

## Safety Data Sheet

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### 1. Chemical product and company identification

Product name : HYDROCHLORIC ACID 36%

#### 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 : GE00238 1.3  
 Recommended uses and restrictions : Electronic chemicals

### 2. Hazards identification

#### GHS classification

Physical hazards	Corrosive to metals	Category 1
Health hazards	Acute toxicity (oral)	Category 4
	Acute toxicity (inhalation:dust/mist)	Category 4
	Skin corrosion/irritation	Category 1B
	Serious eye damage/eye irritation	Category 1
	Respiratory sensitization	Category 1
	Specific target organ toxicity (single exposure)	Category 1 (respiratory organs)
	Specific target organ toxicity (repeated exposure)	Category 1 (teeth, respiratory organs)
Environmental hazards	Aquatic acute	Category 1

Hazard pictograms



Signal word : Danger

Hazard statements : May be corrosive to metals  
 Harmful if swallowed or if inhaled  
 Causes severe skin burns and eye damage  
 May cause allergy or asthma symptoms or breathing difficulties if inhaled.  
 Causes damage to organs (respiratory organs)  
 Causes damage to organs (teeth, respiratory organs) through prolonged or repeated exposure  
 Very toxic 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: Call a POISON CENTER or doctor if you feel unwell.  
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.  
Call a POISON CENTER or doctor if you feel unwell.  
Get medical advice/attention if you feel unwell.  
If experiencing respiratory symptoms: Call a POISON CENTER or doctor.  
Absorb spillage to prevent material-damage.  
Collect spillage.
- Storage : 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
Hydrochloric acid	35.0 - 37.0	HCl	Listed	231-595-7	7647-01-0

### 4. First aid measures

#### First aid measures

- First-aid measures after inhalation : Remove the victim to fresh air, and make him blow his nose and gargle. If necessary, 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 : Rescuers should wear proper protective equipment like rubber

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Aid and Measures gloves, goggles.

**Most Important Symptoms/Effects**

Symptoms/effects : If inhaled hydrogen chloride vapor, cause irritation of throat, bronchi, and lungs, also cause pulmonary edema, inflammation of respiratory organs, and breathing difficulties.

**5. Fire fighting measures**

Suitable extinguishing media : This product is noncombustible.

Unsuitable extinguishing media : None

Fire hazard : When heated, it produces irritating hydrogen chloride gas. This substance corrodes many metals. At that time, flammable hydrogen gas is generated.

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 and place in container. Neutralize residue with calcium hydroxide solution or sodium carbonate solution and then flush with copious amounts of water.

**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.

Do not allow contact with alkaline substances.

**Storage**

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

Material used in packaging/containers : Glass, Fluorine resin, Polyethylene.

Do not use metal containers.



## 8. Exposure controls / Personal protection equipment

ACGIH Ceiling	2 ppm
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Appropriate engineering controls : Use with an enclosed system or a local exhaust ventilation.

### Protective equipment

Respiratory protection : If necessary, wear a chemical cartridge respirator with acidic gases.

Hand protection : Impervious protective 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	: -34 ° C (conc. 35%)
Freezing point	: No data available
Boiling point	: 108 ° C (Conc. 35%)
Flash point	: Non flammable.
Auto-ignition temperature	: Non flammable.
Decomposition temperature	: No data available
Flammability	: Not flammable.
Vapor pressure	: 14.1 hPa (20°C, conc. 30%)
Relative density	: No data available
Density	: 1.18 g/cm <sup>3</sup> (20°C)
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	: Reacts with metal oxides to produce chlorides. It is oxidized by peroxides, dichromates, permanganates, etc. to generate chlorine.
Chemical stability	: Stable under normal conditions. Generates hydrogen chloride gas.
Possibility of hazardous reactions	: When in contact with alkaline substances, it may react violently with heat generation. This substance corrodes many metals. At that time, flammable hydrogen gas is generated.
Conditions to avoid	: Light, heat.
Incompatible materials	: Alkaline substances, oxidizing substances, metals.



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Hazardous decomposition products : Chlorine, hydrogen.

