



1,4-DICHLOROBENZENE

GHS Safety Data Sheet

Version No:3

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Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME

1,4-DICHLOROBENZENE

OTHER NAMES

C6-H4-Cl2, para-dichlorobenzene, PDCB, PDB, p-DCB, p-DCB, DCB, "para dichlorobenzene", "(1, 4)para-dichlorobenzene", p-dichlorobenzene, p-dichlorobenzene, "1, 4 para dichlorobenzene", "p-chlorophenyl chloride", "p-chlorophenyl chloride", p-dichlorobenzol, p-dichlorobenzol, paradichlorobenzol, "Paranuggets Deodorant Block", Persia-Perazol, Paramoth, Santachlor, Di-chloro, Evola, "Para crystals", Paradi, Paracide, Para-zene, Paradow

PROPER SHIPPING NAME

ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.

PRODUCT USE

As an insecticidal fumigant, moth repellent for fabric and fur, germicide.
Deodorant toilet blocks, urinal disinfectant. As a space odourant.
In dyes, intermediates, pharmacy, agriculture (fumigating soil);
In the manufacture of 2,5-dichloroaniline.
Prior to 1993 Referred to as UN 1592 by Dangerous Goods Code.

SUPPLIER

Company: S D FINE- CHEM LIMITED

Address:

315- 317, T.V. INDUSTRIAL ESTATE,

248, WORLI,

MUMBAI- 400030.INDIA.

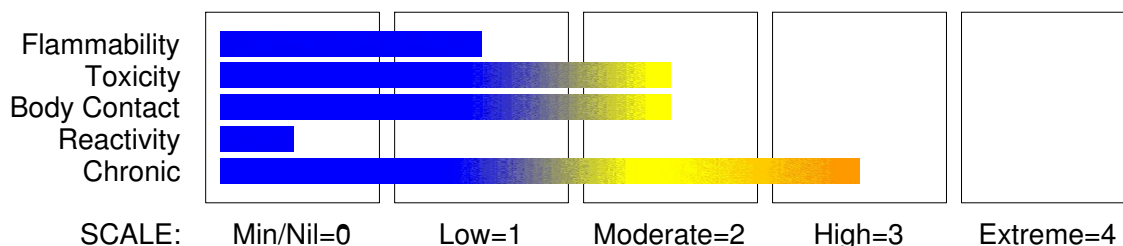
technical@sdfine.com

Telephone: 91- 22- 24959898

Telephone: 91- 22- 24959899

Fax: 91- 22- 24937232

HAZARD RATINGS



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Section 2 - HAZARDS IDENTIFICATION

GHS Classification

Acute Toxicity (Oral) Category 4
Carcinogen Category 2
Chronic Aquatic Hazard Category 1
Eye Irritation Category 2A
Respiratory Irritation Category 3



EMERGENCY OVERVIEW

HAZARD

WARNING

Determined by Chemwatch using GHS criteria:

H335 H302 H319 H351 H410

May cause respiratory irritation

Harmful if swallowed

Causes serious eye irritation

Suspected of causing cancer

Very toxic to aquatic life with long lasting effects

PRECAUTIONARY STATEMENTS

Prevention

Wash hands thoroughly after handling.

Do not handle until all safety precautions have been read and understood.

Obtain special instructions before use.

Use personal protective equipment as required.

Do not eat, drink or smoke when using this product.

Response

If eye irritation persists, get medical advice/attention.

Wear eye/face protection.

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: Get medical attention advice.

Specific treatment: refer to Label or MSDS.

Storage

Store locked up.

Disposal

Dispose of contents and container in accordance with relevant legislation.

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Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
1, 4- dichlorobenzene	106-46-7	>97

Section 4 - FIRST AID MEASURES

SWALLOWED

For advice, contact a Poisons Information Centre or a doctor.

EYE

If this product comes in contact with the eyes:

- Wash out immediately with fresh running water.
- Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.
- If pain persists or recurs seek medical attention.
- Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

SKIN

If skin contact occurs:

- Immediately remove all contaminated clothing, including footwear.
- Flush skin and hair with running water (and soap if available).
- Seek medical attention in event of irritation.

