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Safety Data Sheet

1. Chemical product and company identification

Product name : XYLENE

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	:	GE00024 1.2
Recommended uses and restrictions	:	Electronic chemicals

2. Hazards identification

GHS classification

Physical hazards	Flammable liquids	Category 3
Health hazards	Acute toxicity (inhalation:vapors)	Category 4
	Skin corrosion/irritation	Category 2
	Serious eye damage/eye irritation	Category 2A
	Carcinogenicity	Category 2
	Reproductive toxicity	Category 1B
	Specific target organ toxicity (single exposure)	Category 1 (respiratory organs, central nervous system)
	Specific target organ toxicity (single exposure)	Category 3 (narcosis)
	Specific target organ toxicity (repeated exposure)	Category 1 (nervous system, respiratory organs, auditory organs)
	Aspiration hazard	Category 1
Environmental hazards	Aquatic acute	Category 1
	Aquatic chronic	Category 2

Hazard pictograms

Signal word : Danger

Hazard statements : Flammable liquid and vapor
May be fatal if swallowed and enters airways
Causes skin irritation
Causes serious eye irritation
Harmful if inhaled
May cause drowsiness or dizziness

Suspected of causing cancer
May damage fertility or the unborn child
Causes damage to organs (respiratory organs, central nervous system)
Causes damage to organs (nervous system, respiratory organs, auditory organs) through prolonged or repeated exposure
Very toxic to aquatic life
Toxic to aquatic life with long lasting effects

Precautionary statements

Prevention : Do not handle until all safety precautions have been read and understood.
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: Immediately call a POISON CENTER or doctor.
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.
IF exposed or concerned: Get medical advice/attention.
Call a POISON CENTER or doctor if you feel unwell.
Get medical advice/attention if you feel unwell.
Do not induce vomiting.
If skin irritation occurs: Get medical advice/attention.
If eye irritation persists: Get medical advice/attention.
Take off 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 : Dimethylbenzene

Chemical name	Concentration (%)	Formula	TSCA	EC-No.	CAS RN
Xylene	85(as mixture of o-, m-, p-)	C6H4(CH3)2	Listed	215-535-7	1330-20-7

＊Contains 15% ethylbenzene as an impurity.

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.

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 : The chemical is volatile. Do not induce vomiting because it increases the risk of aspiration into the lungs. Get medical attention immediately. If necessary, rinse mouth with water.

Personal Protection in First Aid and Measures : Rescuers should wear proper protective equipment like rubber gloves, goggles.

5. Fire fighting measures

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

Unsuitable extinguishing media : Water spray

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) : 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. 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 damage to the environment by flowing of spillage to rivers.

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. Fire is strictly prohibited. Ventilate well at working places.
Precautions for safe handling	:	Use with an enclosed system or a local exhaust ventilation. Use in well-ventilated areas. Do not allow contact with oxidizing substances.

Storage

Storage conditions	:	Store in a dark, cool place and tightly closed.
Material used in packaging/containers	:	Glass, fluorine resin, stainless steel. Do not use polyvinyl chloride resin, polystyrene, polypropylene.

8. Exposure controls / Personal protection equipment

ACGIH TWA	20 ppm

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

Protective equipment

Respiratory protection	:	Chemical cartridge respirator with an organic vapor cartage or airline respirator
Hand protection	:	Organic solvents 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	:	Characteristic
pH	:	No data available
Melting point	:	-47.4 ° C (as m-xylene)
Freezing point	:	No data available
Boiling point	:	139.3 ° C (as m-xylene)
Flash point	:	27 ° C (C.C.) (as m-xylene)
Auto-ignition temperature	:	527 ° C (as m-xylene)
Decomposition temperature	:	No data available
Flammability	:	Flammable
Vapor pressure	:	8 hPa (20℃) (as m-xylene)
Relative density	:	No data available
Density	:	0.860 - 0.870 g/cm³ (20℃)
Relative gas density	:	3.66 (as m-xylene)
Solubility	:	Organic solvents: Soluble in acetone, ethanol, diethyl ether. Water: 0.02 % (20℃) (as m-xylene)
Partition coefficient n-octanol/water (log Pow)	:	3.2 (as m-xylene)
Explosive limits (vol %)	:	1.1 - 7 vol % (as m-xylene)

Viscosity, kinematic:	:	No data available
Particle characteristics	:	No data available

10. Stability and reactivity

Reactivity	:	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.
Incompatible materials	:	Oxidizing substances.
Hazardous decomposition products	:	Carbon monoxide.

