

# Phenolphthalein



[Identification](#) | [Characterisation](#) | [Formula](#) | [Physical and chemical properties](#) |  
[Occupational health and first aid](#) | [Safe handling](#) | [Regulations](#) | [Links](#) | [Literature register](#)

## IDENTIFICATION

### Phenolphthalein

3,3-Bis(4-hydroxyphenyl)-1(3H)-isobenzofuranone  
3,3-Bis(p-hydroxyphenyl)phthalide

**ZVG No:** 100532  
**CAS No:** 77-09-8  
**EC No:** 201-004-7  
**INDEX No:** 604-076-00-1

## CHARACTERISATION

### SUBSTANCE GROUP CODE

142101 Phenols, substituted  
143501 Lactones, substituted

### STATE OF AGGREGATION

The substance is solid.

### PROPERTIES

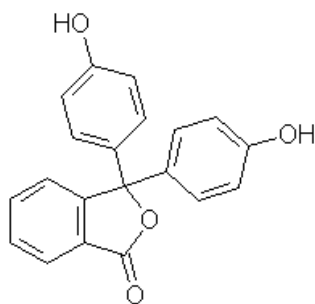
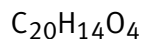
crystalline  
white  
odourless

### CHEMICAL CHARACTERISATION

Combustible substance, poorly flammable.  
Practically insoluble in water.  
Acute or chronic health hazards result from the substance.  
(see: chapter REGULATIONS).

[Substance information in Wikipedia](#)

## FORMULA



**Molar mass:** 318,32 g/mol

## PHYSICAL AND CHEMICAL PROPERTIES

Melting point | Density |  
Solubility

### MELTING POINT

Melting point: 263,7 °C

Reference: [01211](#)

### DENSITY

DENSITY

Value: 1,29 g/cm<sup>3</sup>

Temperature: 20,6 °C

Reference: [01211](#)

### SOLUBILITY IN WATER

Concentration: 3,36 mg/l

Temperature: 20 °C

Reference: [01211](#)

## OCCUPATIONAL HEALTH AND FIRST AID

Occupational health check

### OCCUPATIONAL HEALTH CHECK

**Prophylaxis offer:** Occupational medical prevention has to be offered when, conducting activities with this substance, repeated exposure cannot be excluded.

**Subsequent prophylaxis:** After termination of activities with exposure to this substance subsequent occupational medical prophylaxis has to be offered.

**Deadlines:** Prophylaxis offer has to be made prior to taking up work. Deadlines for the proposal of regularly recurrent occupational medical prevention and subsequent prophylaxis are to gather from the Occupational Health Rule (Arbeitsmedizinische Regel) "[AMR Nummer 2.1](#)".

## SAFE HANDLING

## TECHNICAL MEASURES - HANDLING

### Workplace

Provision of very good ventilation in the working area.

The cleaned air should not be returned to the working area. Air that has been pumped out can only be returned if it has been sufficiently cleaned using an acknowledged method.

Washing facility at the workplace required.

### Equipment

Carcinogenic and germ cell mutagenic substances should only be used in closed apparatus. If release of the substance cannot be prevented, then it should be suctioned off at the point of exit.

Consider emission limit values, a purification of waste gases if necessary.

Label containers and pipelines clearly.

### Advice on safer handling

Take care to maintain clean working place.

The substance must not be present at workplaces in quantities above that required for work to be progressed.

Do not leave container open.

Use leak-proof equipment with exhaust for refilling or transfer.

Avoid spillage.

Fill only into labelled container.

Avoid rising dust.

### Cleaning and maintenance

All rooms and equipment have to be cleaned regularly.

Use protective equipment while cleaning if necessary.

Avoid dust formation. Dust formation that cannot be avoided must be collected regularly.

Use tested industrial vacuum cleaners of class H.

Use a tested industrial vacuum cleaner or suction device.

Do not raise dust while cleaning.

Use of a blower for cleaning is not permitted.

Only conduct maintenance and other work on or in the vessel or closed spaces after obtaining written permission.

## TECHNICAL MEASURES - STORAGE

### Storage

Keep in locked storage or only make accessible to specialists or their authorised assistants.

Do not use any food containers - risk of mistake.

Containers have to be labelled clearly and permanently.

Store in the original container as much as possible.

Place fragile vessels in break-proof outer vessels.

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

Recommended storage at room temperature.

### Conditions of collocated storage

Storage class 6.1 C (Combustible, acutely toxic Cat. 3 or chronic effecting substances)

Only substances of the same storage class should be stored together.

