

Safety Data Sheet

1. Chemical product and company identification

Product name : p-Dichlorobenzene

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 : 10129
 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

Health hazards	Serious eye damage/eye irritation	Category 2A
	Skin sensitization	Category 1
	Carcinogenicity	Category 2
	Reproductive toxicity	Category 2
	Specific target organ toxicity (single exposure)	Category 1 (central nervous system, blood, liver)
	Specific target organ toxicity (single exposure)	Category 3 (respiratory tract irritation.)
	Specific target organ toxicity (repeated exposure)	Category 1 (nervous system, liver, blood)
	Specific target organ toxicity (repeated exposure)	Category 2 (respiratory organs, kidney)
Environmental hazards	Aquatic acute	Category 1
	Aquatic chronic	Category 1

Hazard pictograms



Signal word : Danger

Hazard statements : May cause an allergic skin reaction
 Causes serious eye irritation
 May cause respiratory irritation
 Suspected of causing cancer
 Suspected of damaging fertility or the unborn child
 Causes damage to organs (central nervous system, blood, liver)
 Causes damage to organs (nervous system, liver, blood) through prolonged or repeated exposure



May cause damage to organs (respiratory organs, kidney) through prolonged or repeated exposure
 Very toxic to aquatic life
 Very toxic to aquatic life with long lasting effects

Precautionary statements

- Prevention**
- : Do not handle until all safety precautions have been read and understood.
 - Do not breathe dust.
 - 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.
 - Contaminated work clothing should not be allowed out of the workplace.
 - Avoid release to the environment.
 - Wear protective gloves/protective clothing/eye protection/face protection.
- Response**
- : IF ON SKIN: Wash with plenty of 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.
 - If skin irritation or rash 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 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
p-Dichlorobenzene	≥ 99	C6H4Cl2	Listed	203-400-5	106-46-7

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.
- 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. If necessary, get medical treatment.



First-aid measures after ingestion : Give the victim water or salt water and make him vomit. Get medical attention.

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

Most Important Symptoms/Effects

Symptoms/effects : Inhalation causes headache, breathlessness, nausea, runny nose, and swollen eyes.

5. Fire fighting measures

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

Unsuitable extinguishing media : Water spray

Fire hazard : Thermal decomposition emits harmful hydrogen chloride, phosgene.

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 dust. Conduct operations from upwind and evacuate people downwind.

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 : Sweep up in a chemical waste container. Flush contaminated 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 appropriate protective equipment to avoid contact with skin or inhalation of dust.

Precautions for safe handling : Avoid formation of dust and aerosols.
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.



8. Exposure controls / Personal protection equipment

ACGIH TWA	10 ppm
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Appropriate engineering controls : Install a local ventilation system in case of dusty condition.

Protective equipment

Respiratory protection : Dust mask

Hand protection : Impervious protective gloves

Eye protection : Safety goggles

Skin and body protection : Protective clothing, protective boots

9. Physical and chemical properties

Physical state : Solid

Color : Colorless - white

Odor : Characteristic

pH : No data available

Melting point : 52 - 55 ° C

Freezing point : No data available

Boiling point : 174.12 ° C

Flash point : 65.6 ° C (C.C.)

Auto-ignition temperature : 640 ° C

Decomposition temperature : No data available

Flammability : Flammable

Vapor pressure : 2.34 hPa (25°C)

Relative density : 1.248 (55/4°C)

Density : No data available

Relative gas density : 5.08

Solubility : Organic solvents: Soluble in diethyl ether, chloroform, benzene.
Water: 0.01 % (35°C)

Partition coefficient n-octanol/water (log Pow) : 3.37

Explosive limits (vol %) : 1.7 - 5.9 vol %

Viscosity, kinematic : No data available

Particle characteristics : No data available

10. Stability and reactivity

Reactivity : Alkaline decomposition using copper or a copper salt as a catalyst produces p-chlorophenol.
Reaction with fuming sulfuric acid produces 1,4-dichloro-2-benzenesulfonic acid.
May react with oxidizing substances.

