SAFETY DATA SHEET

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

1.1 Product identifier
Product name: Eastman(TM) Hydroquinone, USP

Product No.: EAN 900356. P08992NA

Synonyms, Trade Names: 08992-0N

Additional identification
Chemical name: hydroquinone
CAS-No.: 123-31-9

1.2 Relevant identified uses of the substance or mixture and uses advised against
Identified uses: Chemical Intermediate, Inhibitor, Photographic processing chemical.
Uses advised against: None known.

1.3 Details of the supplier of the safety data sheet
Manufacturer / Supplier

Eastman Chemical Company
200 South Wilcox Drive
Kingsport, TN 37660-5280 US
+14232292000

Visit our website at www.EASTMAN.com or email emnmsds@eastman.com

1.4 Emergency telephone number:

For emergency health, safety and environmental information: call the United States 1-423-229-4511 or 1-423-229-2000

For emergency transportation information from Canada: call CANUTEC at 613-996-6666 or call 800-EASTMAN.

SECTION 2: Hazards identification

WARNING!
HARMFUL IF SWALLOWED
MAY CAUSE ALLERGIC SKIN REACTION
REPEATED EXPOSURE TO DUST MAY CAUSE EYE INJURY

SECTION 3: Composition/information on ingredients

3.1 / 3.2 Substances / Mixtures

General information:

Chemical name	Concentration	Additional identification	Notes
hydroquinone	100%	123-31-9	#

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.
This substance has workplace exposure limit(s).
PBT: persistent, bioaccumulative and toxic substance.
vPvB: very persistent and very bioaccumulative substance.

SECTION 4: First aid measures

4.1 Description of first aid measures

Inhalation: Move to fresh air. Treat symptomatically. Get medical attention if symptoms persist.

Eye contact: Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Call a physician or poison control center immediately. In case of irritation from airborne exposure, move to fresh air. Get medical attention if symptoms persist.

Skin contact: Immediately remove contaminated clothing and shoes and wash skin with soap and plenty of water. If skin irritation or an allergic skin reaction develops, get medical attention. Wash contaminated clothing before reuse. Destroy or thoroughly clean contaminated shoes.

Ingestion: Call a physician or poison control center immediately. Only induce vomiting at the instruction of medical personnel. Never give anything by mouth to an unconscious person.

4.2 Most important symptoms and effects, both acute and delayed: May irritate and cause redness and pain. Symptoms may be delayed.

4.3 Indication of any immediate medical attention and special treatment needed

Hazards: None known.

Treatment: Treat symptomatically.

SECTION 5: Firefighting measures

General fire hazards: Material can accumulate static charges which may cause an electrical spark (ignition source). Use proper bonding and/or grounding procedures.

5.1 Extinguishing media

Suitable extinguishing media: Water spray. Dry chemical. Carbon Dioxide.

Unsuitable extinguishing media: None known.

5.2 Special hazards arising from the substance or mixture: Powdered material may form explosive dust-air mixtures.

5.3 Advice for firefighters

Special fire fighting procedures: Minimize dust generation and accumulation.

Special protective equipment for fire-fighters: Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures: Wear appropriate personal protective equipment.

6.2 Environmental precautions: Do not release into the environment.

6.3 Methods and material for containment and cleaning up: Sweep up and place in a clearly labeled container for chemical waste. Large Spillages: Flush spill area with water spray. Prevent runoff from entering drains, sewers, or streams. Dike for later disposal.

Notification Procedures: In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

SECTION 7: Handling and storage:

7.1 Precautions for safe handling: Avoid breathing dust. Avoid contact with eyes, skin, and clothing. Do not taste or swallow. Use only with adequate ventilation. Wash thoroughly after handling.

7.2 Conditions for safe storage, including any incompatibilities: Keep container closed. Keep away from food, drink and animal feedingstuffs.

7.3 Specific end use(s): Chemical Intermediate Inhibitor Photographic processing chemical.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limits

If exposure limits have not been established, maintain airborne levels to an acceptable level.

Chemical name	Type	Exposure Limit values	Source
1,4-dihydroxybenzene; hydroquinone; quinol	TWA	2 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	1 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	8 HR ACL	2 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN	4 mg/m3	Canada. Saskatchewan OELs (Occupational

	ACL		Health and Safety Regulations, 1996, Table 21) (05 2009)
	TWA	2 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
	TWAEV	1 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)

8.2 Exposure controls

Appropriate engineering controls: Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Individual protection measures, such as personal protective equipment

General information: Eye bath. Washing facilities. Safety shower.

Eye/face protection: Chemical goggles and face shield are recommended. Wear a full-face respirator, if needed.

Skin protection

Hand protection: Wear chemical-resistant gloves, footwear, and protective clothing appropriate for the risk of exposure. Contact health and safety professional or manufacturer for specific information. Wash hands after contact.

Other: No data available.

Respiratory Protection: If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. In the United States of America, if respirators are used, a program should be instituted to assure compliance with OSHA Standard 63 FR 1152, January 8, 1998. Respirator type: Air-purifying respirator with an appropriate, government approved (where applicable), air-purifying filter, cartridge or canister. Contact health and safety professional or manufacturer for specific information.

Hygiene measures: Observe good industrial hygiene practices.

