

## SAFETY DATA SHEET

Version 4.11  
Revision Date 08/09/2016  
Print Date 10/20/2018

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1. PRODUCT AND COMPANY IDENTIFICATION

## 1.1 Product identifiers

Product name : Pentachlorophenol

Product Number : P2604  
Brand : Aldrich  
Index-No. : 604-002-00-8

CAS-No. : 87-86-5

## 1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Synthesis of substances

## 1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich  
3050 Spruce Street  
SAINT LOUIS MO 63103  
USA

Telephone : +1 800-325-5832  
Fax : +1 800-325-5052

## 1.4 Emergency telephone number

Emergency Phone # : +1-703-527-3887 (CHEMTREC)

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2. HAZARDS IDENTIFICATION

## 2.1 Classification of the substance or mixture

**GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)**

Acute toxicity, Oral (Category 3), H301  
Acute toxicity, Inhalation (Category 2), H330  
Acute toxicity, Dermal (Category 3), H311  
Skin irritation (Category 2), H315  
Eye irritation (Category 2A), H319  
Carcinogenicity (Category 2), H351  
Specific target organ toxicity - single exposure (Category 3), Respiratory system, H335  
Acute aquatic toxicity (Category 1), H400  
Chronic aquatic toxicity (Category 2), H411

For the full text of the H-Statements mentioned in this Section, see Section 16.

## 2.2 GHS Label elements, including precautionary statements

Pictogram



Signal word

Danger

Hazard statement(s)

H301 + H311 : Toxic if swallowed or in contact with skin  
H315 : Causes skin irritation.  
H319 : Causes serious eye irritation.  
H330 : Fatal if inhaled.  
H335 : May cause respiratory irritation.

|                            |                                                                                                                                  |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| H351                       | Suspected of causing cancer.                                                                                                     |
| H400                       | Very toxic to aquatic life.                                                                                                      |
| H411                       | Toxic to aquatic life with long lasting effects.                                                                                 |
| Precautionary statement(s) |                                                                                                                                  |
| P201                       | Obtain special instructions before use.                                                                                          |
| P202                       | Do not handle until all safety precautions have been read and understood.                                                        |
| P260                       | Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.                                                                            |
| P264                       | Wash skin thoroughly after handling.                                                                                             |
| P270                       | Do not eat, drink or smoke when using this product.                                                                              |
| P271                       | Use only outdoors or in a well-ventilated area.                                                                                  |
| P273                       | Avoid release to the environment.                                                                                                |
| P280                       | Wear protective gloves/ protective clothing/ eye protection/ face protection.                                                    |
| P284                       | Wear respiratory protection.                                                                                                     |
| P301 + P310 + P330         | IF SWALLOWED: Immediately call a POISON CENTER/doctor. Rinse mouth.                                                              |
| P302 + P352 + P312         | IF ON SKIN: Wash with plenty of soap and water. Call a POISON CENTER or doctor/ physician if you feel unwell.                    |
| P304 + P340 + P310         | IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor.              |
| P305 + P351 + P338         | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. |
| P308 + P313                | IF exposed or concerned: Get medical advice/ attention.                                                                          |
| P332 + P313                | If skin irritation occurs: Get medical advice/ attention.                                                                        |
| P337 + P313                | If eye irritation persists: Get medical advice/ attention.                                                                       |
| P362                       | Take off contaminated clothing and wash before reuse.                                                                            |
| P391                       | Collect spillage.                                                                                                                |
| P403 + P233                | Store in a well-ventilated place. Keep container tightly closed.                                                                 |
| P405                       | Store locked up.                                                                                                                 |
| P501                       | Dispose of contents/ container to an approved waste disposal plant.                                                              |

## 2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

### 3.1 Substances

|                  |                                     |
|------------------|-------------------------------------|
| Formula          | : C <sub>6</sub> HCl <sub>5</sub> O |
| Molecular weight | : 266.34 g/mol                      |
| CAS-No.          | : 87-86-5                           |
| EC-No.           | : 201-778-6                         |
| Index-No.        | : 604-002-00-8                      |

#### Hazardous components

| Component                | Classification                                                                                                                                                                                          | Concentration |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| <b>Pentachlorophenol</b> |                                                                                                                                                                                                         |               |
|                          | Acute Tox. 3; Acute Tox. 2;<br>Acute Tox. 3; Skin Irrit. 2; Eye<br>Irrit. 2A; Carc. 2; STOT SE 3;<br>Aquatic Acute 1; Aquatic<br>Chronic 2; H301 + H311,<br>H315, H319, H330, H335,<br>H351, H400, H411 | <= 100 %      |

For the full text of the H-Statements mentioned in this Section, see Section 16.