Chemical stability : Stable under normal conditions. Sublimate at room temperature.

Possibility of hazardous reactions : Stable under normal conditions of use.

Conditions to avoid : Light, heat.

Incompatible materials : Oxidizing substances.



Hazardous decomposition products : Carbon monoxide, chlorine, hydrogen chloride.

11. Toxicological information

Acute toxicity (oral) : No classification
rat LD50=2512mg/kg

Acute toxicity (dermal) : No classification
rat LD50>2000mg/kg

Acute toxicity (inhalation) : No classification (gas)
Classification not possible (vapor)
No classification (dust, mist)
rat LC50>5.70mg/L/4h

Skin corrosion/irritation : No classification
There are descriptions that in a skin irritation test with rabbits (OECD TG 404), as a result of application of 500 mg of this substance for four hours, slight erythema was observed, but resolved after seven days. There is a report that in another skin irritation test with rabbits, moderate to severe erythema was observed but resolved after 72 hours, and the Primary Irritation Index (PII) was 2.9.

Serious eye damage/irritation : Causes serious eye irritation
It is reported that, in an eye irritation test with rabbits (OECD TG 405), as a result of application of 500 mg of this substance for 24 hours, conjunctival erythema and oedema were observed, but resolved after 72 hours, and it was slightly irritating to the eyes. From the above, this substance was classified into category 2 based on the result of the test complying with an OECD testing guideline.

Respiratory sensitization : Classification not possible

Skin sensitization : May cause an allergic skin reaction
It is reported that in a maximization test with guinea pigs, sensitization was observed in 14 out of 24 animals (score 1; 9/24 animals, score 2; 4/24 animals, score 3; 1/24 animal), and there is a sensitization. As for humans, a case of a 69-year-old male who developed allergic purpura through dermal contact with an armchair that had been treated with this substance is reported. Based on the above, this substance was classified into category 1.



Germ cell mutagenicity	: No classification As for in vivo, a dominant lethal test with mice was negative, micronucleus tests with rat kidney cells and mouse bone marrow cells were positive and negative results, a micronucleus test with mouse peripheral blood erythrocytes was negative, a chromosome aberration test with rat bone marrow cells was negative, a comet assay with rat kidney, and mouse liver, lung, spleen, kidney, and bone marrow were positive, DNA-adduct formation tests with lung and stomach of rats or mice were positive, DNA-adduct formation tests with rat liver and kidney were positive and negative results, and it was positive in unscheduled DNA synthesis tests with rat kidney and mouse liver and in replicative DNA synthesis tests with liver and kidney of rats, and liver of mice. As for in vitro, in bacterial reverse mutation tests, mammalian cell genetic mutation tests, mouse lymphoma tests, micronucleus tests, and sister chromatid exchange tests, there were many negative results but positive results also existed, and it was negative in mammalian cell chromosome aberration tests and positive in DNA damage tests. From the above, the reproducibility of the positive findings in the micronucleus test could not be confirmed, or was non-standard tests. Therefore, based on the weight-of-evidence principle, it was judged to have no relevant genotoxicity.
Carcinogenicity	: Suspected of causing cancer IARC classifies it as group 2B (possibly carcinogenic to humans).
Reproductive toxicity	: Suspected of damaging fertility or the unborn child As above, as the result of the two-generation reproduction toxicity tests with rats dosed by inhalation and oral routes, there were no adverse effects on the fertility of parental animals, but adverse effects on the occurrence and development at and after birth such as decreased live pups at birth, low value of body weights, and growth delay until weaning were observed at doses where general toxicity effects were manifested in the parental animals. In addition, the classification by the Japan Society For Occupational Health also corresponds to category 2. Therefore, it was classified into category 2 for this hazard class.



