SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name: p-Benzquinone

Product Number: 12309
Brand: Sigma-Aldrich
Index-No.: 606-013-00-3

REACH No.: A registration number is not available for this substance as the substance or its uses are exempted from registration, the annual tonnage does not require a registration or the registration is envisaged for a later registration deadline.

CAS-No.: 106-51-4

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

Identified uses: Laboratory chemicals, Manufacture of substances

1.3 Details of the supplier of the safety data sheet

Company: Sigma-Aldrich Inc.
3050 SPRUCE ST
ST. LOUIS MO 63103
UNITED STATES

Telephone: +1 314 771-5765
Fax: +1 800 325-5052

1.4 Emergency telephone

Emergency Phone #: 800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

Flammable solids (Category 1), H228
Acute toxicity, Oral (Category 3), H301
Acute toxicity, Inhalation (Category 3), H331
Skin corrosion (Sub-category 1B), H314
Serious eye damage (Category 1), H318
Skin sensitization (Category 1), H317
Germ cell mutagenicity (Category 2), H341
Specific target organ toxicity - single exposure (Category 3), Respiratory system, H335
Short-term (acute) aquatic hazard (Category 1), H400
Long-term (chronic) aquatic hazard (Category 1), H410
For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 Label elements

**Labelling according Regulation (EC) No 1272/2008**

<table>
<thead>
<tr>
<th>Pictogram</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Pictogram" /></td>
</tr>
</tbody>
</table>

**Signal word** Danger

**Hazard statement(s)**
- H228 Flammable solid.
- H301 + H331 Toxic if swallowed or if inhaled.
- H314 Causes severe skin burns and eye damage.
- H317 May cause an allergic skin reaction.
- H335 May cause respiratory irritation.
- H341 Suspected of causing genetic defects.
- H410 Very toxic to aquatic life with long lasting effects.

**Precautionary statement(s)**
- P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
- P260 Do not breathe dusts or mists.
- P280 Wear protective gloves/ protective clothing/ eye protection/ face protection/ hearing protection.
- P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
- 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.

**Supplemental Hazard Statements** none

**Reduced Labeling (<= 125 ml)**

<table>
<thead>
<tr>
<th>Pictogram</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Pictogram" /></td>
</tr>
</tbody>
</table>

**Signal word** Danger

**Hazard statement(s)**
- H341 Suspected of causing genetic defects.
- H314 Causes severe skin burns and eye damage.
- H317 May cause an allergic skin reaction.
- H301 + H331 Toxic if swallowed or if inhaled.

**Precautionary statement(s)**
- P260 Do not breathe dusts or mists.
- P280 Wear protective gloves/ protective clothing/ eye protection/ face protection/ hearing protection.
- P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
- 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.

Supplemental Hazard Statements

none

2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

SECTION 3: Composition/information on ingredients

3.1 Substances

Synonyms : Quinone

Formula : C₆H₄O₂

Molecular weight : 108,09 g/mol

CAS-No. : 106-51-4

EC-No. : 203-405-2

Index-No. : 606-013-00-3

<table>
<thead>
<tr>
<th>Component</th>
<th>Classification</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>p-benzoquinone</td>
<td>Flam. Sol. 1; Acute Tox. 3; Skin Corr. 1B; Eye Dam. 1; Skin Sens. 1; MutA. 2; STOT SE 3; Aquatic Acute 1; Aquatic Chronic 1; H228, H301, H331, H314, H318, H317, H341, H335, H400, H410</td>
<td>&lt;= 100 %</td>
</tr>
</tbody>
</table>

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

SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice

First aider needs to protect himself. Show this material safety data sheet to the doctor in attendance.

If inhaled

After inhalation: fresh air. Immediately call in physician. If breathing stops: immediately apply artificial respiration, if necessary also oxygen.

In case of skin contact

In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Call a physician immediately.

In case of eye contact

After eye contact: rinse out with plenty of water. Immediately call in ophthalmologist. Remove contact lenses.
**If swallowed**
If swallowed: give water to drink (two glasses at most). Seek medical advice immediately. In exceptional cases only, if medical care is not available within one hour, induce vomiting (only in persons who are wide awake and fully conscious), administer activated charcoal (20 - 40 g in a 10% slurry) and consult a doctor as quickly as possible. Do not attempt to neutralise.

