SAFETY DATA SHEET

Eastman(TM) Hydroquinone, USP

SECTION 1. IDENTIFICATION

Product name : Eastman(TM) Hydroquinone, USP

Product code : 08992-0N, P08992N0, P08992N6, P08992NA, P08992NB, E08992N1

Manufacturer or supplier's details

Company name of supplier : Eastman Chemical Company

Address : 200 South Wilcox Drive
          Kingsport TN 37660-5280

Telephone : (423) 229-2000

Emergency telephone : CHEMTREC: +1-800-424-9300, +1-703-527-3887 CCN7321

Recommended use of the chemical and restrictions on use

Recommended use : Chemical intermediate
                  Inhibitor
                  Photographic processing chemical.

Restrictions on use : None known.

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with 29 CFR 1910.1200

Combustible dust

Acute toxicity (Oral) : Category 4

Serious eye damage : Category 1

Skin sensitization : Sub-category 1B

Germ cell mutagenicity : Category 2

Carcinogenicity : Category 2

GHS label elements

Hazard pictograms :

Signal Word : Danger
Hazard Statements:
- 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.

Precautionary Statements:
- **Prevention:**
  - 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/ vapors/ spray.
  - P264 Wash skin thoroughly after handling.
  - P270 Do not eat, drink or smoke when using this product.
  - P272 Contaminated work clothing must not be allowed out of the workplace.
  - P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
- **Response:**
  - 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.
- **Storage:**
  - P405 Store locked up.
- **Disposal:**
  - P501 Dispose of contents/ container to an approved waste disposal plant.

**Other hazards**
None known.

**SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS**

**Substance name:** 08992-0N

**Ingredients**

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No.</th>
<th>Concentration (% w/w)</th>
</tr>
</thead>
<tbody>
<tr>
<td>hydroquinone</td>
<td>123-31-9</td>
<td>100</td>
</tr>
</tbody>
</table>

**SECTION 4. FIRST AID MEASURES**
If inhaled: Move to fresh air. Treat symptomatically. If symptoms persist, call a physician.

In case of skin contact: Wash off with soap and plenty of water. Wash contaminated clothing before re-use. In the case of skin irritation or allergic reactions see a physician.

In case of eye contact: Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.

If swallowed: Seek medical advice.

Most important symptoms and effects, both acute and delayed:
- Rash
- Harmful if swallowed.
- May cause an allergic skin reaction.
- Causes serious eye damage.
- Suspected of causing genetic defects.
- Suspected of causing cancer.

Notes to physician: Treat symptomatically.

SECTION 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media: Carbon dioxide (CO2)
- Dry chemical
- Water spray

Unsuitable extinguishing media: Do NOT use water jet.

Specific hazards during fire fighting: None known.

Hazardous combustion products: No hazardous combustion products are known

Further information: None known.

Special protective equipment for fire-fighters: Wear an approved positive pressure self-contained breathing apparatus in addition to standard fire fighting gear.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Wear appropriate personal protective equipment. Local authorities should be advised if significant spillages cannot be contained.
Environmental precautions : Avoid release to the environment.

Methods and materials for containment and cleaning up : Sweep up or vacuum up spillage and collect in suitable container for disposal. Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13).

SECTION 7. HANDLING AND STORAGE

Advice on protection against fire and explosion : None known.

Advice on safe handling : Do not get in eyes. Avoid contact with skin, eyes and clothing. Do not swallow. Wash thoroughly after handling.

Conditions for safe storage : Store locked up.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>CAS-No.</th>
<th>Value type (Form of exposure)</th>
<th>Control parameters / Permissible concentration</th>
<th>Basis</th>
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</thead>
<tbody>
<tr>
<td>hydroquinone</td>
<td>123-31-9</td>
<td>TWA</td>
<td>1 mg/m3</td>
<td>ACGIH</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C</td>
<td>2 mg/m3</td>
<td>NIOSH REL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>2 mg/m3</td>
<td>OSHA Z-1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>2 mg/m3</td>
<td>OSHA P0</td>
</tr>
</tbody>
</table>

Engineering measures : Ensure adequate ventilation.

Personal protective equipment

Respiratory protection : Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines.

Hand protection

Remarks : Wear suitable gloves.

Eye protection : Wear safety glasses with side shields (or goggles). Face-shield
Always wear eye protection when the potential for inadvertent eye contact with the product cannot be excluded.

Skin and body protection : Wear protective gloves/ protective clothing.

