	:	GE00247 1.3
Recommended uses and restrictions	:	Electronic chemicals

2. Hazards identification

GHS classification

Physical hazards	Corrosive to metals	Category 1
Health hazards	Acute toxicity (inhalation:vapors)	Category 1
	Skin corrosion/irritation	Category 1B
	Serious eye damage/eye irritation	Category 1
	Specific target organ toxicity (single exposure)	Category 1 (respiratory organs)
	Specific target organ toxicity (repeated exposure)	Category 1 (respiratory organs, teeth)
Environmental hazards	Aquatic acute	Category 3

Hazard pictograms

Signal word : Danger

Hazard statements :
May be corrosive to metals
Causes severe skin burns and eye damage
Fatal if inhaled
Causes damage to organs (respiratory organs)
Causes damage to organs (respiratory organs, teeth) through prolonged or repeated exposure
Harmful to aquatic life

Precautionary statements

Prevention :
Keep only in original container.
Do not breathe mist/vapors.
Wash hands, forearms and face thoroughly after handling.
Do not eat, drink or smoke when using this product.
Use only outdoors or in a well-ventilated area.

		Avoid release to the environment. Wear protective gloves/protective clothing/eye protection/face protection. [In case of inadequate ventilation] wear respiratory protection.
Response	:	IF SWALLOWED: Rinse mouth. Do not induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water . IF INHALED: Remove person to fresh air and keep comfortable for breathing. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF exposed or concerned: Call a POISON CENTER or doctor. Immediately call a POISON CENTER or doctor. Get medical advice/attention if you feel unwell. Absorb spillage to prevent material-damage.
Storage	:	Store in a well-ventilated place. Keep container tightly closed. Store locked up.
Disposal	:	Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.

3. Composition/information on ingredients

Distinction of substance or mixture : Substance

Chemical name	Concentration (%)	Formula	TSCA	EC-No.	CAS RN
Nitric acid	61	HNO3	Listed	231-714-2	7697-37-2

4. First aid measures

First aid measures

First-aid measures after inhalation	:	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately get medical treatment.
First-aid measures after skin contact	:	Wash the affected areas under running water, get medical treatment as soon as possible.
First-aid measures after eye contact	:	Wash the affected areas under running water for at least 15 minutes. Get medical treatment.
First-aid measures after ingestion	:	Rinse mouth with water. Give the victim one or two glasses of water or milk. Do not induce vomiting. Get medical treatment as soon as possible.
Personal Protection in First Aid and Measures	:	Rescuers should wear proper protective equipment like rubber gloves, goggles.

Most Important Symptoms/Effects

Symptoms/effects	:	If inhaled, cause burning sensation and ache of throat, cough, shortness of breath, and pulmonary edema. These symptoms may appear in delaying. If contacted with skin, cause redness, ache, severe burns, and blister. If contacted with eyes, cause redness, ache, blurred vision, and severe burning.

5. Fire fighting measures

Suitable extinguishing media	:	This product is noncombustible.
Unsuitable extinguishing media	:	None
Fire hazard	:	Contact with combustible material may cause fire.
Firefighting instructions	:	Move containers from fire area if it can be done without risk, if not possible, apply water from a safe distance to cool and protect surrounding area.
Personal protection (Emergency response)	:	Firefighters should wear protective equipment.

6. Accidental release measures

Personal Precautions, Protective Equipment and Emergency Procedures

General measures	:	Wear proper protective equipment and avoid contact with skin and inhalation of vapor. Conduct operations from upwind and evacuate people downwind. Keep away personnel except for authorized ones from spillage area by stretching ropes.

Environmental precautions

Environmental precautions	:	Attention should be given to avoid discharge of spilled product into rivers and resulting environmental damage. When diluting spill with large amounts of water, discharge of untreated wastewater into the environment must be avoided.

Methods and Equipment for Containment and Cleaning up

For containment	:	Absorb spill with diatomaceous earth or dry sand. Or dilute spill with some water gradually and then neutralize with calcium hydroxide or sodium carbonate. Then, flush contaminated area with copious amounts of water.
Prevention Measures for Secondary Accidents	:	Do not allow contact with organic substances or combustible substances.

