

## Safety Data Sheet

### 1. Product and company identification

Product name : Nitric acid 1.38  
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@gms.kanto.co.jp  
SDS No. : GE00247

### 2. Summary of danger and Hazard

#### GHS classification

##### Physical and chemical hazard

Explosives : Out of category  
Flammable liquids : Out of category  
Pyrophoric liquids : Out of category  
Self-heating substances and mixtures : Out of category  
Oxidizing liquids : Out of category  
Corrosive to metals : Category 1

##### Human health hazard

Acute toxicity(inhalation:vapors) : Category 1  
Skin corrosion/irritation : Category 1B  
Serious eye damage/eye irritation : Category 1  
Specific target organ systemic toxicity(single exposure) : Category 1  
Specific target organ systemic toxicity(repeated exposure) : Category 1

##### Environmental hazard

Hazardous to the aquatic environment-acute hazard : Category 3  
Hazardous to the aquatic environment-chronic hazard : Out of category

#### Pictogram or symbol



Signal word : Danger

- Hazard statement : May be corrosive to metals  
Fatal if inhaled  
Causes severe skin burns and eye damage  
Causes serious eye damage  
Causes damage to organs (respiratory organs)  
Causes damage to organs (respiratory organs, tooth) through prolonged or repeated exposure  
Harmful to aquatic life
- Cautions
- Safety measurements : Keep only in original container.  
Do not breathe dust, mist, and vapor.  
Use only in a well-ventilated area.  
Avoid release to the environment.  
Do not eat, drink or smoke when using this product.  
Wear appropriate protective gloves, glasses, clothing, face shield, or mask.  
Wash protective equipment thoroughly after use.  
Wash hands thoroughly after handling.
- First-aid measures : If inhaled : Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately get medical treatment.  
If swallowed: Rinse mouth, do not induce vomiting. Immediately get medical treatment.  
If in eyes : Rinse cautiously with water for several minutes. Get medical treatment.  
If on skin : Remove contaminated clothing and the substance. Immediately get medical treatment.  
If exposed, get medical treatment.  
Get medical treatment, if you feel unwell.  
Absorb spillage to prevent material damage.
- Storage : Keep in corrosive resistant container.  
Tightly container closed and store in a well-ventilated area.  
Store locked up.
- Disposal : Dispose of contents and containers appropriately in accordance with related regulations.

### 3. Composition/Information on ingredients

- Substance/Mixture : Substance  
Chemical name or commercial name : Nitric acid  
Ingredients and composition : 60-61% Nitric acid in water  
Chemical formula : HNO<sub>3</sub>  
CAS No. : 7697-37-2  
TSCA Inventory : Registered  
EINECS No. : 2317142  
Dangerous and hazardous ingredients

: Nitric acid

#### 4. First aid measures

- Inhalation : Remove the victim to fresh air, and make him blow his nose and gargle. If necessary, get medical treatment.
- Skin contact : Wash the affected areas under running water.
- Eye contact : Wash the affected areas under running water for at least 15 minutes. Get medical treatment.
- 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.

#### Anticipated acute and delayed symptoms

- : 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.

#### Protection for first aid person

- : Rescuers should wear proper protective equipment like rubber gloves, goggles.

#### 5. Fire fighting measures

- Extinguishing media : This product is noncombustible.
- Prohibited extinguishing media : None
- Particular fire fighting : 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.

#### Protection for firefighters

- : Firefighters should wear protective equipment.

#### 6. Accidental release measures

- Cautions for personnel : 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.
- Cautions for environment : 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.
- Removal measure : Remove the spillage by absorption with diatomaceous earth or dry sand. Or else dilute with water gradually and neutralize with calcium hydroxide solution or sodium carbonate solution then wash thoroughly with water.

#### 7. Cautions of handling and storage

##### Handling

- Engineering measures : Wear proper protective equipment to avoid contact with skin or inhalation of vapor.
- Cautions : The substance is an oxidizer. Avoid contact with organic substances.

##### Storage

Adequate storage condition

: Store in a dark, cool place and tightly closed.

Safety adequate container materials

: Glass, Fluorine resin, Polyethylene

#### 8. Exposure control/Personal protection

Engineering measures : Use with an enclosed system or a local exhaust ventilation.

Control parameters

ACGIH(2015) : 2ppm(TLV-TWA)

4ppm (TLV-STEL)

Protective equipment

Respiration protective equipment

: Chemical cartridge respirator with acids vapor cartage or airline respirator

Hands protective equipment

: Impervious protective gloves

Eyes protective equipment

: Safety goggles

Skin and body protective equipment

: Protective clothing, protective boots

#### 9. Physical and chemical properties

Appearance : Liquid

Color : Colorless

Odor : Acrid odor

pH : Strong acidity

Boiling point : 121.2°C

Melting point : Not available

Vapor pressure : 11.86hPa(25°C)

Density : 1.38g/cm<sup>3</sup> (20°C)

Solubility

Solubility in solvents : Water ; Miscible

Other data : Viscosity : 2cP(20°C)

#### 10. Stability and reactivity

Stability : Decomposed partly by light.