Protective measures : Remove respiratory and skin/eye protection only after vapors
hygiene measures: Handle in accordance with good industrial hygiene and safety practice.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: crystalline

Color: white

Odor: odorless

Odor Threshold: not determined

pH: 4.1 - 4.7

Melting point/range: 172.3 °C (1,013 hPa)

Boiling point/boiling range: 287 °C

Flash point: 165 °C (1,013 hPa)

Method: closed cup

Evaporation rate: not determined

Flammability (solid, gas): Not applicable

Self-ignition: 515 °C (1,013 hPa)

Upper explosion limit: not determined

Lower explosion limit: not determined

Vapor pressure: 0.000032 hPa (25 °C)

Relative vapor density: 3.8

Relative density: 1.33 (15 °C)

Solubility(ies)

Water solubility: 72 g/l (25 °C)

Partition coefficient: n-octanol/water: log Pow: 0.59 (20 °C)

Autoignition temperature: not determined
Decomposition temperature: Thermal stability not tested. Low stability hazard expected at normal operating temperatures.

Viscosity
- Viscosity, dynamic: Not applicable
- Viscosity, kinematic: Not applicable

Explosive properties: Not classified

Oxidizing properties: Not classified

Surface tension: Not applicable

Molecular weight: 110.1 g/mol

SECTION 10. STABILITY AND REACTIVITY

Reactivity: None reasonably foreseeable.

Chemical stability: Stable under normal conditions.

Possibility of hazardous reactions: Stable None known.

Conditions to avoid: None known.

Incompatible materials: Strong oxidizing agents

Hazardous decomposition products: Carbon dioxide (CO2) Carbon monoxide

SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity
Harmful if swallowed.

Product:
- Acute oral toxicity: Remarks: Harmful if swallowed.
- Acute inhalation toxicity: Remarks: No significant adverse effects were reported
- Acute dermal toxicity: Remarks: No significant adverse effects were reported

Ingredients:
hydroquinone:
- Acute oral toxicity: LD50 Oral (Rat): > 375 mg/kg
- Acute dermal toxicity: LD50 Dermal (Rabbit): > 2,000 mg/kg
Skin corrosion/irritation
Not classified based on available information.

**Product:**
Remarks: May cause an allergic skin reaction.

**Ingredients:**
hydroquinone:
Species: Rabbit
Exposure time: 24 h
Result: none

Serious eye damage/eye irritation
Causes serious eye damage.

**Product:**
Remarks: Causes eye irritation.

**Ingredients:**
hydroquinone:
Species: Humans
Result: corneal opacity

Respiratory or skin sensitization

Skin sensitization
May cause an allergic skin reaction.

Respiratory sensitization
Not classified based on available information.

**Product:**
Remarks: No data available

**Ingredients:**
hydroquinone:
Test Type: Skin Sensitization
Species: Mouse
Result: sensitizing

Test Type: Skin Sensitization
Species: Guinea pig
Result: Not a skin sensitizer.

Germ cell mutagenicity
Suspected of causing genetic defects.
Ingredients:
hydroquinone:
Genotoxicity in vitro:
- Test Type: Mutagenicity - Bacterial
  Metabolic activation: +/- activation
  Result: negative
- Test Type: Chromosome aberration test in vitro
  Metabolic activation: +/- activation
  Result: negative
- Test Type: Chromosome aberration test in vitro
  Metabolic activation: + activation
  Result: positive
- Test Type: Chromosome aberration test in vitro
  Metabolic activation: - activation
  Result: negative
- Test Type: Mutagenicity - Mammalian
  Metabolic activation: +/- activation
  Result: positive

Genotoxicity in vivo:
- Test Type: Micronucleus test
  Species: Mouse
  Application Route: Intraperitoneal injection
  Result: positive
- Test Type: Micronucleus test
  Species: Rat
  Application Route: oral: gavage
  Result: negative

Carcinogenicity
Suspected of causing cancer.

Product:
Remarks: This information is not available.

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.

OSHA
No component of this product present at levels greater than or equal to 0.1% is on OSHA’s list of regulated carcinogens.

NTP
No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

Reproductive toxicity
Not classified based on available information.
Product:
Effects on fertility : Remarks: No data available

STOT-single exposure
Not classified based on available information.

Product:
Remarks: No data available

STOT-repeated exposure
Not classified based on available information.

Product:
Remarks: No data available

Repeated dose toxicity

Ingredients:

hydroquinone:
Species: Rat
NOAEL: 20 mg/kg
Application Route: Oral
Exposure time: 90 d

Species: Rat
NOAEL: 73.9 mg/kg
Application Route: Dermal Study
Exposure time: 90 d
Remarks: (highest dose tested)

Aspiration toxicity
Not classified based on available information.