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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**SECTION 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**

**Carbon oxides**
Combustible.
Vapors are heavier than air and may spread along floors.
Forms explosive mixtures with air on intense heating.
Development of hazardous combustion gases or vapours possible in the event of fire.

5.3 **Advice for firefighters**
Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

5.4 **Further information**
Remove container from danger zone and cool with water. Prevent fire extinguishing water from contaminating surface water or the ground water system.

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**SECTION 6: Accidental release measures**

6.1 **Personal precautions, protective equipment and emergency procedures**
Advice for non-emergency personnel: Avoid generation and inhalation of dusts in all circumstances. Avoid substance contact. Ensure adequate ventilation. Keep away from heat and sources of ignition. Evacuate the danger area, observe emergency procedures, consult an expert.
For personal protection see section 8.

6.2 **Environmental precautions**
Do not let product enter drains. Risk of explosion.

6.3 **Methods and materials for containment and cleaning up**
Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully. Dispose of properly. Clean up affected area. Avoid generation of dusts.

6.4 **Reference to other sections**
For disposal see section 13.
SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling
Work under hood. Do not inhale substance/mixture.

Advice on protection against fire and explosion
Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharge.

Hygiene measures
Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions
Tightly closed. Keep away from heat and sources of ignition. Keep locked up or in an area accessible only to qualified or authorized persons.

7.3 Specific end use(s)
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Ingredients with workplace control parameters

8.2 Exposure controls

Personal protective equipment

Eye/face protection
Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Tightly fitting safety goggles

Skin protection
This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).

Full contact
Material: Nitrile rubber
Minimum layer thickness: 0,11 mm
Break through time: 480 min
Material tested: KCL 741 Dermatril® L

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).
Splash contact  
Material: Nitrile rubber  
Minimum layer thickness: 0,11 mm  
Break through time: 480 min  
Material tested: KCL 741 Dermatril® L

**Body Protection**  
Flame retardant antistatic protective clothing.

**Respiratory protection**  
Recommended Filter type: Filter A-(P3)

The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.

**Control of environmental exposure**  
Do not let product enter drains. Risk of explosion.

### SECTION 9: Physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
</table>
| **a)** Appearance                             | Form: powder  
Color: dark yellow                          |
| **b)** Odor                                   | Pungent                                    |
| **c)** Odor Threshold                         | No data available                          |
| **d)** pH                                     | 4 at 1 g/l at 20 °C  
(External MSDS)                              |
| **e)** Melting point/freezing point           | Melting point/range: 113 - 115 °C  
Melting point/range: 112 - 114 °C            |
| **f)** Initial boiling point and boiling range| >= 160 °C at 1.013 hPa  
OECD Test Guideline 103 -  
Decomposes below the boiling point.          |
| **g)** Flash point                            | 77 °C - closed cup                          |
| **h)** Evaporation rate                       | No data available                          |
| **i)** Flammability (solid, gas)              | The substance or mixture is a flammable solid with the category 1. - Test N.1: Test method for readily combustible solids |
| **j)** Upper/lower flammability or explosive limits | No data available                          |
| **k)** Vapor pressure                         | 0,133 hPa at 25 °C                          |
| **l)** Vapor density                          | No data available                          |
| **m)** Relative density                       | 1,33 at 20 °C  
OECD Test Guideline 109                      |
| **n)** Water solubility                       | 14,7 g/l at 20 °C  
OECD Test Guideline 105                      |
| **o)** Partition coefficient: n-octanol/water | log Pow: 0,1 - 0,3 at 23 °C  
Bioaccumulation is not expected.             |
| **p)** Autoignition temperature               | No data available                          |
| **q)** Decomposition                          | No data available                          |

**Sigma-Aldrich - 12309**

The life science business of Merck operates as MilliporeSigma in the US and Canada
9.2 Other safety information
No data available

SECTION 10: Stability and reactivity

10.1 Reactivity
Forms explosive mixtures with air on intense heating.
A range from approx. 15 Kelvin below the flash point is to be rated as critical.
The following applies in general to flammable organic substances and mixtures: in correspondingly fine distribution, when whirled up a dust explosion potential may generally be assumed.