## 4. FIRST AID MEASURES

### 4.1 Description of first aid measures

#### General advice

Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

**If inhaled**

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

**In case of skin contact**

Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

**In case of eye contact**

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

**If swallowed**

Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

**4.2 Most important symptoms and effects, both acute and delayed**

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

**4.3 Indication of any immediate medical attention and special treatment needed**

No data available

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**5. FIREFIGHTING MEASURES****5.1 Extinguishing media****Suitable extinguishing media**

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

**5.2 Special hazards arising from the substance or mixture**

No data available

**5.3 Advice for firefighters**

Wear self-contained breathing apparatus for firefighting if necessary.

**5.4 Further information**

No data available

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**6. ACCIDENTAL RELEASE MEASURES****6.1 Personal precautions, protective equipment and emergency procedures**

Wear respiratory protection. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust. For personal protection see section 8.

**6.2 Environmental precautions**

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

**6.3 Methods and materials for containment and cleaning up**

Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

**6.4 Reference to other sections**

For disposal see section 13.

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**7. HANDLING AND STORAGE****7.1 Precautions for safe handling**

Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed. For precautions see section 2.2.

**7.2 Conditions for safe storage, including any incompatibilities**

Keep container tightly closed in a dry and well-ventilated place.

**7.3 Specific end use(s)**

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1 Control parameters

#### Components with workplace control parameters

| Component         | CAS-No. | Value                                                                                                                                                                                                                                                                                                                                                                                                                                            | Control parameters | Basis                                                                                   |
|-------------------|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----------------------------------------------------------------------------------------|
| Pentachlorophenol | 87-86-5 | TWA                                                                                                                                                                                                                                                                                                                                                                                                                                              | 0.500000 mg/m3     | USA. ACGIH Threshold Limit Values (TLV)                                                 |
|                   | Remarks | Central Nervous System impairment<br>Upper Respiratory Tract irritation<br>Eye irritation<br>Cardiac impairment<br>Adopted values or notations enclosed are those for which changes are proposed in the NIC<br>See Notice of Intended Changes (NIC)<br>Substances for which there is a Biological Exposure Index or Indices (see BEI® section)<br>Confirmed animal carcinogen with unknown relevance to humans<br>Danger of cutaneous absorption |                    |                                                                                         |
|                   |         | TWA                                                                                                                                                                                                                                                                                                                                                                                                                                              | 0.500000 mg/m3     | USA. NIOSH Recommended Exposure Limits                                                  |
|                   |         | Potential for dermal absorption                                                                                                                                                                                                                                                                                                                                                                                                                  |                    |                                                                                         |
|                   |         | TWA                                                                                                                                                                                                                                                                                                                                                                                                                                              | 0.500000 mg/m3     | USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants        |
|                   |         | Skin designation                                                                                                                                                                                                                                                                                                                                                                                                                                 |                    |                                                                                         |
|                   |         | TWA                                                                                                                                                                                                                                                                                                                                                                                                                                              | 0.5 mg/m3          | USA. ACGIH Threshold Limit Values (TLV)                                                 |
|                   |         | Central Nervous System impairment<br>Upper Respiratory Tract irritation<br>Eye irritation<br>Cardiac impairment<br>2015 Adoption<br>Substances for which there is a Biological Exposure Index or Indices (see BEI® section)<br>Confirmed animal carcinogen with unknown relevance to humans<br>Danger of cutaneous absorption                                                                                                                    |                    |                                                                                         |
|                   |         | STEL                                                                                                                                                                                                                                                                                                                                                                                                                                             | 1 mg/m3            | USA. ACGIH Threshold Limit Values (TLV)                                                 |
|                   |         | Central Nervous System impairment<br>Upper Respiratory Tract irritation<br>Eye irritation<br>Cardiac impairment<br>2015 Adoption<br>Substances for which there is a Biological Exposure Index or Indices (see BEI® section)<br>Confirmed animal carcinogen with unknown relevance to humans<br>Danger of cutaneous absorption                                                                                                                    |                    |                                                                                         |
|                   |         | PEL                                                                                                                                                                                                                                                                                                                                                                                                                                              | 0.5 mg/m3          | California permissible exposure limits for chemical contaminants (Title 8, Article 107) |
|                   |         | Skin                                                                                                                                                                                                                                                                                                                                                                                                                                             |                    |                                                                                         |

