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Safety Data Sheet

1. Chemical product and company identification

Product name	:	Acrylic acid

Company information

Name of manufacturer	:	KANTO CHEMICAL CO., INC.
Address	:	2-1, Nihonbashi, Muromachi 2-Chome, Chuo-Ku, Tokyo, 103-0022, JP
Name of section	:	Business Administration Department, Reagent Division
Telephone number	:	+81-3-6214-1090
Facsimile number	:	+81-3-3241-1047
Mail address	:	BC32@kanto.co.jp
Reference No	:	01081
Recommended use	:	For research use only
Restrictions on use	:	Seek expert judgment when using the product for applications other than those recommended.

2. Hazards identification

GHS classification

Physical hazards	Flammable liquids	Category 3
	Self-reactive substances and mixtures	Type G
Health hazards	Acute toxicity (oral)	Category 4
	Acute toxicity (dermal)	Category 3
	Acute toxicity (inhalation:vapors)	Category 3
	Acute toxicity (inhalation:dust/mist)	Category 4
	Skin corrosion/irritation	Category 1A
	Serious eye damage/eye irritation	Category 1
	Specific target organ toxicity (single exposure)	Category 1 (respiratory organs, kidney)
	Specific target organ toxicity (single exposure)	Category 2 (liver)
	Specific target organ toxicity (repeated exposure)	Category 1 (respiratory organs)
Environmental hazards	Aquatic acute	Category 1
	Aquatic chronic	Category 2

Hazard pictograms

Signal word : Danger

Hazard statements	:	Flammable liquid and vapor Harmful if swallowed or if inhaled Toxic in contact with skin or if inhaled Causes severe skin burns and eye damage Causes damage to organs (respiratory organs, kidney) May cause damage to organs (liver) Causes damage to organs (respiratory organs) through prolonged or repeated exposure Very toxic to aquatic life Toxic to aquatic life with long lasting effects

Precautionary statements

Prevention	:	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep container tightly closed. Ground and bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting equipment. Use only non-sparking tools. Take action to prevent static discharges. 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.
Response	:	IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell. IF SWALLOWED: Rinse mouth. Do not induce vomiting. IF ON SKIN: Wash with plenty of water. 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. Call a POISON CENTER or doctor if you feel unwell. Get medical advice/attention if you feel unwell. Rinse mouth. Take off immediately all contaminated clothing and wash it before reuse. Collect spillage.
Storage	:	Store in a well-ventilated place. Keep container tightly closed. Store in a well-ventilated place. Keep cool. 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

Synonyms : 2-Propenoic acid

Chemical name	Concentration (%)	Formula	TSCA	EC-No.	CAS RN
Acrylic acid	≥ 97	C3H4O2	Listed	201-177-9	79-10-7

＊Stabilized with p-methoxyphenol.

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 : Inhalation may causes cough, throat ache, shortness of breath, lung edema.

5. Fire fighting measures

Suitable extinguishing media : Water, dry chemical powder, carbon dioxide, dry sand, foam

Unsuitable extinguishing media : None

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.

Fight fire from windward.

Dry chemical powder, carbon dioxide or dry sand should be used for small fires. Foam extinguisher is effective for a large scale fire.

Personal protection (Emergency response) : Wear breathing apparatus.

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. Remove all sources of ignition. 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 inert material (e.g, diatomaceous earth, sand) and flush spillage area with copious amounts of water.
Prevention Measures for Secondary Accidents	:	Remove nearby sources of ignition and prepare extinguishing media.

7. Handling and storage

Handling

Technical measures	:	Wear proper protective equipment to avoid contact with skin or inhalation of vapor. Pay attention to fire.
Precautions for safe handling	:	Use with an enclosed system or a local exhaust ventilation. Use in well-ventilated areas.

Storage

Storage conditions	:	Store in a refrigerator and tightly closed. (15-25℃).
Material used in packaging/containers	:	Glass, fluorine resin.