10.2 Chemical stability
The product is chemically stable under standard ambient conditions (room temperature).

10.3 Possibility of hazardous reactions
Violent reactions possible with:
Strong bases
strong reducing agents
Risk of ignition or formation of inflammable gases or vapours with:
Sulfides
combustible substances
hydrides
Exothermic reaction with:
Oxidizing agents
alkalines
Strong acids

10.4 Conditions to avoid
Strong heating.

10.5 Incompatible materials
No data available

10.6 Hazardous decomposition products
In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
LD50 Oral - Rat - 130 mg/kg
Remarks:
(RTECS)
Acute toxicity estimate Inhalation - 4 h - 0,51 mg/l
(Expert judgment)
Inhalation: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)
**Skin corrosion/irritation**  
Skin - in vitro test  
Result: Corrosive after 3 minutes to 1 hour of exposure - 60 min  
(OECD Test Guideline 431)

**Serious eye damage/eye irritation**  
Causes serious eye damage.

**Respiratory or skin sensitization**  
In Chemico Skin Sensitisation: Direct Peptide Reactivity Assay (DPRA) - In vitro study  
Result: positive  
(OECD Test Guideline 442C)

**Germ cell mutagenicity**  
Suspected of causing genetic defects.  
Ames test  
S. typhimurium  
Result: positive  
Mutagenicity (micronucleus test)  
Mouse - male and female  
Result: positive  
Remarks:  
(ECHA)

**Carcinogenicity**  
IARC: No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

**Reproductive toxicity**  
No data available

**Specific target organ toxicity - single exposure**  
Inhalation - May cause respiratory irritation. - Respiratory system

**Specific target organ toxicity - repeated exposure**  
No data available

**Aspiration hazard**  
No data available

### 11.2 Additional Information

RTECS: DK2625000

burning sensation, Cough, wheezing, laryngitis, Shortness of breath, Headache, Nausea, Vomiting, Damage to the eyes.  
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.  
Stomach - Irregularities - Based on Human Evidence

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**SECTION 12: Ecological information**

12.1 Toxicity  
No data available

Toxicity to daphnia static test EC50 - Daphnia magna Straus (Water flea) - 0,13 mg/l

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The life science business of Merck operates as MilliporeSigma in the US and Canada
and other aquatic invertebrates
Toxicity to algae
 static test EC50 - Desmodesmus subspicatus (green algae) - 1,5 mg/l - 72 h
(OECD Test Guideline 201)

12.2 Persistence and degradability
Biodegradability
 aerobic - Exposure time 28 d
 Result: 56 % - Not rapidly biodegradable
(OECD Test Guideline 301A)

12.3 Bioaccumulative potential
 No data available

12.4 Mobility in soil
 No data available

12.5 Results of PBT and vPvB assessment
This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6 Other adverse effects
 No data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods
Product
 See www.retrologistik.com for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

SECTION 14: Transport information

14.1 UN number
ADR/RID: 2587  
IMDG: 2587  
IATA: 2587

14.2 UN proper shipping name
ADR/RID: BENZOQUINONE 
IMDG: BENZOQUINONE 
IATA: Benzoquinone

14.3 Transport hazard class(es)
ADR/RID: 6.1  
IMDG: 6.1  
IATA: 6.1

14.4 Packaging group
ADR/RID: II  
IMDG: II  
IATA: II

14.5 Environmental hazards
ADR/RID: yes  
IMDG Marine pollutant: yes  
IATA: no

14.6 Special precautions for user
 No data available
SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006.

National legislation

Environmental hazards : ENVIRONMENTAL HAZARDS

Other regulations
Observe work restrictions regarding maternity protection in accordance to Dir 92/85/EEC or stricter national regulations where applicable.

Take note of Dir 94/33/EC on the protection of young people at work.

15.2 Chemical Safety Assessment
For this product a chemical safety assessment was not carried out

SECTION 16: Other information

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

H228 Flammable solid.
H301 Toxic if swallowed.
H301 + H331 Toxic if swallowed or if inhaled.
H314 Causes severe skin burns and eye damage.
H317 May cause an allergic skin reaction.
H318 Causes serious eye damage.
H331 Toxic if inhaled.
H335 May cause respiratory irritation.
H341 Suspected of causing genetic defects.
H400 Very toxic to aquatic life.
H410 Very toxic to aquatic life with long lasting effects.

Relevant changes since previous version
2. Hazards identification
Further information
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 Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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