INHALED

- If fumes or combustion products are inhaled remove from contaminated area.
- Lay patient down. Keep warm and rested.
- Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.
- Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.
- Transport to hospital, or doctor.

NOTES TO PHYSICIAN

Treat symptomatically.

EYES - Stain for evidence of corneal injury.

SKIN - Treat as for dermatitis.

RESPIRATION - Administer oxygen if available. The use of bronchodilators, expectorants and antitussives may help.

There is no antidote for systemic effects.

Readily absorbed after oral administration to rats and found in all organs with accumulation in adipose tissues. 90% of the dose is excreted within 48 hours. Two metabolites, 2,5-dichlorophenylmethylsulfone and 2,5-dichlorophenylsulfoxide are detected in the blood (though not the compound itself). Slow release from the adipose tissues is probably responsible for the persistence of these metabolites. 2,5-dichlorophenol is detected in plasma, urine, liver, kidneys and fatty tissues - in humans this metabolite is a useful monitor of exposure. An occupational exposure for 1 week to 7.4 ppm p-DCB produced an increase of p-DCB in the urine as a direct measurement and its use as a biological exposure index has been suggested

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Section 4 - FIRST AID MEASURES

Section 5 - FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

Water spray or fog.

Foam.

Dry chemical powder.

· Alcohol stable foam.

Carbon dioxide.

FIRE FIGHTING

- Alert Fire Brigade and tell them location and nature of hazard.
- Wear full body protective clothing with breathing apparatus.
- Prevent, by any means available, spillage from entering drains or water course.
- Use water delivered as a fine spray to control fire and cool adjacent area.
- Avoid spraying water onto liquid pools.
- DO NOT approach containers suspected to be hot.
- Cool fire exposed containers with water spray from a protected location.
- If safe to do so, remove containers from path of fire.

Equipment should be thoroughly decontaminated after use.

FIRE/EXPLOSION HAZARD

- Combustible.
- Slight fire hazard when exposed to heat or flame.
- Heat may cause expansion or decomposition leading to violent rupture of containers.
- On combustion, may emit toxic fumes of carbon monoxide (CO).
- May emit acrid smoke. May emit poisonous fumes.

Decomposes on heating and produces toxic fumes of:

hydrogen chloride.

chlorine.

carbon monoxide (CO).

phosgene and carbon dioxide (CO₂).

FIRE INCOMPATIBILITY

Avoid contamination with strong oxidising agents as ignition may result.

Avoid contact with.

aluminium powdered metals.

Personal Protective Equipment

Breathing apparatus.

Gas tight chemical resistant suit.

Limit exposure duration to 1 BA set 30 mins.

Section 6 - ACCIDENTAL RELEASE MEASURES

EMERGENCY PROCEDURES

MINOR SPILLS

- Remove all ignition sources.
- Clean up all spills immediately.
- Avoid contact with skin and eyes.

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Section 6 - ACCIDENTAL RELEASE MEASURES

- Control personal contact by using protective equipment.
- Use dry clean up procedures and avoid generating dust.
- Place in a suitable labelled container for waste disposal.

MAJOR SPILLS

- Clear area of personnel and move upwind.
- Slippery when spilt.
- Alert Fire Brigade and tell them location and nature of hazard.
- Wear full body protective clothing with breathing apparatus.
- Prevent, by any means available, spillage from entering drains or water courses.
- No smoking, naked lights or ignition sources.
- Increase ventilation.
- Stop leak if safe to do so.
- Water spray or fog may be used to disperse / absorb vapour.
- Contain spill with sand, earth or vermiculite.
- Collect recoverable product into labelled containers for recycling.
- Collect solid residues and seal in labelled drums for disposal.
- Wash area with detergent and water and prevent runoff into drains.
- After clean up operations, decontaminate and launder all protective clothing and equipment before storing and re-using.
- If contamination of drains or waterways occurs, advise emergency services.