11. Toxicological information

Acute toxicity (oral)	:	No classification rat LD50=3600mg/kg (as o-xylene) LD50=4320mg/kg (as m-xylene) LD50=4029mg/kg (as p-xylene) LD50=3500-4700mg/kg (as ethylbenzene)
Acute toxicity (dermal)	:	No classification rabbit LD50>3160mg/kg (as o-xylene) LD50=3228mg/kg (as m-xylene) LD50=15400mg/kg (as ethylbenzene)
Acute toxicity (inhalation)	:	No classification (gas) Harmful if inhaled Classification not possible (dust, mist)
Acute toxicity (vapor) - Description	:	rat LC50=5303ppm/4h (as o-xylene) LC50=7328ppm/4h (as m-xylene) LC50=4740ppm/4h (as p-xylene) LC40=4000ppm/4h (as ethylbenzene)
Skin corrosion/irritation	:	Causes skin irritation m-Xylene : Application of the substance to rabbit skin (application period unknown) caused irritation. In a test in which 13 volunteers soaked their both hands in the substance for 20 minutes, they experienced burning sensation after 10 minutes of exposure, which were reversible within 10 minutes after the end of exposure. Erythema was observed in the exposure sites, but the effects faded within a few hours. Based on the content, this product was classified into category 2.
Serious eye damage/irritation	:	Causes serious eye irritation m-Xylene : Application of 0.5 mL of the substance to rabbit eyes resulted in mild to moderate irritation. Thus, it was classified into category 2A. Based on the content, the product was classified into category 2A.
Respiratory sensitization	:	Classification not possible
Skin sensitization	:	Classification not possible
Germ cell mutagenicity	:	No classification The substance gave negative results in micronucleus assay in mouse bone marrow cells in vivo and reverse mutation test in bacteria in vitro.
Carcinogenicity	:	Suspected of causing cancer IARC classifies ethylbenzene as group 2B (possibly carcinogenic to humans). Based on the content, this product was classified into category 2.

Reproductive toxicity	:	May damage fertility or the unborn child Ethylbenzene : The Japan Society for Occupational Health considered that although no clear reproductive toxicity effect is reported for humans, it is certain that reproductive toxicity occurs in laboratory animals, and they classified it in reproductive toxicants group 2 (suspected human reproductive toxicant). Based on the content, the product was classified into category 1B.
STOT-single exposure	:	Causes damage to organs (respiratory organs, central nervous system) May cause drowsiness or dizziness o-Xylene : Inhalation exposure in mice caused excitability of the central nervous system at low doses and central nervous system depression at high doses. The effects on the central nervous system were observed within the guidance value range of category 1. Xylene isomers cause central nervous system depression, uncoordinated movements, lying down, and coma. ACGIH reports that xylene isomers result in respiratory tract irritation. m-Xylene : There is human evidence including "In inhalation exposure, nausea, short-term dysmnesia, hyporeactivity, lowered sense of equilibrium and lowered pulmonary function were observed." and "in oral ingestion, pulmonary congestion and dropsy were noted, and the death was due to central respiratory depression." p-Xylene : As for human cases, dizziness was observed in four of six volunteers exposed to this substance by inhalation. For experimental animals, it is reported that inhalation exposure (unknown species of animals, and doses corresponding to category 1) caused incoordination, tremors, reduced axonal transport, and at higher doses, narcotic effects; additionally, while the route(s) of exposure, doses, etc. are not known, tremors, biphasic central nervous system response (depression and excitement), and gastrointestinal-tract damage were reported as toxic symptoms of this substance. Ethylbenzene : Exposure of volunteers to the substance resulted in no adverse effects in 100 ppm, but it has been reported that irritation of the respiratory tract, conjunctivitis, and somnolence were common above 200 ppm. In a single inhalation exposure study in mice, lacrimation, decreased respiratory rate, effects on the central nervous system, sedation, eyes closed, and sensory paralysis were reported. Based on the content, this product was classified into category 1 (respiratory organs, central nervous system) and category 3 (narcosis).