#### Biological occupational exposure limits

| Component         | CAS-No. | Parameters        | Value       | Biological specimen | Basis                                     |
|-------------------|---------|-------------------|-------------|---------------------|-------------------------------------------|
| Pentachlorophenol | 87-86-5 | pentachlorophenol | 2.0000 mg/g | Urine               | ACGIH - Biological Exposure Indices (BEI) |

|  | Remarks | Prior to last shift of workweek                          |             |           |                                           |
|--|---------|----------------------------------------------------------|-------------|-----------|-------------------------------------------|
|  |         | Free PCP                                                 | 5.0000 mg/l | In plasma | ACGIH - Biological Exposure Indices (BEI) |
|  |         | End of shift (As soon as possible after exposure ceases) |             |           |                                           |
|  |         | pentachlorophenol                                        |             | Urine     | ACGIH - Biological Exposure Indices (BEI) |
|  |         | Prior to last shift of workweek                          |             |           |                                           |

## 8.2 Exposure controls

### Appropriate engineering controls

Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

### Personal protective equipment

#### Eye/face protection

Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

#### Skin protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

#### Splash contact

Material: Fluorinated rubber

Minimum layer thickness: 0.7 mm

Break through time: 120 min

Material tested: Vitoject® (KCL 890 / Aldrich Z677698, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374

If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

#### Body Protection

Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

#### Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

#### Control of environmental exposure

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

### 9.1 Information on basic physical and chemical properties

- |                                 |                                                  |
|---------------------------------|--------------------------------------------------|
| a) Appearance                   | Form: crystalline<br>Colour: light red           |
| b) Odour                        | No data available                                |
| c) Odour Threshold              | No data available                                |
| d) pH                           | No data available                                |
| e) Melting point/freezing point | Melting point/range: 165 - 180 °C (329 - 356 °F) |

|                                                 |                                             |
|-------------------------------------------------|---------------------------------------------|
| f) Initial boiling point and boiling range      | 310 °C (590 °F)                             |
| g) Flash point                                  | No data available                           |
| h) Evaporation rate                             | No data available                           |
| i) Flammability (solid, gas)                    | No data available                           |
| j) Upper/lower flammability or explosive limits | No data available                           |
| k) Vapour pressure                              | 53.3 hPa (40.0 mmHg) at 211.2 °C (412.2 °F) |
| l) Vapour density                               | No data available                           |
| m) Relative density                             | 1.978 g/mL at 25 °C (77 °F)                 |
| n) Water solubility                             | No data available                           |
| o) Partition coefficient: n-octanol/water       | log Pow: 5.12                               |
| p) Auto-ignition temperature                    | No data available                           |
| q) Decomposition temperature                    | No data available                           |
| r) Viscosity                                    | No data available                           |
| s) Explosive properties                         | No data available                           |
| t) Oxidizing properties                         | No data available                           |

## 9.2 Other safety information

No data available

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## 10. STABILITY AND REACTIVITY

### 10.1 Reactivity

No data available

### 10.2 Chemical stability

Stable under recommended storage conditions.

### 10.3 Possibility of hazardous reactions

No data available

### 10.4 Conditions to avoid

No data available

### 10.5 Incompatible materials

Strong oxidizing agents, Strong bases

### 10.6 Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. - Carbon oxides, Hydrogen chloride gas

Other decomposition products - No data available

In the event of fire: see section 5

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## 11. TOXICOLOGICAL INFORMATION

### 11.1 Information on toxicological effects

#### Acute toxicity

LD50 Oral - Rat - 27 mg/kg

Remarks: Vascular:BP elevation not characterized 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 Dermal - Rat - 96.0 mg/kg

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

No data available

#### **Skin corrosion/irritation**

Skin - Rabbit

Result: Open irritation test - 24.00 h

#### **Serious eye damage/eye irritation**

Eyes - Rabbit

Result: Mild eye irritation - 24.00 h

#### **Respiratory or skin sensitisation**

No data available

#### **Germ cell mutagenicity**

No data available

#### **Carcinogenicity**

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.

Limited evidence of carcinogenicity in animal studies

IARC: 2B - Group 2B: Possibly carcinogenic to humans (Pentachlorophenol)

NTP: Reasonably anticipated to be a human carcinogen (Pentachlorophenol)

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

#### **Reproductive toxicity**

No data available

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

#### **Specific target organ toxicity - single exposure**

May cause respiratory irritation.