Collocated storage with the following substances is prohibited:

- Pharmaceuticals, foods, and animal feeds including additives.
- Infectious, radioactive und explosive substances.
- Gases.

- Other explosive substances of storage class 4.1A.
- Strongly oxidizing substances of storage class 5.1A.
- Ammonium nitrate and preparations containing ammonium nitrate.
- Organic peroxides and self reactive substances.

Under certain conditions the collocated storage with the following sub-stances is permitted (For more details see [TRGS 510](#)):

- Pyrophoric substances.
- Substances liberating flammable gases in contact with water.
- Oxidizing substances of storage class 5.1B.

The substance should not be stored with substances with which hazardous chemical reactions are possible.

## TECHNICAL MEASURES - FIRE AND EXPLOSION PROTECTION

### Technical, constructive measures

Substance is combustible, but there is no additional information about the combustion behaviour. Fire fighting equipment must be available.

## ORGANISATIONAL MEASURES

Instruction on the hazards and the protective measures using instruction manual ([TRGS 555](#)) are required with signature if just more than one minor hazard was detected.

Instruction must be provided before employment and then at a minimum of once per annum thereafter.

The concentration of the substance in the air must be minimized.

The number of employees who work with the hazardous substance must be kept to a minimum.

Observe the restrictions on juvenile employment as defined in the "Jugendarbeitsschutzgesetz".

Observe the restrictions on activities of pregnant women according to the the „Mutterschutzgesetz“ (German Maternity Protection Act)

Only employees are permitted to enter the work areas. Signposting to this effect must be displayed.

## PERSONAL PROTECTION

### Body protection

Depending on the risk, wear a suitable protective clothing or a suitable chemical protection suit.

### Respiratory protection

In an emergency (e.g.: unintentional release of the substance) respiratory protection must be worn. Consider the maximum period for wear.

Respiratory protection: Particle filter P3, colour code white.

Use insulating device for concentrations above the usage limits for filter devices, for oxygen concentrations below 17% volume, or in circumstances which are unclear.

### Eye protection

Sufficient eye protection should be worn.

Wear glasses with side protection.

### Hand protection

Use protective gloves. The glove material must be sufficiently impermeable and resistant to the substance. Check the tightness before wear. Gloves should be well cleaned before being removed, then stored in a well ventilated location. Pay attention to skin care.

Skin protection cremes do not protect sufficiently against the substance.

Currently there is no information available regarding suitable glove materials.

Ask the manufacturer for suitable materials.

### Occupational hygiene

Foods, beverages and other articles of consumption must not be consumed at the work areas. Suitable areas are to be designated for these purposes.

Avoid contact with skin. In case of contact wash skin.

Avoid inhalation of dust.

Avoid contact with clothing. Contaminated clothes must be exchanged and cleaned carefully.

Before a break it might be necessary to change clothes.

Provide washrooms with showers and if possible rooms with separate storage for street clothing and work clothing.

The skin must be washed with soap and water before breaks and at the end of work. Apply fatty skin-care products after washing.

Take care of personal hygiene.

## DISPOSAL CONSIDERATIONS

Hazardous waste according to Waste Catalogue Ordinance (AVV).

If there is no way of recycling it must be disposed of in compliance with the respective national and local regulations.

Collection of small amounts of substance:

Do not put/place waste into sink or dust bin.

Collect in container for toxic, flammable compounds.

Collection vessels must be clearly labelled with a systematic description of their contents. Store the vessels in a well-ventilated location. Entrust them to the appropriate authorities for disposal.

## ACCIDENTAL RELEASE MEASURES

Evacuate area. Warn affected surroundings.

The hazardous area may only be entered once suitable protective measures are implemented. Only then can the hazardous situation be removed (see chapter Personal Protection).

Pick up without creating dust.

Afterwards ventilate area and wash spill site.

Endangerment of water:

The effects on water sources have not yet been classified. Yet escape into ground, lakes, or streams should be avoided under all circumstances. Inform responsible authorities in case of escape.

## FIRE FIGHTING MEASURES

### Classes of fires

B liquid or melting  
substances

### Suitable extinguishing media

Water (spray - not splash)  
Dry extinguishing powder  
Foam  
Carbon dioxide

### Instructions

If possible, take container out of dangerous zone.  
Shut off sources of ignition.

### Special protective equipment

In the case of a fire hazardous substances can be released.

Carbon monoxide and carbon dioxide

Wear self-contained breathing apparatus and special tightly sealed suit.

