1. PRODUCT AND COMPANY IDENTIFICATION

Product name: Hydroquinone
Product Number: H9003
Brand: Sigma-Aldrich
Company: Sigma-Aldrich
3050 Spruce Street
SAINT LOUIS MO 63103 USA
Telephone: +18003255832
Fax: +18003255052
Emergency Phone #: (314) 776-6555

2. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms: 1,4-Benzenediol, 1,4-Dihydroxybenzene
Formula: C₆H₆O₂
Molecular Weight: 110.11 g/mol

<table>
<thead>
<tr>
<th>CAS-No.</th>
<th>EC-No.</th>
<th>Index-No.</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>123-31-9</td>
<td>204-617-8</td>
<td>604-005-00-4</td>
<td></td>
</tr>
</tbody>
</table>

3. HAZARDS IDENTIFICATION

Emergency Overview

OSHA Hazards
Target Organ Effect, Toxic by ingestion, Skin sensitiser, Irritant, Carcinogen, Mutagen

Target Organs
Blood, Liver, Kidney, Eyes

HMIS Classification
Health hazard: 2
Chronic Health Hazard: *
Flammability: 1
Physical hazards: 0

NFPA Rating
Health hazard: 2
Fire: 1
Reactivity Hazard: 0
Potential Health Effects

Inhalation May be harmful if inhaled. Causes respiratory tract irritation.
Skin May be harmful if absorbed through skin. Causes skin irritation.
Eyes Causes eye irritation.
Ingestion Toxic if swallowed.

4. 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.

5. FIRE-FIGHTING MEASURES

Flammable properties
Flash point 165 °C (329 °F) - closed cup
Ignition temperature 499 °C (930 °F)

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

Special protective equipment for fire-fighters
Wear self contained breathing apparatus for fire fighting if necessary.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions
Use personal protective equipment. Avoid dust formation. Avoid breathing dust. Ensure adequate ventilation.

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.

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

7. HANDLING AND STORAGE

Handling
Avoid formation of dust and aerosols.
Provide appropriate exhaust ventilation at places where dust is formed. Normal measures for preventive fire protection.

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

Air and light sensitive.
8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Value</th>
<th>Control parameters</th>
<th>Update</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydroquinone</td>
<td>123-31-9</td>
<td>TWA</td>
<td>1 mg/m³</td>
<td>2008-01-01</td>
<td>USA. ACGIH Threshold Limit Values (TLV)</td>
</tr>
</tbody>
</table>

Remarks
Eye irritation Eye damage 2008 Adoption Confirmed animal carcinogen with unknown relevance to humans: The agent is carcinogenic in experimental animals at a relatively high dose, by route(s) of administration, at site(s), of histologic type(s), or by mechanism(s) that may not be relevant to worker exposure. Available epidemiologic studies do not confirm an increased risk of cancer in exposed humans. Available evidence does not suggest that the agent is likely to cause cancer in humans except under uncommon or unlikely routes or levels of exposure. Sensitizer

<table>
<thead>
<tr>
<th>TWA</th>
<th>2 mg/m³</th>
<th>1989-01-19</th>
<th>USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>TWA</td>
<td>2 mg/m³</td>
<td>1997-08-04</td>
<td>USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants</td>
</tr>
</tbody>
</table>

Personal protective equipment

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).

Hand protection
Handle with gloves.

Eye protection
Face shield and safety glasses

Skin and body protection
Choose body protection according to the amount and concentration of the dangerous substance at the work place.

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

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance
Form crystalline
Colour colourless

Safety data
pH 3.7 at 70 g/l
Melting point 172 - 175 °C (342 - 347 °F)
Boiling point 285 °C (545 °F)
Flash point 165 °C (329 °F) - closed cup
Ignition temperature 499 °C (930 °F)
Lower explosion limit no data available
Upper explosion limit no data available
Vapour pressure 1 hPa (1 mmHg) at 132 °C (270 °F)
Density 1.332 g/cm³
Water solubility 50 g/l
Partition coefficient: log Pow: 0.59
Relative vapour density - (Air = 1.0)

10. STABILITY AND REACTIVITY

Storage stability
Stable under recommended storage conditions.

Conditions to avoid
Air Light.

Materials to avoid
Strong bases, Strong oxidizing agents

Hazardous decomposition products
Hazardous decomposition products formed under fire conditions. - Carbon oxides

11. TOXICOLOGICAL INFORMATION

Acute toxicity
LD50 Oral - rat - 302 mg/kg
LD50 Dermal - Mammal - 5,970 mg/kg

Irritation and corrosion
no data available

Sensitisation
May cause allergic skin reaction.

Chronic exposure
This product is or contains a component that has been reported to be possibly carcinogenic based on its IARC, ACGIH, NTP, or EPA classification.

IARC: 3 - Group 3: Not classifiable as to its carcinogenicity to humans (Hydroquinone)

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.

Genotoxicity in vivo - rat - Oral
Unscheduled DNA synthesis
Genotoxicity in vivo - mouse - Oral
Micronucleus test
Laboratory experiments have shown mutagenic effects.

Signs and Symptoms of Exposure
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.

Potential Health Effects
- **Inhalation**: May be harmful if inhaled. Causes respiratory tract irritation.
- **Skin**: May be harmful if absorbed through skin. Causes skin irritation.
- **Eyes**: Causes eye irritation.
- **Ingestion**: Toxic if swallowed.
- **Target Organs**: Blood, Liver, Kidney, Eyes,

Additional Information
RTECS: MX3500000

12. ECOLOGICAL INFORMATION

Elimination information (persistence and degradability)
- **Biodegradability**: Biotic/Aerobic
  - Result: 86% - Readily biodegradable.

- **Bioaccumulation**: Leuciscus idus (Golden orfe) - 3 d
  - Bioconcentration factor (BCF): 40

Ecotoxicity effects
- **Toxicity to fish**: LC50 - Oncorhynchus mykiss (rainbow trout) - 0.04 - 0.10 mg/l - 96 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

Further information on ecology
An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Very toxic to aquatic organisms.

13. DISPOSAL CONSIDERATIONS

**Product**
Observe all federal, state, and local environmental regulations. 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.

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
Marine pollutant: No
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: No

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

15. REGULATORY INFORMATION

OSHA Hazards
Target Organ Effect, Toxic by ingestion, Skin sensitiser, Irritant, Carcinogen, Mutagen

DSL Status
All components of this product are on the Canadian DSL list.

SARA 302 Components
Hydroquinone  CAS-No. 123-31-9  Revision Date 2007-07-01

SARA 313 Components
Hydroquinone  CAS-No. 123-31-9  Revision Date 2007-07-01

SARA 311/312 Hazards
Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components
Hydroquinone  CAS-No. 123-31-9  Revision Date 2007-07-01

Pennsylvania Right To Know Components
Hydroquinone  CAS-No. 123-31-9  Revision Date 2007-07-01

New Jersey Right To Know Components
Hydroquinone  CAS-No. 123-31-9  Revision Date 2007-07-01

California Prop. 65 Components
This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

16. OTHER INFORMATION

Further information
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