7. Handling and storage

Handling

Technical measures	:	Wear proper protective equipment to avoid contact with skin or inhalation of vapor.
Precautions for safe handling	:	Use with an enclosed system or a local exhaust ventilation. Use in well-ventilated areas. The substance is an oxdizer. Avoid contact with organic substances.

Storage

Storage conditions	:	Store in a dark, cool place and tightly closed. Keep away from combustible matrials.
Material used in packaging/containers	:	Glass, Fluorine resin, Polyethylene.

8. Exposure controls / Personal protection equipment

ACGIH TWA	2 ppm
ACGIH STEL	4 ppm

Appropriate engineering controls	:	Use with an enclosed system or a local exhaust ventilation.

Protective equipment

Respiratory protection	:	Chemical cartridge respirator with acids vapor cartage or airline respirator
Hand protection	:	Acid resistant gloves
Eye protection	:	Safety goggles
Skin and body protection	:	Protective clothing, protective boots

9. Physical and chemical properties

Physical state	:	Liquid
Color	:	Colorless.
Odor	:	Pungent.
pH	:	Strong acidity
Melting point	:	No data available
Freezing point	:	No data available
Boiling point	:	121.2 ° C
Flash point	:	Non flammable.
Auto-ignition temperature	:	Non flammable.
Decomposition temperature	:	No data available
Flammability	:	Non flammable.
Vapor pressure	:	12 hPa (25℃)
Relative density	:	No data available
Density	:	1.38 g/cm^3 (20℃)
Relative gas density	:	No data available
Solubility	:	Water: Miscible.
Partition coefficient n-octanol/water (log Pow)	:	No data available
Explosive limits (vol %)	:	No data available
Viscosity, kinematic:	:	No data available
Particle characteristics	:	No data available

10. Stability and reactivity

Reactivity	:	It is a strong oxidant and reacts violently with flammable and reducing substances. It is a strong acid that reacts violently with alkaline substances and corrodes many metals.
Chemical stability	:	Stable under normal conditions. Decomposed partly by light.
Possibility of hazardous reactions	:	Decomposed by heat and produce nitrogen oxides gas. When contacts with combustible materials like wood powder, or wood wool, the mixture may ignite. When nitric acid contacts with carbon disulfide, amine compounds, or hydrazine compounds, the mixture may ignite or explode.
Conditions to avoid	:	Light, heat.
Incompatible materials	:	Alkaline substances, combustible materials, reducing substances, metals.
Hazardous decomposition products	:	Nitrogen oxides.

11. Toxicological information

Acute toxicity (oral)	:	Classification not possible
Acute toxicity (dermal)	:	Classification not possible
Acute toxicity (inhalation)	:	No classification (gas) Fatal if inhaled Classification not possible (dust, mist)
Acute toxicity (vapor) - Description	:	rat LC50=49ppm/4h (as nitric acid)
Skin corrosion/irritation	:	Causes severe skin burns Studies have shown that the substance (liquid and vapor) causes severe damage to human skin and even short-time exposure can cause damage to the skin, and that applying 8% solution to rabbits caused necrosis. Based on the above information, the substance was classified into category 1B.
Serious eye damage/irritation	:	Causes serious eye damage Studies have shown that the substance causes cornea damage, resulting in irreparable visual impairment and that nitric acid causes severe chemical burns in human eyes, which may lead to loss of eyesight due to blepharophimosis, adhesion of eyelid and irreparable corneal opacity. And the substance is rated as category 1B in Skin corrosion/irritation. Thus, the substance was classified into category 1.
Respiratory sensitization	:	Classification not possible
Skin sensitization	:	Classification not possible
Germ cell mutagenicity	:	Classification not possible
Carcinogenicity	:	Classification not possible
Reproductive toxicity	:	Classification not possible
STOT-single exposure	:	Causes damage to organs (respiratory organs) The substance has airway irritation. There is human evidence including "in inhalation exposure, cough, headache, nausea, chest pain, dyspnea, bronchoconstriction, respiratory depression and pulmonary edema were noted" and "in oral exposure, corrosive necrosis of oral cavity, gullet and stomach, and pneumonia were observed." There is evidence from animal studies including "in inhalation exposure test in rats, extensive airway inflammation, rhinitis, bronchitis, pneumonia, and pulmonary edema were noted." These symptoms were observed with the dose of the guidance value range of category 1. The substance adversely affects respiratory organs and is classified into category 1 (respiratory organs).
STOT-repeated exposure	:	Causes damage to organs (respiratory organs, teeth) through prolonged or repeated exposure Studies have shown that in occupational inhalation exposure to nitric acid, 3 of 32 exposed workers suffered tooth germ erosion (no onset in 293 subjects of control group). Studies have also described that in repeated exposure to nitric acid vapor and mist, chronic bronchitis was noted, and in severe exposure cases, chemical pneumonia as well as erosion of tooth germ, especially canine tooth and incisor were observed. Based on the above information on human occupational exposure, the substance is classified into category 1 (respiratory organs, teeth).
Aspiration hazard	:	Classification not possible