8. Exposure controls / Personal protection equipment

ACGIH TWA	2 ppm
Remark (ACGIH)	Skin

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

Protective equipment

Respiratory protection	:	If necessary, wear chemical cartridge respirator with an organic vapor cartage
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	:	Acidity
Melting point	:	14 ° C
Freezing point	:	No data available
Boiling point	:	141 ° C
Flash point	:	54 ° C (C.C.)
Auto-ignition temperature	:	360 ° C
Decomposition temperature	:	No data available
Flammability	:	Flammable
Vapor pressure	:	3.8 hPa (20℃)
Relative density	:	No data available
Density	:	1.051 g/cm^3 (20℃)
Relative gas density	:	2.48

Solubility	:	Water: Miscible. Organic solvents: Easily soluble in ethanol.
Partition coefficient n-octanol/water (log Pow)	:	0.35
Explosive limits (vol %)	:	2.4 - 8 vol %
Viscosity, kinematic	:	No data available
Particle characteristics	:	No data available

10. Stability and reactivity

Reactivity	:	It is a radically polymerizable monomer and easily polymerizes to produce polyacrylic acid.
Chemical stability	:	Stable under normal conditions. The effect of the stabilizer decreases when the oxygen concentration decreases and the storage temperature is exceeded.
Possibility of hazardous reactions	:	It may react violently with strong bases and amines while generating heat.
Conditions to avoid	:	Light, heat.
Incompatible materials	:	Alkaline substances, acids, oxidizing substances.
Hazardous decomposition products	:	Carbon monoxide.

11. Toxicological information

Acute toxicity (oral)	:	Harmful if swallowed rat LD50=340mg/kg
Acute toxicity (dermal)	:	Toxic in contact with skin rabbit LD50=280mg/kg
Acute toxicity (inhalation)	:	No classification (gas) Toxic if inhaled (vapor) rat LC50=1221ppm/4h Harmful if inhaled (dust, mist) rat LC50=2.75mg/L/4h
Skin corrosion/irritation	:	Causes severe skin burns There is a report that in a skin irritation test (OECD TG compliant) in which the undiluted liquid of this substance was applied semi-occlusively to rabbits for 3 minutes, superficial necrosis, slight edema, and discoloration were observed, and on histopathological examination, deep focal necrosis and loss of epidermal adnexa in the necrosis area, and perifocal moderate epithelial hyperplasia and diffuse inflammatory reaction were observed in the application area. Moreover, in humans, 2 workers needed hospitalisation because of skin corrosion during 1967-1992. Based on the above results, it was classified into category 1A.
Serious eye damage/irritation	:	Causes serious eye damage In an eye irritation test with rabbits, application of the undiluted solution showed severe irritation, and it is reported that scarring of the eyelid and corneal opacity persisted 20 days after administration. In addition, there is a description that it is irritating to the eyes in humans. Based on the above results, it was classified into category 1.
Respiratory sensitization	:	Classification not possible

