

### 1. PRODUCT AND COMPANY IDENTIFICATION

#### 1.1 Product identifiers

Product name : Hydroquinone

Product Number : H9003

Brand : Sigma-Aldrich

Index-No. : 604-005-00-4

CAS-No. : 123-31-9

#### 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)

### 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 4), H302

Serious eye damage (Category 1), H318

Skin sensitisation (Category 1), H317

Germ cell mutagenicity (Category 2), H341

Carcinogenicity (Category 2), H351

Acute aquatic toxicity (Category 1), H400

Chronic aquatic toxicity (Category 1), H410

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)

|      |   |
|------|---|
| H302 | Harmful if swallowed.                                 |
| H317 | May cause an allergic skin reaction.                  |
| H318 | Causes serious eye damage.                            |
| H341 | Suspected of causing genetic defects.                 |
| H351 | Suspected of causing cancer.                          |
| H410 | Very 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.   |
| P261                       | Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.  |
| P264                       | Wash skin thoroughly after handling.  |
| P270                       | Do not eat, drink or smoke when using this product.   |
| P272                       | Contaminated work clothing should not be allowed out of the workplace.  |
| P273                       | Avoid release to the environment.   |
| P280                       | Wear protective gloves/ protective clothing/ eye protection/ face protection.   |
| P301 + P312 + P330         | IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth.  |
| P302 + P352                | IF ON SKIN: Wash with plenty of soap and water.   |
| P305 + P351 + P338 + P310  | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor. |
| P308 + P313                | IF exposed or concerned: Get medical advice/ attention.   |
| P333 + P313                | If skin irritation or rash occurs: Get medical advice/ attention.   |
| P363                       | Wash contaminated clothing before reuse.  |
| P391                       | Collect spillage.   |
| 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

|                  |   |  |
|------------------|---|--|
| Synonyms         | : | 1,4-Benzenediol<br>1,4-Dihydroxybenzene      |
| Formula          | : | C <sub>6</sub> H <sub>6</sub> O <sub>2</sub> |
| Molecular weight | : | 110.11 g/mol                                 |
| CAS-No.          | : | 123-31-9                                     |
| EC-No.           | : | 204-617-8                                    |
| Index-No.        | : | 604-005-00-4                                 |

#### Hazardous components

| Component           | Classification   | Concentration |
|---------------------|--|---------------|
| <b>Hydroquinone</b> | Acute Tox. 4; Eye Dam. 1;<br>Skin Sens. 1; Muta. 2; Carc. 2;<br>Aquatic Acute 1; Aquatic<br>Chronic 1; H302, H317, H318,<br>H341, H351, H410 | 90 - 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. 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**

Use personal protective equipment. 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. Further processing of solid materials may result in the formation of combustible dusts. The potential for combustible dust formation should be taken into consideration before additional processing occurs.

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.

Air and light sensitive.

**7.3 Specific end use(s)**

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

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**8. EXPOSURE CONTROLS/PERSONAL PROTECTION****8.1 Control parameters****Components with workplace control parameters**

| Component    | CAS-No.  | Value  | Control parameters | Basis   |
|--------------|----------|--|--------------------|---|
| Hydroquinone | 123-31-9 | TWA  | 1.000000 mg/m3     | USA. ACGIH Threshold Limit Values (TLV)   |
|              | Remarks  | Eye irritation<br>Eye damage<br>Adopted values or notations enclosed are those for which changes are proposed in the NIC<br>See Notice of Intended Changes (NIC)<br>Confirmed animal carcinogen with unknown relevance to humans<br>Sensitizer |                    |   |
|              |          | TWA  | 1 mg/m3            | USA. ACGIH Threshold Limit Values (TLV)   |
|              |          | Dermal Sensitization<br>Eye irritation<br>Eye damage<br>2015 Adoption<br>Confirmed animal carcinogen with unknown relevance to humans  |                    |   |
|              |          | TWA  | 2.000000 mg/m3     | USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants        |
|              |          | TWA  | 2 mg/m3            | USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants        |
|              |          | C  | 2.000000 mg/m3     | USA. NIOSH Recommended Exposure Limits  |
|              |          | 15 minute ceiling value  |                    |   |
|              |          | PEL  | 2 mg/m3            | California permissible exposure limits for chemical contaminants (Title 8, Article 107) |