12. Ecological information

Ecotoxicity

Aquatic acute	:	Harmful to aquatic life Gambusia affinis LC50=72mg/L/96h (as nitric acid)
Aquatic chronic	:	No classification Nitric acid exists widely as natural substances, and from results of acute toxicity test on the salts, it is known that decreased pH causes acute toxicity. It is known to cause adverse effects when concentrations of nitrate ions are high, but it is estimated that toxicity does not occur generally at a concentration of 1 mg/L for classification in chronic toxicity. Therefore, it was classified as "No classification."

Persistence and degradability

No additional information available

Bioaccumulative potential

No additional information available

Mobility in soil

No additional information available

Hazardous to the ozone layer

Ozone	:	Classification not possible

13. Disposal considerations

Ecological waste information	:	Neutralization method : Add sodium carbonate solution or calcium hydroxide solution to the mixed acid to neutralize. After neutralizing, flush in a drain with plenty of water. In case of using calcium hydroxide solution, it creates precipitation. Filter the precipitation and bury in a landfill site approved for hazardous waste disposal. Or entrust approved waste disposal companies with the disposal.
Contaminated container and packaging	:	In case of disposal of empty bottles, dispose bottles after removing the content thoroughly.

14. Transport information

International Regulations

Transport by sea(IMDG)

UN-No. (IMDG)	:	2031
Proper Shipping Name (IMDG)	:	NITRIC ACID
Packing group (IMDG)	:	II
Transport hazard class(es) (IMDG)	:	8

Air transport(IATA)

UN-No. (IATA)	:	2031
Proper Shipping Name (IATA)	:	Nitric acid
Packing group (IATA)	:	II
Transport hazard class(es) (IATA)	:	8

Marine pollutant : Not applicable

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Pollutant category : Y

MFAG-No : 157

15. Regulatory information

Regulatory information with regard to this substance in your country or region should be examined by your own responsibility.

16. Other information

Data sources : Handbook of dangeroous and hazardous chemicals, Japan Industrial Safety & Health Association. (2000-2001) .
Dangerous Properties of Industrial Materials,6th ed. N.I.Sax Van Nostrand Reinhold Company (1984) .
Handbook of Dangerous Substances Springer-Verlag Tokyo (1991) .
Handbook of 17322 Chemical Products, The Chemical Daily Co. (2022) .
Handbook of Poisonous and Deleterious substances, revised and enlarged edition, Yakumu Kohosa (2000) .
NITE Chemical Risk Information Platform (NITE-CHRIP), National Institute of Technology and Evaluation.

The information contained herein is based on several references and the present state of our knowledge. However the SDS does not always cover all information about the product, handle the product carefully.The information is intended to ordinary usage, in case of particular handlings, conduct appropriate safety measurements.The information herein is only provision of information, and it does not represent a guarantee the properties of the product.The Safety Data Sheet(SDS) is prepared based on JIS Z7253.