STOT-repeated exposure	:	Causes damage to organs (nervous system, respiratory organs, auditory organs) through prolonged or repeated exposure m-Xylene : After human volunteers were exposed by inhalation to the substance for 5 days (6 hours/day), followed by no exposure on weekend, and then exposed again for one day, they were evaluated for sense of equilibrium after forced exercise. Reduced response time at 90-100 ppm and reduced sense of equilibrium at the high concentration of 400 ppm were observed, indicating neurological effects from even short-term exposure. Although there are no data on long-term effects from exposure to the substance alone, it could potentially have the same effects as xylene (mixture), which suggests that neurological and respiratory effects are of concern. Animal studies have shown that in 3-month or 6-month inhalation exposure tests with the substance (probably vapor) in male rats, reduced locomotion and incoordination were observed at 100 ppm (category 2), suggesting neurological effects in humans. Ethylbenzene : Significant hearing loss was seen in workers co-exposed to about 30 ppm of ethylbenzene and 85 dB noise than in those exposed to noise alone, indicating that relatively low ethylbenzene exposures may be involved in hearing loss. And, the result of the neurobehavioral function test in this worker was significantly inferior to the worker of the office work in the result of "simple reaction time, number of advocation, dexterity of the hand, visual memory power, index tracking power". In addition, it was reported that acetylcholinesterase activity was significantly lower, suggesting inhibition of neuronal function and disturbance of neurotransmitters. Based on the content, this product was classified into category 1 (respiratory organs, nervous system, auditory organs).
Aspiration hazard	:	May be fatal if swallowed and enters airways The substance (mixture) is a hydrocarbon and its kinematic viscosity data is not available. Kinematic viscosities of o-, m-, p-xylene and ethylbenzene are 0.86, 0.67, 0.70 and 0.74 mm2/s (25℃), respectively. The substance is considered to have a similar, low kinematic viscosity. Thus, it was classified into category 1.

12. Ecological information

Ecotoxicity

Aquatic acute	:	Very toxic to aquatic life Pseudokirchneriella subcapitata ErC50=0.799mg/L/72h (as o-xylene) Daphnia magana EC50=2.42mg/L/48h (as m-xylene) Crangon franciscorum LC50=1.7mg/L/96h (as p-xylene) Crangon franciscorum LC50=0.42mg/L/96h (as ethylbenzene)
Aquatic chronic	:	Toxic to aquatic life with long lasting effects Daphnia magna NOEC=0.407mg/L/21-day (as o-xylene) Daphnia magna NOEC=0.407mg/L/21-day (as m-xylene) Ceriodaphnia dubia NOEC=0.956mg/L/7-day (as ethybenzene)

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 : 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) : 1307
Proper Shipping Name (IMDG) : XYLENES
Packing group (IMDG) : III
Transport hazard class(es) (IMDG) : 3

Air transport(IATA)

UN-No. (IATA) : 1307
Proper Shipping Name (IATA) : Xylenes
Packing group (IATA) : III
Transport hazard class(es) (IATA) : 3

Marine pollutant : Applicable

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

Pollutant category : Y
MFAG-No : 130

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) .
Solvents Handbook, T, Asahara el, Kodansha Scientific Ltd. (1976) .
Registry of Toxic Effects of Chemical Substances (RTECS) 1985-86 ed. National Instituted for Occupational Safety and Health (1987) .
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.