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- STOT-single exposure : Causes damage to organs (central nervous system, blood, liver)
May cause respiratory irritation
This substance is irritating to the respiratory tract. As for human cases, there are reports of cough, jaundice, acute hemolytic anemia, and methemoglobinuria in an accident case of a three-year-old boy who orally ingested moth-repellent crystals, of vertigo and anemia in a case of inhalation exposure of a male in a closed room, and of kidney damage in a case of dermal exposure of a male. There are further descriptions that acute symptoms associated with this substance include effects on the liver, headache, nausea, vomiting, dizziness, central nervous system depression, convulsive seizures, agitation, weakness, methemoglobinemia, and acute hemolytic anemia. As for experimental animals, there are reports of abnormal gait, hunched posture, an increase in hyaline droplets in the renal cortex, vacuolation of hepatocytes, and hepatic porphyria in oral administration (corresponding to category 2) to rats. And in inhalation exposure with rats (corresponding to category 1), there are reports of tremors, reduced reflex, an increase in locomotor activity, piloerection, tremors, loss of reflex, centrilobular hepatocyte hypertrophy, and vacuolation and mild necrosis of hepatocytes, and in males, increased formation of hyaline droplets in the renal cortex.
In humans, there is only one case with kidney damage in human case of dermal exposure and no findings in the kidney were observed in oral and inhalation route. And, in experimental animals, the increase in hyaline droplets in the renal cortex was seen in male rats. Therefore, effects on the kidney were not adopted on this substance. From the above, this substance was classified into category 1 (central nervous system, blood, liver), category 3 (respiratory tract irritation).
- STOT-repeated exposure : Causes damage to organs (nervous system, liver, blood) through prolonged or repeated exposure
May cause damage to organs (respiratory organs, kidney) through prolonged or repeated exposure
In humans, systemic petechiae, anemia, jaundice, yellow atrophy of the liver, unsteady gait, paresthesia, and aphasia were seen in vapor exposure, and anemia, unsteady gait, tremors of the hands, and decreased mental activity were seen in oral ingestion. As for experimental animals, in a 5-7 month inhalation toxicity test with rats and guinea pigs, increased liver and kidney weights, and degeneration and edema of hepatocytes were observed at 158 ppm. In a 16-day inhalation toxicity test with rats and guinea pigs, interstitial edema, congestion, and alveolar hemorrhage were observed in the lungs at 173 ppm. In a 4-week toxicity test with rats dosed by gavage, tubular nephropathy with dilation and necrosis of tubules at 150 mg/kg/day and increased liver weights, increased kidney weights, and centrilobular hepatocellular hypertrophy at 300 mg/kg/day were observed. Therefore, this substance was classified into category 1 (nervous system, liver, blood), category 2 (respiratory organs, kidney).
- Aspiration hazard : Classification not possible

12. Ecological information

Ecotoxicity

- Aquatic acute : Very toxic to aquatic life
Daphnia magna EC50=0.7mg/L/48h



Aquatic chronic : Very toxic to aquatic life with long lasting effects
Daphnia magna NOEC=0.1mg/L/21-day

Persistence and degradability

Not readily biodegradable

BOD : 0%

Bioaccumulative potential

Low bioconcentration

BCF : 78

Mobility in soil

Moderate mobility

Koc : 273

Hazardous to the ozone layer

Ozone : Classification not possible

13. Disposal considerations

Ecological waste information : 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.
The incinerator should be suitable for burning organic halogen compounds.
Alkaline solution should be used for cleaning liquid of the scrubber.

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) : 3077
Proper Shipping Name (IMDG) : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
Packing group (IMDG) : III
Transport hazard class(es) : 9

(IMDG)

Air transport(IATA)

UN-No. (IATA) : 3077
Proper Shipping Name (IATA) : Environmentally hazardous substance, solid, n.o.s.
Packing group (IATA) : III
Transport hazard class(es) : 9

(IATA)

Marine pollutant : Applicable

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

Pollutant category : X
MFAG-No : 171

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 : Solvents Handbook, T, Asahara et al, Kodansha Scientific Ltd.
(1976) .
Handbook of Dangerous Substances Springer-Verlag Tokyo
(1991) .
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.