EMERGENCY RESPONSE PLANNING GUIDELINES (ERPG)

The maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to one hour WITHOUT experiencing or developing

life-threatening health effects is:

1,4-dichlorobenzene 150 ppm

irreversible or other serious effects or symptoms which could impair an individual's ability to take protective action is:

1,4-dichlorobenzene 110 ppm

other than mild, transient adverse effects without perceiving a clearly defined odour is:

1,4-dichlorobenzene 110 ppm

The threshold concentration below which most people will experience no appreciable risk of health effects:

1,4-dichlorobenzene 75 ppm

American Industrial Hygiene Association (AIHA)

Ingredients considered according to the following cutoffs

Very Toxic (T+)	$\geq 0.1\%$	Toxic (T)	$\geq 3.0\%$
R50	$\geq 0.25\%$	Corrosive (C)	$\geq 5.0\%$
R51	$\geq 2.5\%$		
else	$\geq 10\%$		

where percentage is percentage of ingredient found in the mixture

SAFE STORAGE WITH OTHER CLASSIFIED CHEMICALS



+



X



+



X



0



+

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Section 6 - ACCIDENTAL RELEASE MEASURES

+: May be stored together
O: May be stored together with specific precautions
X: Must not be stored together

Personal Protective Equipment advice is contained in Section 8 of the MSDS.

Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING

- Avoid all personal contact, including inhalation.
- Wear protective clothing when risk of exposure occurs.
- Use in a well-ventilated area.
- Prevent concentration in hollows and sumps.
- DO NOT enter confined spaces until atmosphere has been checked.
- DO NOT allow material to contact humans, exposed food or food utensils.
- Avoid contact with incompatible materials.
- When handling, DO NOT eat, drink or smoke.
- Keep containers securely sealed when not in use.
- Avoid physical damage to containers.
- Always wash hands with soap and water after handling.
- Work clothes should be laundered separately. Launder contaminated clothing before re-use.
- Use good occupational work practice.
- Observe manufacturer's storing and handling recommendations.
- Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.

SUITABLE CONTAINER

Glass container.
Metal can.
Steel drum.
DO NOT use aluminium or galvanised containers.
· Check that containers are clearly labelled.
Packaging as recommended by manufacturer.

STORAGE INCOMPATIBILITY

Avoid storage with oxidisers.
DO NOT use aluminium or galvanised containers.

STORAGE REQUIREMENTS

- Store in original containers.
- Keep containers securely sealed.
- No smoking, naked lights or ignition sources.
- Store in a cool, dry, well-ventilated area.
- Store away from incompatible materials and foodstuff containers.
- Protect containers against physical damage and check regularly for leaks.
- Observe manufacturer's storing and handling recommendations.

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Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

The following materials had no OELs on our records

- 1, 4- dichlorobenzene: CAS:106- 46- 7

EMERGENCY EXPOSURE LIMITS

Material	Revised IDLH Value (mg/m3)	Revised IDLH Value (ppm)
1, 4- dichlorobenzene		150

ODOUR SAFETY FACTOR (OSF)

OSF=56 (p-DICHLOROBENZENE)

Exposed individuals are reasonably expected to be warned, by smell, that the Exposure Standard is being exceeded.

Odour Safety Factor (OSF) is determined to fall into either Class A or B.

The Odour Safety Factor (OSF) is defined as:

OSF= Exposure Standard (TWA) ppm/ Odour Threshold Value (OTV) ppm

Classification into classes follows:

Class	OSF	Description
A	550	Over 90% of exposed individuals are aware by smell that the Exposure Standard (TLV- TWA for example) is being reached, even when distracted by working activities
B	26- 550	As " A" for 50- 90% of persons being distracted
C	1- 26	As " A" for less than 50% of persons being distracted
D	0.18- 1	10- 50% of persons aware of being tested perceive by smell that the Exposure Standard is being reached
E	<0.18	As " D" for less than 10% of persons aware of being tested

MATERIAL DATA

Odour Threshold Value: 0.121 ppm (detection)

NOTE: Detector tubes for p-dichlorobenzene, measuring in excess of 2 ppm, are commercially available.

Exposure at or below the limit is thought to protect workers from the significant risk of eye damage and irritation, vertigo and neuropathic effects

PERSONAL PROTECTION

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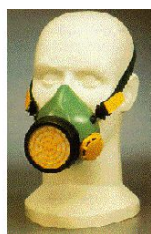
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Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION



EYE

- Safety glasses with side shields; or as required,
- Chemical goggles.
- Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lens or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59].