## 11. Toxicological information

- Acute toxicity (oral) : Harmful if swallowed  
rat LD50=238-277mg/kg (as hydrogen chloride)
- Acute toxicity (dermal) : No classification  
rabbit LD50>5010mg/kg (as hydrogen chloride)
- Acute toxicity (inhalation) : No classification (gas)  
Classification not possible (vapor)  
Harmful if inhaled
- Acute toxicity (mist) - Description : rat LC50=0.42mg/L/4h (as hydrogen chloride)
- Skin corrosion/irritation : Causes severe skin burns  
In a rabbit skin irritation test, application for 1 - 4-hour caused corrosion at higher concentrations. Skin irritation and ulceration with fur discoloration occurred in mice and rats dermally exposed for 5 - 30 minutes. In human experiments, there are reports that contact caused slight to strong irritation, or ulceration and severe burns to the skin. Based on these data, the substance was considered to have corrosive properties, and was classified into category 1B.
- Serious eye damage/irritation : Causes serious eye damage  
The substance was classified as a skin corrosive substance. In eye damage and irritation tests, solutions of the substance, hydrochloric acid, was used as a test substance. In animal tests including rabbit tests, high irritation, damage and corrosion to eyes have been reported. For humans, the concentrated solution can cause permanent damage and loss of sight. Based on these data, the substance was classified into category 1.
- Respiratory sensitization : May cause allergy or asthma symptoms or breathing difficulties if inhaled.  
Since the substance is on the sensitizing chemical substance list by Japanese Society of Occupational and Environmental allergy, the substance was classified into category 1. There is a report that after exposure to a cleaning product that contained hydrogen chloride, the subject developed bronchospasm and still had marked asthma symptoms 1 year after exposure that were triggered by exercise and inhalation of trivial concentrations of irritants.
- Skin sensitization : No classification  
A guinea pig maximization test and a mouse ear swelling test demonstrated negative results for the substance. In a human test using fifty volunteers, none gave a positive reaction in a challenge application, 10 - 14 days after the final induction application. The substance was classified as "No classification".
- Germ cell mutagenicity : Classification not possible  
Classification not possible due to lack of data from in vivo mutagenicity tests. From in vitro mutagenicity tests, there is a report of a negative Ames test and a positive result (which is considered to be an artifact due to the low pH) chromosome aberration test.
- Carcinogenicity : No classification  
IARC classifies hydrochloric acid as group 3 (not classifiable as to its carcinogenicity to humans).



- Reproductive toxicity : Classification not possible  
In rat and mice tests by exposure during gestation period, there were no adverse effects on fetal development, however, classification was not possible since there are no data for effects on sexual function and fertility by exposure before mating or gestation.
- STOT-single exposure : Causes damage to organs (respiratory organs)  
In humans, inhalation exposure caused symptoms such as dyspnea, laryngitis, bronchitis, bronchoconstriction, pneumonia and edema. Inflammation and necrosis of the upper respiratory tract and pulmonary edema have also been reported. In animal tests, toxic effects with morphological change of the lung and bronchus such as bronchitis with mucosal necrosis, pulmonary edema, hemorrhage, and thrombus were observed at dose levels within the guidance value range for category 1. Based on the information for humans and animals, the substance was classified into category 1 (respiratory organs).
- STOT-repeated exposure : Causes damage to organs (teeth, respiratory organs) through prolonged or repeated exposure  
There are 2 or more reports for humans in which repeated exposure caused tooth damage by erosion. Additionally, an increase in the frequency of chronic bronchitis was reported. Based on the information, the substance was classified into category 1 (teeth, respiratory organs).
- Aspiration hazard : Classification not possible

## 12. Ecological information

### Ecotoxicity

- Aquatic acute : Very toxic to aquatic life  
Daphnia magna EC50=0.492mg/L/48h (as hydrogen chloride)
- Aquatic chronic : No classification  
Classified into "No classification" since the toxicity is mitigated in environmental water by buffer action though it is considered to be a factor of toxicity that water solution becomes strongly acidic.

### 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 :  
After gradually adding to a stirring solution such as lime milk to neutralize, dilute with a large amount of water for treatment.

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) : 1789  
 Proper Shipping Name (IMDG) : HYDROCHLORIC ACID  
 Packing group (IMDG) : II  
 Transport hazard class(es) : 8

(IMDG)

#### Air transport (IATA)

UN-No. (IATA) : 1789  
 Proper Shipping Name (IATA) : Hydrochloric acid  
 Packing group (IATA) : II  
 Transport hazard class(es) : 8

(IATA)

Marine pollutant : Applicable

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

Pollutant category : Z  
 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 : Encyclopaedia Chimica, Kyoritsu Shuppan Co, Ltd. (1963) .  
 Handbook of Dangerous Substances Springer-Verlag Tokyo (1991) .  
 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.

