

Material Safety Data Sheet

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Version 1.2

According to 91/155/EEC

1 - Product and Company Information

Product Name	PENTACHLOROPHENOL, 98%
Product Number	P2604
Company	Sigma-Aldrich Pte Ltd #08-01 Citilink Warehouse Singapore 118529 Singapore
Technical Phone #	65 271 1089
Fax	65 271 1571

2 - Composition/Information on Ingredients

Product Name	CAS #	EC no	Annex I Index Number
PENTACHLOROPHENOL	87-86-5	201-778-6	604-002-00-8

Formula	C6HCl5O
Molecular Weight	266.34 AMU
Synonyms	AD 73 * Chem-Penta * Chem-Tol * Chlon * Chlorophen * CM 613 * CP 1309 * Dowicide 7 * Dowicide EC-7 * Dow pentachlorophenol DP-2 antimicrobial * Durotox * EP 30 * Fungifen * Grundier arbezol * 1-Hydroxypentachlorobenzene * Lauxtol * Lauxtol A * Lioprem * MB 333 * NCI-C54933 * NCI-C55378 * NCI-C56655 * PCP (pesticide) * Penchlorol * Penta * Pentachloorfenol (Dutch) * Pentachlorofenol * Pentachlorofenolo (Italian) * Pentachlorophenol * 2,3,4,5,6-Pentachlorophenol * Pentachlorophenol (ACGIH:OSHA) * Pentachlorophenol, DP-2 * Pentachlorophenol (German) * Pentacon * Penta-kil * Penta ready * Penta WR * Penwar * Peratox * Permacide * Permagard * Permasan * Permatox DP-2 * Permatox penta * Permite * Pole toppler fluid * Pol Nu * Preventol P * RCRA waste number U242 * Santophen 20 * Thompson's wood fix * Weedone * Witophen P * Woodtreat A

3 - Hazards Identification

SPECIAL INDICATION OF HAZARDS TO HUMANS AND THE ENVIRONMENT

Toxic in contact with skin and if swallowed. Very toxic by inhalation. Irritating to eyes, respiratory system and skin. Limited evidence of a carcinogenic effect. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Carc. Cat.3

4 - First Aid Measures

AFTER INHALATION

If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.

AFTER SKIN CONTACT

In case of skin contact, flush with copious amounts of water for at least 15 minutes. Remove contaminated clothing and shoes. Call a physician.

AFTER EYE CONTACT

In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

AFTER INGESTION

If swallowed, wash out mouth with water provided person is conscious. Call a physician immediately.

5 - Fire Fighting Measures

EXTINGUISHING MEDIA

Suitable: Carbon dioxide, dry chemical powder, or appropriate foam.

SPECIAL RISKS

Specific Hazard(s): Emits toxic fumes under fire conditions.

SPECIAL PROTECTIVE EQUIPMENT FOR FIREFIGHTERS

Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

6 - Accidental Release Measures

PERSONAL PRECAUTION PROCEDURES TO BE FOLLOWED IN CASE OF LEAK OR SPILL

Evacuate area.

PROCEDURE(S) OF PERSONAL PRECAUTION(S)

Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.

METHODS FOR CLEANING UP

Sweep up, place in a bag and hold for waste disposal. Avoid raising dust. Ventilate area and wash spill site after material pickup is complete.

7 - Handling and Storage

HANDLING

Directions for Safe Handling: Do not breathe dust. Do not get in eyes, on skin, on clothing. Avoid prolonged or repeated exposure.

STORAGE

Conditions of Storage: Keep tightly closed.

8 - Exposure Controls / Personal Protection

ENGINEERING CONTROLS

Use only in a chemical fume hood. Safety shower and eye bath.

GENERAL HYGIENE MEASURES

Wash contaminated clothing before reuse. Wash thoroughly after handling.

EXPOSURE LIMITS

Country	Source	Type	Value
Poland		NDS	0.5 MG/M3
Poland		NDSch	1.5 MG/M3
Poland		NDSP	-

EXPOSURE LIMITS - DENMARK

Source	Type	Value
OEL	TWA	0.05 mg/m3
		0.005 ppm

Remarks: HK

EXPOSURE LIMITS - NORWAY

Source	Type	Value
	OEL	0.5 mg/m3
		0.05 ppm

Remarks: HK

EXPOSURE LIMITS - SWITZERLAND

Source	Type	Value
OEL	OEL	0.05 mg/m3
		0.005 ppm

Remarks: E H M K

EXPOSURE LIMITS - UNITED KINGDOM

Source	Type	Value
OEL	OEL	0.5 mg/m3
OEL	STEL	1.5 mg/m3

Remarks: Skin

PERSONAL PROTECTIVE EQUIPMENT

Respiratory Protection: Government approved respirator.