HANDS/FEET

Wear chemical protective gloves, eg. PVC.
Wear safety footwear.

OTHER

- Overalls.
- Eyewash unit.

GLOVE SELECTION INDEX

Glove selection is based on a modified presentation of the:
"Forsberg Clothing Performance Index".

The effect(s) of the following substance(s) are taken into account in the computer-generated selection: 1, 4-dichlorobenzene

Protective Material CPI *.

NEOPRENE	B
NITRILE	C
PVC	C

* CPI - Chemwatch Performance Index

A: Best Selection

B: Satisfactory; may degrade after 4 hours continuous immersion

C: Poor to Dangerous Choice for other than short term immersion

NOTE: As a series of factors will influence the actual performance of the glove, a final selection must be based on detailed observation. -

* Where the glove is to be used on a short term, casual or infrequent basis, factors such as "feel" or convenience (e.g. disposability), may dictate a choice of gloves which might otherwise be unsuitable following long-term or frequent use. A qualified practitioner should be consulted.

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Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

RESPIRATOR

Protection Factor	Half- Face Respirator	Full- Face Respirator	Powered Air Respirator
10 x ES	A P1 Air- line*	- -	A PAPR- P1 -
50 x ES	Air- line**	A P2	A PAPR- P2
100 x ES	-	A P3	-
		Air- line*	-
100+ x ES	-	Air- line**	A PAPR- P3

* - Negative pressure demand ** - Continuous flow.

The local concentration of material, quantity and conditions of use determine the type of personal protective equipment required.

For further information consult site specific CHEMWATCH data (if available), or your Occupational Health and Safety Advisor.

ENGINEERING CONTROLS

Local exhaust ventilation usually required. If risk of overexposure exists, wear approved respirator. Correct fit is essential to obtain adequate protection. Supplied-air type respirator may be required in special circumstances. Correct fit is essential to ensure adequate protection.

An approved self contained breathing apparatus (SCBA) may be required in some situations.

Provide adequate ventilation in warehouse or closed storage area. Air contaminants generated in the workplace possess varying "escape" velocities which, in turn, determine the "capture velocities" of fresh circulating air required to effectively remove the contaminant.

Type of Contaminant:

solvent, vapours, degreasing etc., evaporating from tank (in still air).

aerosols, fumes from pouring operations,

intermittent container filling, low speed

conveyer transfers, welding, spray drift,

plating acid fumes, pickling (released at low velocity into zone of active generation)

direct spray, spray painting in shallow booths,

drum filling, conveyer loading, crusher dusts,

gas discharge (active generation into zone of rapid air motion)

grinding, abrasive blasting, tumbling, high

speed wheel generated dusts (released at high

initial velocity into zone of very high rapid air motion).

Air Speed:

0.25- 0.5 m/s (50- 100 f/min.)

0.5- 1 m/s (100- 200 f/min.)

1- 2.5 m/s (200- 500 f/min.)

2.5- 10 m/s (500- 2000 f/min.)

Within each range the appropriate value depends on:

Lower end of the range

1: Room air currents minimal or favourable to capture

2: Contaminants of low toxicity or of nuisance value only.

3: Intermittent, low production.

4: Large hood or large air mass in motion

Upper end of the range

1: Disturbing room air currents

2: Contaminants of high toxicity

3: High production, heavy use

4: Small hood- local control only

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Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

Simple theory shows that air velocity falls rapidly with distance away from the opening of a simple extraction pipe. Velocity generally decreases with the square of distance from the extraction point (in simple cases). Therefore the air speed at the extraction point should be adjusted, accordingly, after reference to distance from the contaminating source. The air velocity at the extraction fan, for example, should be a minimum of 1-2 m/s (200-400 f/min) for extraction of solvents generated in a tank 2 meters distant from the extraction point. Other mechanical considerations, producing performance deficits within the extraction apparatus, make it essential that theoretical air velocities are multiplied by factors of 10 or more when extraction systems are installed or used.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE

Volatile, white crystals with penetrating, aromatic odour.
Sublimes (evaporates) at room temperature.
Very slightly soluble in water; soluble in alcohol, acetone aromatics.