Product:
No aspiration toxicity classification

Further information

Product:
Remarks: None known.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Ingredients:

hydroquinone:
Toxicity to fish : LC50 (Fish): 0.638 mg/l
Toxicity to daphnia and other aquatic invertebrates

- EC50 (Daphnia magna (Water flea)): 0.134 mg/l
- Exposure time: 48 h

Toxicity to algae

- EC50 (Chlorella pyrenoidosa): 0.33 mg/l
- Exposure time: 72 h
- NOEC: (Chlorella pyrenoidosa): 0.019 mg/l
- Exposure time: 72 h

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)

- NOEC: (Daphnia magna (Water flea)): 0.0057 mg/l
- Exposure time: 21 d

Persistence and degradability

**Ingredients:**

**hydroquinone:**

Biodegradability

- Result: Readily biodegradable.
- Biodegradation: 70%
- Exposure time: 14 d
- Method: Ready Biodegradability: Modified MITI Test (I)

Biochemical Oxygen Demand (BOD)

- BOD-5: 0.48 - 1.10 g/g

Chemical Oxygen Demand (COD)

- 1.83 - 1.90 g/g

ThOD

- 1.89 g/g

Bioaccumulative potential

No data available

Mobility in soil

**Ingredients:**

**hydroquinone:**

Distribution among environmental compartments

- log Koc: 0.97 - 1.7
- Method: QSAR model

Other adverse effects

No data available

SECTION 13. DISPOSAL CONSIDERATIONS

**Disposal methods**

Waste from residues

- Dispose of in accordance with local regulations.
SECTION 14. TRANSPORT INFORMATION

International Regulations

IATA-DGR
UN/ID No. : UN 3077
Proper shipping name : Environmentally hazardous substance, solid, n.o.s.
(hydroquinone)
Class : 9
Packing group : III
Labels : Miscellaneous
Packing instruction (cargo aircraft) : 956
Packing instruction (passenger aircraft) : 956

IMDG-Code
UN number : UN 3077
Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
(hydroquinone)
Class : 9
Packing group : III
Labels : 9
EmS Code : F-A, S-F
Marine pollutant : yes

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not applicable for product as supplied.

Domestic regulation

49 CFR
UN/ID/NA number : UN 3077
Proper shipping name : Environmentally hazardous substances, solid, n.o.s., Environmentally hazardous substance, solid, n.o.s.
(hydroquinone)
Class : 9
Packing group : III
Labels : Class 9 - Miscellaneous Dangerous Goods
ERG Code : 171
Marine pollutant : yes(hydroquinone)
Remarks : Shipping in package sizes of less than 5 L (liquids) or 5 KG (solids) may lead to a non-regulated classification.

SECTION 15. REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>CAS-No.</th>
<th>Component TPQ (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>123-31-9</td>
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<td>10,000</td>
</tr>
<tr>
<td>123-31-9</td>
<td></td>
<td>500</td>
</tr>
</tbody>
</table>
SAFETY DATA SHEET

Eastman(TM) Hydroquinone, USP

SARA 311/312 Hazards:
- Fire Hazard
- Chronic Health Hazard
- Acute Health Hazard

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

hydroquinone 123-31-9 99.5491 %

The ingredients of this product are reported in the following inventories:
- CH INV: On the inventory, or in compliance with the inventory
- DSL: On the inventory, or in compliance with the inventory
- AICS: On the inventory, or in compliance with the inventory
- NZIoC: On the inventory, or in compliance with the inventory
- ENCS: On the inventory, or in compliance with the inventory
- ISHL: On the inventory, or in compliance with the inventory
- KECI: On the inventory, or in compliance with the inventory
- PICCS: On the inventory, or in compliance with the inventory
- IECSC: On the inventory, or in compliance with the inventory
- TCSI: On the inventory, or in compliance with the inventory
- TSCA: On the inventory, or in compliance with the inventory

TSCA list:
No substances are subject to a Significant New Use Rule.
No substances are subject to TSCA 12(b) export notification requirements.

SECTION 16. OTHER INFORMATION

Full text of other abbreviations
AICS - Australian Inventory of Chemical Substances; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC -
International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50% of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

Further information

**NFPA:**

<table>
<thead>
<tr>
<th>Flammability</th>
<th>Health</th>
<th>Instability</th>
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</thead>
<tbody>
<tr>
<td>3</td>
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<td>0</td>
</tr>
</tbody>
</table>

**Special hazard.**

**HMIS® IV:**

- **HEALTH:** *
- **FLAMMABILITY:** 3
- **PHYSICAL HAZARD:** 0

HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard.

Revision Date: 02/05/2018

The information provided in this Material Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

US / ZB