Hand Protection: Compatible chemical-resistant gloves.

Eye Protection: Chemical safety goggles.

9 - Physical and Chemical Properties

Appearance Physical State: Solid
 Color: Faintly red
 Form: Fine crystals

Property	Value	At Temperature or Pressure
pH	N/A	
BP/BP Range	310 °C	760 mmHg
MP/MP Range	187 °C	
Flash Point	N/A	
Flammability	N/A	
Autoignition Temp	N/A	
Oxidizing Properties	N/A	
Explosive Properties	N/A	
Explosion Limits	N/A	
Vapor Pressure	40 mmHg	211.2 °C
SG/Density	1.978 g/cm3	
Partition Coefficient	Log Kow: 5.12	
Viscosity	N/A	
Vapor Density	9.2 g/l	
Saturated Vapor Conc.	N/A	
Evaporation Rate	N/A	
Bulk Density	N/A	
Decomposition Temp.	N/A	

Solvent Content	N/A
Water Content	N/A
Surface Tension	N/A
Conductivity	N/A
Miscellaneous Data	N/A
Solubility	Other Solvents: MOSTORGANIC SOLVENTS

10 - Stability and Reactivity

STABILITY

Stable: Stable.

Materials to Avoid: Strong oxidizing agents, Strong bases.

HAZARDOUS DECOMPOSITION PRODUCTS

Hazardous Decomposition Products: Carbon monoxide, Carbon dioxide, Hydrogen chloride gas.

HAZARDOUS POLYMERIZATION

Hazardous Polymerization: Will not occur

11 - Toxicological Information

RTECS NUMBER: SM6300000

ACUTE TOXICITY

LDLO

Oral

Man

401 mg/kg

Remarks: Behavioral:Change in motor activity (specific assay).

Skin and Appendages: Other: Sweating. Nutritional and Gross

Metabolic:Changes in:Body temperature increase.

LD50

Oral

Rat

27 mg/kg

Remarks: Vascular:BP elevation not charactertized in autonomic section. Endocrine:Hyperglycemia. Nutritional and Gross

Metabolic:Changes in:Body temperature increase.

LC50

Inhalation

Rat

355 mg/m3

Remarks: Behavioral:Excitement. Behavioral:Muscle contraction or spasticity. Lungs, Thorax, or Respiration:Dyspnea.

LD50

Skin

Rat

96 mg/kg

Remarks: Behavioral:Excitement. Behavioral:Muscle contraction or spasticity. Lungs, Thorax, or Respiration:Dyspnea.

LD50

Intraperitoneal

Rat

56 MG/KG

Remarks: Behavioral:Convulsions or effect on seizure threshold.

Lungs, Thorax, or Respiration:Dyspnea. Nutritional and Gross

Metabolic:Changes in:Body temperature increase.

LD50
Oral
Mouse
36 mg/kg

LC50
Inhalation
Mouse

225 mg/m3

Remarks: Behavioral:Excitement. Behavioral:Muscle contraction or spasticity. Lungs, Thorax, or Respiration:Dyspnea.

LD50
Intraperitoneal
Mouse
32 MG/KG

LD50
Oral
Hamster
168 mg/kg

LD50
Oral
Gerbil
294 mg/kg

LD50
Oral
Duck
380 mg/kg

IRRITATION DATA

Skin
Rabbit
10 mg
24H
Remarks: Open irritation test

Eyes
Rabbit
0.1 ml
24
Remarks: Mild irritation effect

SIGNS AND SYMPTOMS OF EXPOSURE

Exposure can cause: Convulsions.

ROUTE OF EXPOSURE

Skin Contact: Causes skin irritation.
Skin Absorption: Toxic if absorbed through skin.
Eye Contact: Causes eye irritation.
Inhalation: May be fatal if inhaled. Material is irritating to mucous membranes and upper respiratory tract.
Ingestion: Toxic if swallowed.

TARGET ORGAN INFORMATION

Liver. Kidneys.

CHRONIC EXPOSURE - CARCINOGEN

Result: The evidence for carcinogenicity of pentachlorophenol (PCP) is based on assays that utilized less than pure PCP. Contaminants of PCP include: tri- or tetra- chlorophenol, hexachlorobenzene, polychlorinated dibenzo-p-dioxins, or polychlorinated dibenzofurans. Indications are that positive evidence for carcinogenicity is from the contaminant(s) and not the PCP. This product is or contains a component that has been reported to be possibly carcinogenic based on its IARC, ACGIH, NTP, or EPA classification.