PHYSICAL PROPERTIES

Solid.

Does not mix with water.

Sinks in water.

Molecular Weight: 147.0

Melting Range (°C): 53.1

Solubility in water (g/L): Insoluble

pH (1% solution): Not applicable.

Volatile Component (%vol): 100

Relative Vapour Density (air=1): 5.08

Lower Explosive Limit (%): 2.5

Autoignition Temp (°C): 560

State: Divided solid

Boiling Range (°C): 174

Specific Gravity (water=1): 1.46

pH (as supplied): Not available

Vapour Pressure (kPa): 1.33 @ 54.8 C.

Evaporation Rate: Slow

Flash Point (°C): 65 (Tag)

Upper Explosive Limit (%): 16

Decomposition Temp (°C): >55

Viscosity: Not available

log Kow (Prager 1995): 3.37

log Kow (Sangster 1997): 3.45

Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

CONDITIONS CONTRIBUTING TO INSTABILITY

- Presence of incompatible materials.
- Product is considered stable.
- Hazardous polymerisation will not occur.

Section 11 - TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

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Section 11 - TOXICOLOGICAL INFORMATION

SWALLOWED

Accidental ingestion of the material may be harmful; animal experiments indicate that ingestion of less than 150 gram may be fatal or may produce serious damage to the health of the individual.

Considered an unlikely route of entry in commercial/industrial environments.

EYE

Evidence exists, or practical experience predicts, that the material may cause eye irritation in a substantial number of individuals and/or may produce significant ocular lesions which are present twenty-four hours or more after instillation into the eye(s) of experimental animals.

Repeated or prolonged eye contact may cause inflammation characterised by temporary redness (similar to windburn) of the conjunctiva (conjunctivitis); temporary impairment of vision and/or other transient eye damage/ulceration may occur. if exposure is prolonged.

SKIN

Skin contact with the material may damage the health of the individual; systemic effects may result following absorption.

The material is not thought to be a skin irritant (i.e. is unlikely to produce irritant dermatitis as described in EC Directives using animal models). Temporary discomfort, however, may result from prolonged dermal exposures. Good hygiene practice requires that exposure be kept to a minimum and that suitable gloves be used in an occupational setting.

and it is absorbed by skin.

Toxic effects may result from skin absorption.

Absorption by skin may readily exceed vapour inhalation exposure. Symptoms for skin absorption are the same as for inhalation.

Bare unprotected skin should not be exposed to this material.

The material may accentuate any pre-existing skin condition.

INHALED

Limited evidence exists, or practical experience predicts, that the material produces irritation of the respiratory system in a significant number of individuals following inhalation.

Although inhalation is not thought to produce harmful effects (as classified under EC Directives), the material may still produce health damage, especially where pre-existing organ (e.g liver, kidney) damage is evident. Present definitions of harmful or toxic substances are generally confined to doses producing mortality rather than those producing morbidity (disease, ill-health).

The use of a quantity of material in an unventilated or confined space may result in increased exposure and an irritating atmosphere developing.

Before starting consider control of exposure by mechanical ventilation.

CHRONIC HEALTH EFFECTS

On the basis, primarily, of animal experiments, concern has been expressed that the material may produce carcinogenic or mutagenic effects; in respect of the available information, however, there presently exists inadequate data for making a satisfactory assessment.

Principal routes of exposure are usually by.

skin contact/absorption and inhalation of vapour.

In individuals exposed chronically to p-DCB, liver effects including jaundice, cirrhosis, and possible death may occur. Chronic exposure may also produce weakness, headache, rhinitis, twitching of the facial muscles. A woman who consumed 4 to 5 moth ball pellets daily for 2.5 years

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Section 11 - TOXICOLOGICAL INFORMATION

developed unsteady gait, tremors of the hand and general mental sluggishness which disappeared 4 months after exposure ceased. Eight workers manufacturing p-DCB based mothproofing agents for 1 to 7 months developed neural disorders including intensified muscle reflexes, mild clonus of the ankle and tremors of the fingers. They reported loss of appetite and haemopoietic changes.