Decomposed by heat and produce nitrogen oxides gas.

Reactivity : When nitric acid contacts with carbon disulfide, amine compounds, or hydrazine compounds, the mixture may ignite or explode.

Nitric acid is strong oxidizer, and reacts vigorously with combustible substances like alcohols, phenol, or acetone and reducing agents.

Nitric acid reacts with alkaline substances, and erodes metals. When contacts with organic substances like wood powder, or wood wool, the mixture may ignite.

Incompatible conditions : Light, heat

Incompatible materials : Alcohols, acids, acetone, reducing substances, combustible materials

Hazardous decomposition products

: Nitrogen oxides

#### 11. Toxicological information

Acute toxicity : Oral : Not possible to classify because of insufficient data.  
Dermal : Not possible to classify because of insufficient data.  
Fatal if inhaled(vapor) (category 1)  
Inhalation(dust, mist) : Not possible to classify because of insufficient data.  
rat inhalation LC50=49ppm/4H(vapor)

Skin corrosion/irritation : Causes severe skin burns and eye damage(category 1B)

There is the description that liquid or vapor of this substance causes severe damage to the skin of humans. and also description that causes damage to skin of humans, even if the exposure of a short period of time. Furthermore, the results of applying 8% solution to rabbit this material, there is reported that necrosis was observed. From the above result, it was classified into category 1B.

Serious eye damage/eye irritation

: Causes serious eye damage(category 1)

There is the description that this material is given the injury to the cornea, and causes recovery with no visual impairment. And there is the description that causes severe chemical burns to the human eye, the reduction of the eyeball, eyelid adhesions, lead to blindness from the no recovery of corneal opacity. In addition, this substance is classified into category 1B in skin corrosion/irritation. From these result, it was classified into category 1.

Respiratory sensitization or Skin sensitization

: Respiratory sensitization : Not possible to classify because of insufficient data.

Skin sensitization : Not possible to classify because of insufficient data.

Mutagenicity : Not possible to classify because of insufficient data.

Carcinogenic effects : Not possible to classify because of insufficient data

Effects on the reproductive system

: Not possible to classify because of insufficient data.

Specific target organ systemic toxicity single exposure

: Cause damage to organs (respiratory organs) (category 1)

This material is a respiratory tract irritation. In humans, there is the description that causes cough, headache, nausea, chest pain, dyspnea, bronchoconstriction, respiratory failure, pulmonary edema by inhalation exposure. And there is the description that oral cavity, esophagus, stomach corrosion necrosis, pneumonia were reported by oral exposure. In laboratory animals, there is the report of a wide range of inflammation of the airways, rhinitis, bronchitis, pneumonia by inhalation exposure of 8 ppm (0.02 mg/L) to rat. These symptoms were observed at doses in the range which corresponds to Category 1. From above results, since the substance affects the respiratory tract, it was classified as Category 1 (respiratory organs).

Specific target organ systemic toxicity repeated exposure

: Cause damage to organs (respiratory organs, tooth) through prolonged or repeated exposure(category 1)

There is the description that the dental erosion of teeth in 3 people of 32 people who are occupationally inhalation exposure to nitric acid (the control group was without the onset in 293 patients) was observed. and as well as chronic bronchitis was observed by repeated exposure to nitric acid vapor and mist. There is the description that with further results in a chemical pneumonia in severe exposure cases some teeth, especially the description of that erode the canines and incisors. Based on the the knowledge of occupational exposure in humans, it was classified into category 1(respiratory organ, tooth).

Aspiration hazard : Not possible to classify because of insufficient data.

12. Ecological information

Ecotoxicity

Fish toxicity : Harmful to aquatic life(category 3)  
 Chronic aquatic toxicity : Out of category  
 Fish(Gambusia affinis) LC50=72mg/L/96H

Persistence and degradability

: Not available

Bioaccumulative potential : Not available

13. Disposal consideration

Residual disposal : Add alkali such as calcium hydroxide, sodium carbonate gradually to neutralize and then flush in a drain with a large amount of water. Or entrust approved waste disposal companies with the disposal.

Containers : In case of disposal of empty bottles, dispose bottles after removing the content thoroughly.

14. Transport information

UN class : Class 8(Corrosive substances) P. G. II

UN number : 2031

Marine regulation information

UN No. : 2031  
 Proper shipping name : NITRIC ACID  
 Class : 8  
 Sub risk : -  
 Packing group : II  
 Marine pollutant : Not applicable

Aviation regulation information

UN No. : 2031  
 Proper shipping name : Nitric acid  
 Class : 8  
 Sub risk : -  
 Packing group : II

15. Regulatory information

Ensure this material in compliance with federal requirements and ensure conformity to local regulations.

16. Other information

References

- Handbook of dangerous 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 16817 Chemical Products, The Chemical Daily Co. (2017)
- Handbook of Poisonous and Deleterious substances, revised and enlarged edition, Yakumu Kohosa (2000)

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, and it has the same required elements on the Material Safety Data Sheet (MSDS) which is prepared based on JIS Z7250:2010.