Mouse

Route of Application: Oral

Exposure Time: 2Y

Result: Tumorigenic: Carcinogenic by RTECS criteria.

Endocrine: Tumors.

Mouse

Route of Application: Subcutaneous

Result: Tumorigenic: Equivocal tumorigenic agent by RTECS criteria. Lungs, Thorax, or Respiration: Tumors. Liver: Tumors.

IARC CARCINOGEN LIST

Rating: Group 2B

CHRONIC EXPOSURE - MUTAGEN

Mouse

50 MG/KG

Intraperitoneal
specific locus test

Mouse

30 MG/KG

Oral

Other mutation test systems

Hamster

100 MG/L

Cell Type: Embryo

Morphological transformation.

Hamster

80 MG/L

Cell Type: ovary

Cytogenetic analysis

Hamster

3 MG/L

Cell Type: ovary

Sister chromatid exchange

CHRONIC EXPOSURE - TERATOGEN

Species: Rat

Dose: 60 MG/KG

Route of Application: Oral

Exposure Time: (9D PREG)

Result: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).

Species: Rat
Dose: 50 MG/KG
Route of Application: Oral
Exposure Time: (6-15D PREG)
Result: Specific Developmental Abnormalities: Musculoskeletal system.

Species: Rat
Dose: 120 MG/KG
Route of Application: Oral
Exposure Time: (8-11D PREG)
Result: Specific Developmental Abnormalities: Homeostasis

Species: Mouse
Dose: 450 MG/KG
Route of Application: Subcutaneous
Exposure Time: (6-14D PREG)
Result: Effects on Embryo or Fetus: Fetal death.

CHRONIC EXPOSURE - REPRODUCTIVE HAZARD

Result: Overexposure may cause reproductive disorder(s) based on tests with laboratory animals.

Species: Rat
Dose: 4 GM/KG
Route of Application: Oral
Exposure Time: (77D PRE-28D POST)
Result: Effects on Newborn: Weaning or lactation index (e.g., # alive at weaning per # alive at day 4). Effects on Newborn: Growth statistics (e.g., reduced weight gain).

Species: Man
Dose: 124 MG/KG
Route of Application: Oral
Exposure Time: (MULTIGENERATION)
Result: Effects on Newborn: Delayed effects.

CMR CAT.: Carc. Cat.3

12 - Ecological Information

ECOTOXICOLOGICAL EFFECTS

Test Type: EC50 Algae
Time: 10 d
Value: 0.36 mg/l

Test Type: EC50 Algae
Species: *Chlorella vulgaris*
Time: 96 h
Value: 10.3 mg/l

Test Type: EC50 Daphnia
Species: *Daphnia magna*
Time: 48 h
Value: 0.3 - 1.30 mg/l

Test Type: LC50 Fish
Species: *Cyprinodon variegatus* (Sheepshead minnow)
Time: 96 h
Value: 0.16 - 0.5 mg/l

Test Type: LC50 Fish

Species: Carassius auratus (Goldfish)
Time: 96 h
Value: 0.16 - 0.380 mg/l

13 - Disposal Considerations

SUBSTANCE DISPOSAL

Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Observe all federal, state, and local environmental regulations.

14 - Transport Information

RID/ADR

UN#: 3155
Class: 6.1
PG: II
Proper Shipping Name: Pentachlorophenol

IMDG

UN#: 3155
Class: 6.1
PG: II
Proper Shipping Name: Pentachlorophenol
Marine Pollutant: No
Severe Marine Pollutant: Yes

IATA

UN#: 3155
Class: 6.1
PG: II
Proper Shipping Name: Pentachlorophenol
Inhalation Packing Group I: No

15 - Regulatory Information

CLASSIFICATION AND LABELING ACCORDING TO EU DIRECTIVES

ANNEX I INDEX NUMBER: 604-002-00-8

INDICATION OF DANGER: T+ N

Very toxic. Dangerous for the environment.

R-PHRASES: 24/25 26 36/37/38 40 50/53

Toxic in contact with skin and if swallowed. Very toxic by inhalation. Irritating to eyes, respiratory system and skin.

Limited evidence of a carcinogenic effect. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

S-PHRASES: 22 36/37 45 52 60 61

Do not breathe dust. Wear suitable protective clothing and gloves. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Not recommended for interior use on large surface areas. This material and its container must be disposed of as hazardous waste. Avoid release to the environment. Refer to special instructions/safety data sheets.

COUNTRY SPECIFIC INFORMATION

Germany

WGK: 3

16 - Other Information

WARRANTY

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. Copyright 2004 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.

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