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Safety Data Sheet

1. Chemical product and company identification

Product name : 1,1,1,3,3,3-Hexafluoro-2-propanol

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 : 18529

2. Hazards identification

GHS classification

Health hazards	Acute toxicity (oral)	Category 4
	Acute toxicity (inhalation:vapors)	Category 4
	Skin corrosion/irritation	Category 1A
	Serious eye damage/eye irritation	Category 1

Hazard pictograms

Signal word : Danger

Hazard statements : Harmful if swallowed or if inhaled
Causes severe skin burns and eye damage

Precautionary statements

Prevention : 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.
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 (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.
Immediately call a POISON CENTER or doctor.
Call a POISON CENTER or doctor if you feel unwell.

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
1,1,1,3,3,3-Hexafluoro-2-propanol	≥ 99	CF3CH(OH)CF3	Listed	213-059-4	920-66-1

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 : Remove contaminated clothing and the substance. Wash with plenty of water. Immediately get medical attention.

First-aid measures after eye contact : Rinse cautiously with water for several 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.

5. Fire fighting measures

Suitable extinguishing media : This product is noncombustible.

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.

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. 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.
Precautions for safe handling	:	Use with an enclosed system or a local exhaust ventilation. Use in well-ventilated areas. Avoid contact with alkaline substances since it exhibits weak acidity when mixed with water.

Storage

Storage conditions	:	Store the bottle tightly closed in a cool, dark place because the substance is hygroscopic.
Material used in packaging/containers	:	Glass, fluorine resin. Do not use metal containers.

8. Exposure controls / Personal protection equipment

ACGIH TWA	Not established

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	:	Irritant odor
pH	:	4.7 (20℃, 176 g/L)
Melting point	:	-3.3 ° C
Freezing point	:	No data available
Boiling point	:	59 ° C (1,013 hPa)
Flash point	:	No ignition up to 60 °C at which test liquid boils. (C.C.)
Auto-ignition temperature	:	> 550 ° C (1,020 hPa)
Decomposition temperature	:	No data available
Flammability (solid, gas)	:	Non flammable.
Vapor pressure	:	14.7 kPa (20℃)

Relative density	:	No data available
Density	:	1.590 g/cm³ (20℃)
Relative gas density	:	5.83
Solubility	:	Water: 176 g/L (20℃) Organic solvent: Soluble in many kinds of organic solvents
Partition coefficient n-octanol/water (Log Pow)	:	1.5 (25℃)
Explosive limits (vol %)	:	No data available
Viscosity, kinematic:	:	No data available
Particle characteristics	:	No data available

10. Stability and reactivity

Reactivity	:	When mixed with water, it shows weak acidity. Gradual decomposition in basic aqueous solutions (e.g, bicarbonate). Excellent solubility in salts. May react with oxidizing substances.
Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	Stable under normal conditions of use.
Conditions to avoid	:	Light, heat, moisture.
Incompatible materials	:	Oxidizing substances, Alkaline substances.
Hazardous decomposition products	:	Carbon monoxide, fluorine, hydrogen fluoride, carbonyl fluoride.

11. Toxicological information

Acute toxicity (oral)	:	Harmful if swallowed mouse LD50=600 mg/kg
Acute toxicity (dermal)	:	Classification not possible
Acute toxicity (inhalation)	:	No classification (gas) Harmful if inhaled (vapor) rat LC50=1,974 ppm/4h Classification not possible (dust, mist)
Skin corrosion/irritation	:	Causes severe skin burns Although these are old in vivo data from rabbits, OECD TG not applicable, they clearly show long-term undissipated skin damage and immediate corrosive effects on the skin due to exposure to the test substance. Erythema: Erythema was moderately to severely observed in 5 of 7 cases with 100% exposure to the test substance on the day of treatment. Edema: Edema was moderate to severe in 5 of 7 patients exposed to 100% of the test substance on the day of treatment and remained unresolved until day 14. Other adverse effects included whitening of the exposed skin area and a subsequent change in skin color to purple in 5 of 7 cases exposed to 100% test substance on the day of treatment and the following day. Necrosis and irreversible burns (not yet resolved on Day 14) were observed in 6 of 7 patients treated with 100% of the test substance. For these reasons, it was classified as category 1A.