Skin sensitization	:	No classification In humans, it is reported that no sensitization symptom has been observed in more than 450 workers using industrial products of acrylic acid since 1989. In addition, there are both positive and negative results in experimental animals. In a modified split adjuvant test with guinea pigs, skin reaction was observed in 0/10 animals so it was negative.
Germ cell mutagenicity	:	No classification As for in vivo, it was negative in a mouse dominant lethal test and a chromosomal aberration test with rat bone marrow cells. As for in vitro, it was negative in bacterial reverse mutation tests and a mammalian cell gene mutation test, but it was positive in mouse lymphoma tests and a chromosomal aberration test with cultured mammalian cells. Furthermore, it was positive in an adduct formation test with the thymus DNA of a calf and it was negative in an unscheduled DNA synthesis test with cultured rat primary hepatocytes, and an unscheduled DNA synthesis test and a micronucleus test with Syrian hamster embryo cells.
Carcinogenicity	:	No classification IARC classifies it as group 3(not classifiable as to its carcinogenicity to humans).
Reproductive toxicity	:	Classification not possible Although no effect on fertility was observed in a two-generation reproductive toxicity test with rats by the oral route, decreased body weight gain and delayed development and differentiation were found in pups at doses where general toxicity was seen in parental animals. As for a teratogenicity test, in a study with rabbits by the inhalation route, no developmental effects in the fetuses were observed at doses where maternal toxicity was seen. As described above, although effects in fetuses were observed at doses where effects in maternal animals were seen, delayed development and differentiation and a low value of fetal weights corresponded to slight changes in the developmental indexes, therefore, it was classified as "Classification not possible."
STOT-single exposure	:	Causes damage to organs (respiratory organs, kidney) May cause damage to organs (liver) The following was reported in rats: by the oral route, degeneration and necrosis of the hepatocytes, and lethargy; by the inhalation route, perinasal wetness due to respiratory irritation, encrustation, abdominal breathing, dyspnea, lethargy, unresponsiveness to irritation, strong irritation and severe inflammation in the bronchial mucosa, exudate into the bronchial lumen, macrophage in the alveoli, focal inflammation in the lung parenchyma, pulmonary hemorrhage, pulmonary edema, congestion of kidneys, and degeneration of hepatocytes and renal tubules. In rabbits, by the dermal route, apathy, laboured respiration, poor general state, and pulmonary edema at necropsy and dyspnea were reported. Besides, effects on the respiratory organs and kidneys were observed within the guidance range value for category 1 and effects on the liver were observed within the guidance range corresponding to category 2. Based on the above, it was classified into category 1 (respiratory organs, kidney) and category 2 (liver).

STOT-repeated exposure	:	Causes damage to organs (respiratory organs) through prolonged or repeated exposure There are 3 test reports that rats were dosed by drinking water for 90 days. In one of these reports, there is a description that decreased body weight gain was observed only in males at a dose of the upper limit of category 2, but the target organ cannot be identified. In the other 2 reports, effects on the kidneys, gastrointestinal tract and liver were observed at doses exceeding category 2, and this substance corresponded to "Not classified" for the oral route. On the other hand, in the inhalation route, based on the description that in multiple tests in which mice and rats were exposed to the vapour of this substance for 90 days or 2 years, tissue changes in the nasal cavity were observed from the concentrations of category 1, it was classified into category 1 (respiratory organs).
Aspiration hazard	:	Classification not possible

12. Ecological information

Ecotoxicity

Aquatic acute	:	Very toxic to aquatic life Desmodesmus subspicatus ErC50=0.13mg/L/72h
Aquatic chronic	:	Toxic to aquatic life with long lasting effects Desmodesmus subspicatus NOEC=0.016mg/L/72h

Persistence and degradability

Readily biodegradable
BOD : 67.8%

Bioaccumulative potential

Low bioconcentration
BCF : 3.2

Mobility in soil

High mobility
Koc : 43

Hazardous to the ozone layer

Ozone	:	Classification not possible

13. Disposal considerations

Ecological waste information	:	Burn in a chemical incinerator equipped with an afterburner and a scrubber. 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)	:	2218
Proper Shipping Name (IMDG)	:	ACRYLIC ACID, STABILIZED
Packing group (IMDG)	:	II

Transport hazard class(es) (IMDG)	:	8 (3)

Air transport(IATA)

UN-No. (IATA)	:	2218
Proper Shipping Name (IATA)	:	Acrylic acid, stabilized
Packing group (IATA)	:	II
Transport hazard class(es) (IATA)	:	8 (3)
Marine pollutant	:	Applicable

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

Pollutant category	:	Y
MFAG-No	:	132P

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 : Dictionary of Organic Compounds, The society of Synthetic Organic Chemistry, Kodansha Ltd. (1985) .
Handbook of Dangerous Substances Springer-Verlag Tokyo (1991) .
Handbook of 17322 Chemical Products, The Chemical Daily Co. (2022) .
Handbook of dangeroous and hazardous chemicals, Japan Industrial Safety & Health Association. (2000-2001) .
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.