## REGULATIONS

[GHS Classification/Labelling](#) | [Workplace labelling](#) | [Air quality control](#) | [Transport Regulations](#) | [REACH](#) | [Restriction of use](#) | [Technical rules](#) | [Regulations of accident insurers](#) | [Occupational health check](#)

### EUROPEAN GHS CLASSIFICATION AND LABELLING

#### Classification

Skin irritation, Category 2; H315  
Germ cell mutagenicity, Category 2; H341  
Carcinogenicity, Category 1B; H350  
Reproductive toxicity, Category 2; H361f



**Signal Word** "Danger"

#### Hazard Statement - H-phrases

H315: Causes skin irritation.  
H341: Suspected of causing genetic defects.  
H350: May cause cancer.  
H361f: Suspected of damaging fertility.

#### Precautionary Statement - P-phrases

P202: Do not handle until all safety precautions have been read and understood.  
P264: Wash skin thoroughly after handling.  
P280: Wear protective gloves/protective clothing/eye protection/face protection.  
P302+P352: IF ON SKIN: Wash with plenty of soap and water.  
P308+P313: IF exposed or concerned: Get medical advice/attention.  
P332+P313: If skin irritation occurs: Get medical advice/attention.

Manufacturer's specification by Sigma-Aldrich

Reference: [01221](#)

State: 2022

Checked: 2022

The substance is listed in appendix VI, table 3 of CLP regulation.  
The given classification can deviate from the listed classification, since this classification is to be complemented concerning missing or divergent danger classes and categories for the respective substance.

Reference: [99999](#)

### GHS-CLASSIFICATION OF MIXTURES

#### Specific Concentration Limits

Carc. 1B; H350: C  $\geq$  1 %

The general concentration limits from Annex 1 of the Regulation (EU) 1272/2008 are to be used for possibly unspecified concentration ranges or further available substance classifications.

Reference: [07501](#) [07505](#)

### WORKPLACE LABELLING ACCORDING TO GERMAN [ASR A1.3](#)

**Prohibition label**

No Smoking



No admittance for unauthorized persons



No eating and drinking

**Precept label**

Use safety goggles



Wear safety gloves

**TECHNICAL INSTRUCTIONS ON AIR QUALITY CONTROL (TA LUFT)****Chapter 5.2.7.1.1 Carcinogenic Substances**

The substance must be assigned to the class (I, II or III) whose substances have the nearest potency. We can not accomplish this evaluation due to insufficiency of data.

Carcinogenic substances not mentioned by name and for which no information on potency is available should be assigned to Class I as a precautionary measure.

**TRANSPORT REGULATIONS**

Not subject to transport regulations.

Reference: [01221](#)

**REACH - REGULATION**

The substance is specified in the [REACH Candidate list](#) of substances of very high concern for authorisation.

**RESTRICTIONS OF USE / BANS OF USE****REACH Regulation (EC) No 1907/2006 Annex XVII**

Annex XVII, Point 28 and Point 29 and Point 30

The substance shall not be placed on the market or used as a substance or as a constituent of other substances or in mixtures for supply to the general public when the concentration of the substance or mixture reaches or exceeds the concentration limits according to the CLP Regulation. When placing the substance or mixture on the market for professional users, the supplier shall ensure that the packaging of such substances and mixtures is marked with the label "Restricted to professional users." For further details, please refer to the Regulation.

## Annex XVII, Point 75

Mixtures containing certain hazardous substances shall no longer be placed on the market for tattooing purposes. Mixtures containing such substances in specified concentrations shall no longer be used for tattooing purposes after 04.01.2022. Substances falling within one or more of the following points:

- carcinogenic or reproductive toxic substances according to Part 3 of Annex VI to CLP Regulation (excluding the classification due to effects only following exposure by inhalation),
- skin-sensitising, skin-corrosive, skin-irritant, serious eye-damaging or eye-irritant substances according to Annex VI Part 3 of the CLP Regulation,
- substances listed with specified conditions in Annex II or IV to Regulation (EC) No 1223/2009 [Cosmetics Regulation], and
- substances listed in Appendix 13 to Annex XVII (point 75) of the REACH Regulation.

In general, mixtures placed on the market for use for tattooing purposes must be labelled "Mixture for use in tattoos or permanent make-up." from 04.01.2022 on and may not be used for tattooing purposes without this labelling. Further safety information shall be provided on the packaging or in the instructions for use. Before using a mixture for tattooing purposes, the person using the mixture shall provide this information to the person undergoing the procedure.