Serious eye damage/irritation	:	Causes serious eye damage In vivo studies on rabbits have shown that. The cornea became cloudy within 30 seconds, eroded grossly with dry precipitate within 4 hours after injection of the test substance, and within 1-7 days, marked progressive damage, opaque areas developed deep into the cornea; by day 29, the cornea was almost completely covered and unrecognizable beneath a mass of fibrin mixed with scar tissue and pus. For the iris, severe iritis with edema and decreased response to light occurred during the first 7 days; on day 29, the iris was not visible and there was no obvious perception of light. For the conjunctiva, bloody secretions were seen within the first hour, and there was severe irritation with fibro-purulent secretions on day 29 as well. Thus it was classified as category 1.
Respiratory sensitization	:	Classification not possible
Skin sensitization	:	No classification The Stimulation Indices (SI) of all dose groups of HFIP-treated mice did not exceed 3, this test material was considered as negative in the LLNA Skin sensitisation assay (OECD TG429). Thus it was classified as "No classification".
Germ cell mutagenicity	:	Classification not possible A reversion mutation test (OECD TG471) using bacteria has confirmed that this substance is germline mutagen negative (non-mutagenic) with or without metabolic activation. However, due to lack of in vivo data, it was classified as "classification not possible".
Carcinogenicity	:	Classification not possible
Reproductive toxicity	:	Classification not possible In a reproductive toxicity study in rats (OECD TG422), prolonged sexual cycle and gestation period, low mating and calving rates were observed in parent animals, and generalized edema, tongue protrusion, and color changes in the contents of the digestive tract were observed in offspring animals, along with low birth numbers, body weight, and survival rates. However, since TG422 is only a screening test, it was classified as "Classification not possible".
STOT-single exposure	:	Classification not possible
STOT-repeated exposure	:	No classification In a repeated-dose toxicity study in rats via the oral route (OECD TG422), death, CNS depression, and clinical symptoms attributable to anesthetic effects were observed in females at 300 mg/kg/day. Since this dose is above the guidance's category 2, it was classified as "No classification".
Aspiration hazard	:	Classification not possible

12. Ecological information

Ecotoxicity

Aquatic acute	:	No classification Daphnia magna EC50>0.15 mg/L/48h
Aquatic chronic	:	No classification

Persistence and degradability

Not readily biodegradable
TOC : 0%, GC : 5%

Bioaccumulative potential

Low bioconcentration
BCF : 1.1-1.4 (1 mg/L), 1.3-2.7 (0.1 mg/L)

Mobility in soil

No additional information available

Hazardous to the ozone layer

Ozone : Classification not possible

13. Disposal considerations

Ecology - waste materials : Mixed with flammable organic solvents and burn in a chemical incinerator equipped with an afterburner and a scrubber. Or entrust approved waste disposal companies with the disposal.

Alkaline solution should be used for cleaning liquid of the scrubber.

The incinerator should be suitable for burning organic halogen compounds.

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)	:	1760
Proper Shipping Name (IMDG)	:	CORROSIVE LIQUID, N.O.S.
Packing group (IMDG)	:	I
Transport hazard class(es) (IMDG)	:	8

Air transport(IATA)

UN-No. (IATA)	:	1760
Proper Shipping Name (IATA)	:	Corrosive liquid, n.o.s.
Packing group (IATA)	:	I
Transport hazard class(es) (IATA)	:	8

Marine pollutant : Not applicable

MFAG-No : 154

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 : NITE Chemical Risk Information Platform (NITE-CHRIP), National Institute of Technology and Evaluation.
Handbook of 17322 Chemical Products, The Chemical Daily Co. (2022) .
Dangerous Properties of Industrial Materials,6th ed. N.I.Sax Van Nostrand Reinhold Company (1984) .
Handbook of Dangerous Substances Springer-Verlag Tokyo (1991) .
ECHA (European Chemicals Agency).

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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.