Rats treated for 2 years with gastric intubation showed kidney lesion and in the male, hyperplasia of the thyroid at dose rates of 150 mg/kg.

Mice treated with 300 mg/kg in a similar 2 year gavage study showed liver changes characterised by hepatocellular degeneration. Thyroid follicular cell hyperplasia was increased in male but not female mice. Nephropathy consisting primarily of degeneration of the cortical tubular epithelium was seen and was more pronounced in males.

Rats, guinea pigs, rabbits, mice and monkeys exposed by inhalation 7 hours/day, 5 days/week for 140 exposures at 800 ppm exhibited tremor, weight loss and liver changes, including swelling and central necrosis in female rats, and swelling of the kidney epithelium.

An increase in liver tumours (e.g. renal tubular cell adenocarcinomas) was seen in male rats treated by gastric intubation doses of 150 mg/kg for 2 years. No evidence of carcinogenicity was seen in female rats. An increase incidence of hepatocellular carcinomas and adenomas was seen in mice treated with gavage doses of 300 mg/kg/day for 2 years. A positive dose-trend for adrenal gland pheochromocytomas in male mice was also reported.

TOXICITY AND IRRITATION

TOXICITY

Oral (human) LDLo: 857 mg/kg

Oral (human) TDLo: 300 mg/kg

Oral (rat) LD50: 500 mg/kg

Dermal (rabbit) LD50: >2000 mg/kg

Intraperitoneal (rat) LD50: 2562 mg/kg

Oral (mouse) LD50: 2950 mg/kg

Intraperitoneal (mouse) LD50: 2000 mg/kg

Oral (rabbit) LD50: 2830 mg/kg

Dermal (rabbit) LD50: >2000 mg/kg

Eye effects, respiratory tract changes, diarrhoea, specific developmental effects (cardiovascular system) recorded.

WARNING: This substance has been classified by the IARC as Group 2B: Possibly Carcinogenic to Humans.

Tenth Annual Report on Carcinogens: Substance anticipated to be Carcinogen [National Toxicology Program: U.S. Dep. of Health & Human Services 2002].

IRRITATION

Eye (human): 80 ppm

Section 12 - ECOLOGICAL INFORMATION

Marine Pollutant: Not Determined

Hazardous Air Pollutant:

Yes

Fish LC50 (96hr.) (mg/l):

33.7- 69

log Kow (Prager 1995):

3.37

log Kow (Sangster 1997):

3.45

log Pow (Verschuereen 1983):

3.39

Half- life Soil - High (hours):

4320

Half- life Soil - Low (hours):

672

Half- life Air - High (hours):

2006

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Section 12 - ECOLOGICAL INFORMATION

Half- life Air - Low (hours):	200.6
Half- life Surface water - High (hours):	4320
Half- life Surface water - Low (hours):	672
Half- life Ground water - High (hours):	8640
Half- life Ground water - Low (hours):	1344
Aqueous biodegradation - Aerobic - High (hours):	4320
Aqueous biodegradation - Aerobic - Low (hours):	672
Aqueous biodegradation - Anaerobic - High (hours):	17280
Aqueous biodegradation - Anaerobic - Low (hours):	2688
Photolysis maximum light absorption - High (nano- m):	280
Photolysis maximum light absorption - Low (nano- m):	223.5
Photooxidation half- life air - High (hours):	2006
Photooxidation half- life air - Low (hours):	200.6
First order hydrolysis half- life (hours):	>879 YRS
Base rate constant [MOH]- HR]- 1:	<0.9

The material is classified as an ecotoxin* because it is NOT readily biodegradable and the Fish LC50 (96 hours) is less than or equal to 1 mg/l.

Substances are considered to be readily biodegradable if the following levels of degradation are achieved in 28 days:

- In tests based on dissolved organic carbon: 70%
- In tests based on oxygen depletion or carbon dioxide generation: 60% of the theoretical maxima

These levels of biodegradation must be achieved within 10 days of the start of biodegradation, which point is taken as the time when 10% of the substance has been degraded.