#### Biological occupational exposure limits

| Component    | CAS-No.  | Parameters             | Value   | Biological specimen | Basis                                     |
|--------------|----------|------------------------|---------|---------------------|---|
| Hydroquinone | 123-31-9 | Methemoglobin          | 1.500 % | In blood            | ACGIH - Biological Exposure Indices (BEI) |
|              | Remarks  | During or end of shift |         |                     |   |

## 8.2 Exposure controls

### Appropriate engineering controls

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

### 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.

#### Full contact

Material: Nitrile rubber

Minimum layer thickness: 0.11 mm

Break through time: 480 min

Material tested: Dermatril® (KCL 740 / Aldrich Z677272, Size M)

#### Splash contact

Material: Nitrile rubber

Minimum layer thickness: 0.11 mm  
Break through time: 480 min  
Material tested: Dermatril® (KCL 740 / Aldrich Z677272, 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.

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## **9. PHYSICAL AND CHEMICAL PROPERTIES**

### **9.1 Information on basic physical and chemical properties**

- |   |   |
|---|---|
| a) Appearance                                   | Form: crystalline<br>Colour: colourless                 |
| b) Odour  | No data available                                       |
| c) Odour Threshold                              | No data available                                       |
| d) pH   | 3.7 at 70 g/l   |
| e) Melting point/freezing point                 | Melting point/range: 172 - 175 °C (342 - 347 °F) - lit. |
| f) Initial boiling point and boiling range      | 285 °C (545 °F) - lit.                                  |
| g) Flash point                                  | 165 °C (329 °F) - closed cup                            |
| 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                              | 1 hPa (1 mmHg) at 132 °C (270 °F)                       |
| l) Vapour density                               | 3.80 - (Air = 1.0)                                      |
| m) Relative density                             | 1.332 g/cm <sup>3</sup>                                 |
| n) Water solubility                             | 50 g/l  |
| o) Partition coefficient: n-octanol/water       | log Pow: 0.59   |
| p) Auto-ignition temperature                    | 515.56 °C (960.01 °F)                                   |
| 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

Bulk density 550 - 650 kg/m<sup>3</sup>

Solubility in other solvents Methanol  
Diethylether

Relative vapour density 3.80 - (Air = 1.0)

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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

Air Light.

### 10.5 Incompatible materials

Strong bases, Strong oxidizing agents

### 10.6 Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. - Carbon oxides

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 - 367.3 mg/kg  
(OECD Test Guideline 401)

Inhalation: No data available

LD50 Dermal - Rabbit - > 2,000 mg/kg  
(OECD Test Guideline 402)

No data available

#### Skin corrosion/irritation

No data available

#### Serious eye damage/eye irritation

No data available

#### Respiratory or skin sensitisation

in vivo assay - Mouse

Result: May cause sensitisation by skin contact.

May cause allergic skin reaction.

(OECD Test Guideline 429)

#### Germ cell mutagenicity

Laboratory experiments have shown mutagenic effects.

In vitro tests showed mutagenic effects

DNA repair

Rat - Liver cells

Result: negative

Mutagenicity (micronucleus test)

Mouse

Result: positive

## Carcinogenicity

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: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
- NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
- 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

No data available

## Specific target organ toxicity - single exposure

No data available

## Specific target organ toxicity - repeated exposure

No data available

## Aspiration hazard

No data available

## Additional Information

RTECS: MX3500000

Absorption into the body leads to the formation of methemoglobin which in sufficient concentration causes cyanosis. Onset may be delayed 2 to 4 hours or longer.