Further information on the restrictions, concentration limits and exemptions can be taken from the Regulation.

Annex XVII to Regulation (EC) No 1907/2006, [consolidated version](#) (BAUA) (only in German)

## TECHNICAL RULES FOR HAZARDOUS SUBSTANCES

### [TRGS 201](#)

Einstufung und Kennzeichnung bei Tätigkeiten mit Gefahrstoffen; Ausgabe Februar 2017, zuletzt geändert und ergänzt April 2018

### [TRGS 400](#)

Gefährdungsbeurteilung für Tätigkeiten mit Gefahrstoffen; Ausgabe Juli 2017

### [TRGS 555](#)

Betriebsanweisung und Information der Beschäftigten; Ausgabe Februar 2017

### [TRGS 600](#)

Substitution; Ausgabe Juli 2020

### [TRGS 401](#)

Gefährdung durch Hautkontakt, Ermittlung - Beurteilung - Maßnahmen; Ausgabe Oktober 2022

### [TRGS 410](#)

Expositionsverzeichnis bei Gefährdung gegenüber krebserzeugenden oder keimzellmutagenen Gefahrstoffen der Kategorien 1A oder 1B; Ausgabe Juni 2015, zuletzt berichtigt Februar 2021

### [TRGS 500](#)

Schutzmaßnahmen; Ausgabe September 2019

### [TRGS 509](#)

Lagern von flüssigen und festen Gefahrstoffen in ortsfesten Behältern sowie Füll- und Entleerstellen für ortsbewegliche Behälter; Ausgabe Juni 2022

### [TRGS 510](#)

Lagerung von Gefahrstoffen in ortsbeweglichen Behältern; Ausgabe Januar Dezember 2020

### [TRGS 800](#)

Brandschutzmaßnahmen; Ausgabe Dezember 2010

### [TRGS 560](#)

Lufrückführung bei Tätigkeiten mit krebserzeugenden, erbgutverändernden und fruchtbarkeitsgefährdenden Stäuben; Ausgabe Januar 2012

## REGULATIONS OF GERMAN ACCIDENT INSURERS



## LINKS

[International Limit Values](#)

[ECHA - Candidate List of Substances of Very High Concern for Authorisation](#)

[DGUV Information 213-098: List of substances - lesson in schools \(in German only\)](#)

## REFERENCES

Quelle: 00001

IFA: Erfassungs- und Pflegehandbuch der GESTIS-Stoffdatenbank (nicht öffentlich)

Data acquisition and maintenance manual of the GESTIS substance database (non-public)

Quelle: 01211

GHS-Sicherheitsdatenblatt, Merck

GHS Material Safety Data Sheet, Merck

Quelle: 01221

GHS-Sicherheitsdatenblatt, Sigma-Aldrich

GHS Material Safety Data Sheet, Sigma-Aldrich

Quelle: 01231

GHS-Sicherheitsdatenblatt, Thermo Fisher Scientific

GHS Material Safety Data Sheet, Thermo Fisher Scientific

Quelle: 05300

[TRGS 510](#) "Lagerung von Gefahrstoffen in ortsbeweglichen Behältern" Ausgabe Dezember 2020

Quelle: 07501

Verordnung (EG) Nr. 790/2009 der Kommission vom 10. August 2009 zur Änderung der Verordnung (EG) Nr. 1272/2008 des Europäischen Parlaments und des Rates über die Einstufung, Kennzeichnung und Verpackung von Stoffen und Gemischen zwecks Anpassung an den technischen und wissenschaftlichen Fortschritt (EG-GHS-Verordnung, 1. Änderung)

Quelle: 07505

Verordnung (EU) Nr. 758/2013 der Kommission vom 7. August 2013 zur Berichtigung von Anhang VI der Verordnung (EG) Nr. 1272/2008 des Europäischen Parlaments und des Rates über die Einstufung, Kennzeichnung und Verpackung von Stoffen und Gemischen (EG-GHS-Verordnung, 2. Berichtigung)

Quelle: 07596

REACH Kandidatenliste; Stand 14.06.2023

Quelle: 99999

Angabe des Bearbeiters

Indication of the editor

[Identification](#) | [Characterisation](#) | [Formula](#) | [Physical and chemical properties](#) | [Safe handling](#) | [Regulations](#) | [Links](#) | [Literature register](#)

**This material data sheet was carefully compiled. However no liability can be assumed for the data content, whatever the legal cause may be.**