* Classification of Substances as Ecotoxic (Dangerous to the Environment)

Appendix 8, Table 1

Compiler's Guide for the Preparation of International Chemical Safety Cards: 1993
Commission of the European Communities.

Kow: 35

log Koc: 2.59-5

Koc: 36000-100000

log Kom: 2.2-2.53

Half-life (hr) air: 200.6-2006

Half-life (hr) H₂O surface water: 0.25-4320

Half-life (hr) H₂O ground: 1344-8760

Half-life (hr) soil: 672-4320

Henry's Pa m³ /mol: 152-262.5

Henry's atm m³ /mol: 0.0015

BOD 5 if unstated: 65%

BCF: 55-1800

Log BCF: 1.78-3.91

Toxicity Fish: LC50(96)5.02-12.7mg/L

Toxicity invertebrate: LC50(48)5.6-28.1mg/L

Bioaccumulation: little if any

Anaerobic effects: unlikely or slow

Effects on algae and plankton: EC50(96) 149-179mg/L

Degradation Biological: some aerobic

processes Abiotic: photol&hydrol not sig, little oxid

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Section 13 - DISPOSAL CONSIDERATIONS

- Recycle wherever possible or consult manufacturer for recycling options.
- Consult State Land Waste Management Authority for disposal.
- Bury residue in an authorised landfill.
- Recycle containers if possible, or dispose of in an authorised landfill.

Section 14 - TRANSPORTATION INFORMATION



Labels Required: MISCELLANEOUS
HAZCHEM: 2X

UNDG:

Dangerous Goods Class:	9	Subrisk:	None
UN Number:	3077	Packing Group:	III
Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.			

Air Transport IATA:

ICAO/IATA Class:	9	ICAO/IATA Subrisk:	None
UN/ID Number:	3077	Packing Group:	III
ERG Code:	9L		
Shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.			

Maritime Transport IMDG:

IMDG Class:	9	IMDG Subrisk:	None
UN Number:	3077	Packing Group:	III
EMS Number:	F- A, S- F	Marine Pollutant:	Not Determined
Shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.			

Section 15 - REGULATORY INFORMATION

REGULATIONS

1,4-dichlorobenzene (CAS: 106-46-7) is found on the following regulatory lists;
Great Lakes Binational Toxics Strategy Substances (U.S. and Canada) - Level II Substances
International Agency for Research on Cancer (IARC) Carcinogens
OECD Representative List of High Production Volume (HPV) Chemicals
WHO Guidelines for Drinking-water Quality - Guideline values for chemicals that are of

continued...

1,4-DICHLOROBENZENE

Section 15 - REGULATORY INFORMATION

health significance in drinking-water

Section 16 - OTHER INFORMATION

REPRODUCTIVE HEALTH GUIDELINES

Established occupational exposure limits frequently do not take into consideration reproductive end points that are clearly below the thresholds for other toxic effects. Occupational reproductive guidelines (ORGs) have been suggested as an additional standard. These have been established after a literature search for the reproductive no-observed-adverse effect-level (NOAEL) and the lowest-observed-adverse-effect-level (LOAEL). In addition the US EPA's procedures for risk assessment for hazard identification and dose-response assessment as applied by NIOSH were used in the creation of such limits. Uncertainty factors (UFs) have also been incorporated.

Ingredient	ORG	UF	Endpoint	CR	Adeq TLV
1, 4- dichlorobenzene	60 mg/m3	NA	NA	NA	Yes

These exposure guidelines have been derived from a screening level of risk assessment and should not be construed as unequivocally safe limits. ORGS represent an 8-hour time-weighted average unless specified otherwise.

CR = Cancer Risk/10000; UF = Uncertainty factor:

TLV believed to be adequate to protect reproductive health:

LOD: Limit of detection

Toxic endpoints have also been identified as:

D = Developmental; R = Reproductive; TC = Transplacental carcinogen

Jankovic J., Drake F.: A Screening Method for Occupational Reproductive
American Industrial Hygiene Association Journal 57: 641-649 (1996).

The above information is believed to be accurate and represent the best information currently available to us, but does not represent any warranty expressed or implied of the properties of the product. User should make their own investigation to determine the suitability of the information for their particular purpose.

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