#### **Specific target organ toxicity - repeated exposure**

No data available

#### **Aspiration hazard**

No data available

#### **Additional Information**

RTECS: Not available

Convulsions

Kidney -

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## **12. ECOLOGICAL INFORMATION**

### **12.1 Toxicity**

|                         |                                                                             |
|-------------------------|-----------------------------------------------------------------------------|
| Toxicity to fish        | LC50 - Cyprinodon variegatus (sheepshead minnow) - 0.16 - 0.5 mg/l - 96.0 h |
|                         | LC50 - Carassius auratus (goldfish) - 0.16 - 0.38 mg/l - 96.0 h             |
|                         | LC50 - Oncorhynchus mykiss (rainbow trout) - 0.075 mg/l - 96.0 h            |
|                         | NOEC - other fish - 0.01 mg/l - 24.0 h                                      |
|                         | LOEC - other fish - 0.1 mg/l - 24.0 h                                       |
| Toxicity to daphnia and | EC50 - Daphnia magna (Water flea) - 0.30 - 1.30 mg/l - 48 h                 |

other aquatic  
invertebrates

Toxicity to algae                      EC50 - No information available. - 0.36 mg/l - 10 d  
EC50 - Chlorella vulgaris (Fresh water algae) - 10.30 mg/l - 96 h  
Growth inhibition EC50 - Scenedesmus quadricauda (Green algae) - 0.08 mg/l  
- 96 h

#### 12.2 Persistence and degradability

Biodegradability                      Result: 99 % - Biodegradable

#### 12.3 Bioaccumulative potential

Bioaccumulation                      Oncorhynchus mykiss (rainbow trout) - 144 h  
- 0.0912 mg/l

Bioconcentration factor (BCF): 482

#### 12.4 Mobility in soil

No data available

#### 12.5 Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

#### 12.6 Other adverse effects

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.  
Very toxic to aquatic life with long lasting effects.

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### 13. DISPOSAL CONSIDERATIONS

#### 13.1 Waste treatment methods

##### Product

Offer surplus and non-recyclable solutions to a licensed disposal company. 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.

##### Contaminated packaging

Dispose of as unused product.

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### 14. TRANSPORT INFORMATION

#### DOT (US)

UN number: 3155                      Class: 6.1                      Packing group: II  
Proper shipping name: Pentachlorophenol  
Reportable Quantity (RQ): 10 lbs

Poison Inhalation Hazard: No

#### IMDG

UN number: 3155                      Class: 6.1                      Packing group: II                      EMS-No: F-A, S-A  
Proper shipping name: PENTACHLOROPHENOL  
Marine pollutant: yes

#### IATA

UN number: 3155                      Class: 6.1                      Packing group: II  
Proper shipping name: Pentachlorophenol

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### 15. REGULATORY INFORMATION

#### SARA 302 Components

No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

#### SARA 313 Components

This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

#### SARA 311/312 Hazards

Acute Health Hazard, Chronic Health Hazard

**Massachusetts Right To Know Components**

Pentachlorophenol

CAS-No.  
87-86-5

Revision Date  
2007-07-01

**Pennsylvania Right To Know Components**

Pentachlorophenol

CAS-No.  
87-86-5

Revision Date  
2007-07-01

**New Jersey Right To Know Components**

Pentachlorophenol

CAS-No.  
87-86-5

Revision Date  
2007-07-01

**California Prop. 65 Components**

WARNING! This product contains a chemical known to the State of California to cause cancer.

Pentachlorophenol

CAS-No.  
87-86-5

Revision Date  
2007-09-28

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**16. OTHER INFORMATION**

**Full text of H-Statements referred to under sections 2 and 3.**

|                 |                                            |
|-----------------|--------------------------------------------|
| Acute Tox.      | Acute toxicity                             |
| Aquatic Acute   | Acute aquatic toxicity                     |
| Aquatic Chronic | Chronic aquatic toxicity                   |
| Carc.           | Carcinogenicity                            |
| Eye Irrit.      | Eye irritation                             |
| H301            | Toxic if swallowed.                        |
| H301 + H311     | Toxic if swallowed or in contact with skin |
| H311            | Toxic in contact with skin.                |
| H315            | Causes skin irritation.                    |
| H319            | Causes serious eye irritation.             |
| H330            | Fatal if inhaled.                          |
| H335            | May cause respiratory irritation.          |
| H351            | Suspected of causing cancer.               |
| H400            | Very toxic to aquatic life.                |

**HMIS Rating**

|                        |   |
|------------------------|---|
| Health hazard:         | 3 |
| Chronic Health Hazard: | * |
| Flammability:          | 0 |
| Physical Hazard        | 1 |

**NFPA Rating**

|                    |   |
|--------------------|---|
| Health hazard:     | 4 |
| Fire Hazard:       | 0 |
| Reactivity Hazard: | 0 |

**Further information**

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**Preparation Information**

Sigma-Aldrich Corporation  
Product Safety – Americas Region  
1-800-521-8956

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