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Liver - Irregularities - Based on Human Evidence

Liver - Irregularities - Based on Human Evidence

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## 12. ECOLOGICAL INFORMATION

### 12.1 Toxicity

- |   |  |
|---|--|
| Toxicity to fish                                    | LC50 - Oncorhynchus mykiss (rainbow trout) - 0.04 - 0.1 mg/l - 96.0 h    |
| Toxicity to daphnia and other aquatic invertebrates | EC50 - Daphnia magna (Water flea) - 0.13 mg/l - 48 h                     |
| Toxicity to algae                                   | EC50 - Pseudokirchneriella subcapitata (green algae) - 0.335 mg/l - 72 h |

### 12.2 Persistence and degradability

- |                  |  |
|------------------|--|
| Biodegradability | Biotic/Aerobic - Exposure time 14 d<br>Result: 86 % - Readily biodegradable. |
|------------------|--|

### 12.3 Bioaccumulative potential

- |                 |   |
|-----------------|---|
| Bioaccumulation | Leuciscus idus (Golden orfe) - 3 d<br>- 50 µg/l |
|                 | Bioconcentration factor (BCF): 40               |

### 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: 3077      Class: 9      Packing group: III  
Proper shipping name: Environmentally hazardous substances, solid, n.o.s. (Hydroquinone)  
Reportable Quantity (RQ): 100 lbs  
Poison Inhalation Hazard: No

### IMDG

UN number: 3077      Class: 9      Packing group: III      EMS-No: F-A, S-F  
Proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Hydroquinone)  
Marine pollutant:yes

### IATA

UN number: 3077      Class: 9      Packing group: III  
Proper shipping name: Environmentally hazardous substance, solid, n.o.s. (Hydroquinone)

### Further information

EHS-Mark required (ADR 2.2.9.1.10, IMDG code 2.10.3) for single packagings and combination packagings containing inner packagings with Dangerous Goods > 5L for liquids or > 5kg for solids.

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## 15. REGULATORY INFORMATION

### SARA 302 Components

The following components are subject to reporting levels established by SARA Title III, Section 302:

|              | CAS-No.  | Revision Date |
|--------------|----------|---------------|
| Hydroquinone | 123-31-9 | 2007-07-01    |

### SARA 313 Components

The following components are subject to reporting levels established by SARA Title III, Section 313:

|              | CAS-No.  | Revision Date |
|--------------|----------|---------------|
| Hydroquinone | 123-31-9 | 2007-07-01    |

### SARA 311/312 Hazards

Acute Health Hazard, Chronic Health Hazard

### Massachusetts Right To Know Components

|              | CAS-No.  | Revision Date |
|--------------|----------|---------------|
| Hydroquinone | 123-31-9 | 2007-07-01    |

### Pennsylvania Right To Know Components

|              | CAS-No.  | Revision Date |
|--------------|----------|---------------|
| Hydroquinone | 123-31-9 | 2007-07-01    |

### New Jersey Right To Know Components

|              | CAS-No.  | Revision Date |
|--------------|----------|---------------|
| Hydroquinone | 123-31-9 | 2007-07-01    |

### California Prop. 65 Components



This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

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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 Dam.        | Serious eye damage                                    |
| H302            | Harmful if swallowed.                                 |
| H317            | May cause an allergic skin reaction.                  |
| H318            | Causes serious eye damage.                            |
| H341            | Suspected of causing genetic defects.                 |
| H351            | Suspected of causing cancer.                          |
| H400            | Very toxic to aquatic life.                           |
| H410            | Very toxic to aquatic life with long lasting effects. |

### HMIS Rating

|                        |   |
|------------------------|---|
| Health hazard:         | 2 |
| Chronic Health Hazard: | * |
| Flammability:          | 1 |
| Physical Hazard        | 0 |

### NFPA Rating

|                    |   |
|--------------------|---|
| Health hazard:     | 2 |
| Fire Hazard:       | 1 |
| Reactivity Hazard: | 0 |

### Further information

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### Preparation Information

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

Version: 3.15

Revision Date: 10/04/2017

Print Date: 05/15/2018