Environmental Controls: No data available.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance

Physical State: Solid

Form: solid (crystal)

Color: White

Odor: Odorless

Odor Threshold:	No data available.
pH:	4.1 - 4.7
Melting Point	172.3 °C
Boiling Point:	287 °C
Flash Point:	165 °C (closed cup)
Evaporation Rate:	Not determined.
Flammability (solid, gas):	Not applicable
Flammability Limit - Upper (%)–:	No data available.
Flammability Limit - Lower (%)–:	No data available.
Vapor pressure:	0.000032 hPa (25 °C)
Vapor density (air=1):	3.8
Specific Gravity:	1.33 (15 °C)
Solubility(ies)	
Solubility in Water:	72 g/l (25 °C)
Solubility (other):	No data available.
Partition coefficient (n-octanol/water):	log Pow: 0.59
Autoignition Temperature:	515 °C
Decomposition Temperature:	Thermal stability not tested. Low stability hazard expected at normal operating temperatures.
Dynamic Viscosity:	Not applicable
Kinematic viscosity:	Not applicable
Explosive properties:	Not classified
Oxidizing properties:	Not classified

SECTION 10: Stability and reactivity

10.1 Reactivity:	None known.
10.2 Chemical stability:	Stable
10.3 Possibility of hazardous reactions:	None known.
10.4 Conditions to avoid:	Heat, sparks, flames.
10.5 Incompatible materials:	Strong oxidizing agents. Strong alkalis.
10.6 Hazardous decomposition products:	Carbon Dioxide. Carbon Monoxide.

SECTION 11: Toxicological information

Information on likely routes of exposure

Inhalation:	None known.
Ingestion:	Harmful if swallowed.

Skin contact: May cause an allergic skin reaction. May cause skin depigmentation.

Eye contact: Causes serious eye damage.

11.1 Information on toxicological effects

Acute Toxicity

Oral

Product: No data available.

Specified substance(s)

1,4-dihydroxybenzene; hydroquinone; quinol	Oral LD-50: (Rat): > 375 mg/kg

Dermal

Product: No data available.

Specified substance(s)

1,4-dihydroxybenzene; hydroquinone; quinol	Dermal LD-50: (Rabbit): > 2,000 mg/kg

Inhalation

Product: No data available.

Specified substance(s)

1,4-dihydroxybenzene; hydroquinone; quinol	No data available.

Repeated dose toxicity

Product: No data available.

Specified substance(s)

1,4-dihydroxybenzene; hydroquinone; quinol	NOAEL (Rat, Oral Study, 90 d): 20 mg/kg NOAEL (Rat, Dermal Study, 90 d): 73.9 mg/kg (highest dose tested)

Skin corrosion/irritation:

Product: No data available.

Specified substance(s)

1,4-dihydroxybenzene; hydroquinone; quinol	(Rabbit, 24 h): none

Serious eye damage/eye irritation:

Product: No data available.

Specified substance(s)

1,4-dihydroxybenzene; hydroquinone; quinol	(Human): corneal opacity

Respiratory or skin sensitization:

Product: No data available.

Specified substance(s)

1,4-dihydroxybenzene; hydroquinone; quinol	Skin Sensitization:, (Mouse) - sensitizing Skin Sensitization:, (Guinea Pig) - Not a skin sensitizer.

Germ cell mutagenicity

In vitro

Product: No data available.

Specified substance(s)

1,4-dihydroxybenzene; hydroquinone; quinol	Mutagenicity - Bacterial, : negative +/- activation Chromosomal aberration, : negative +/- activation Chromosomal aberration, : positive + activation Chromosomal aberration, : negative - activation Mutagenicity - Mammalian, : positive +/- activation

In vivo

Product: No data available.

Specified substance(s)

1,4-dihydroxybenzene; hydroquinone; quinol	No data available.

Carcinogenicity

Product: No data available.

Specified substance(s)

1,4-dihydroxybenzene; hydroquinone; quinol	No data available.

Reproductive toxicity

Product: No data available.

Specified substance(s)

1,4-dihydroxybenzene; hydroquinone; quinol	No data available.

Specific target organ toxicity - single exposure

Product: No data available.

Specified substance(s)

1,4-dihydroxybenzene; hydroquinone; quinol	No data available.

Specific target organ toxicity - repeated exposure

Product: No data available.

Specified substance(s)

1,4-dihydroxybenzene; hydroquinone; quinol	No data available.

Aspiration hazard

Product: No data available.

Specified substance(s)

1,4-dihydroxybenzene; hydroquinone; quinol	No data available.

Other adverse effects: No data available.

SECTION 12: Ecological information

12.1 Toxicity

Acute toxicity

Fish

Product:	No data available.
Specified substance(s)	
1,4-dihydroxybenzene; hydroquinone; quinol	LC-50 (Fish, 96 h): 0.638 mg/l

Aquatic invertebrates

Product:	No data available.
Specified substance(s)	
1,4-dihydroxybenzene; hydroquinone; quinol	EC-50 (daphnid, 48 h): 0.134 mg/l

Chronic Toxicity

Fish

Product:	No data available.
Specified substance(s)	
1,4-dihydroxybenzene; hydroquinone; quinol	No data available.

Aquatic invertebrates

Product:	No data available.
Specified substance(s)	
1,4-dihydroxybenzene; hydroquinone; quinol	NOEC: (daphnid, 21 d): 0.0057 mg/l

Toxicity to Aquatic Plants

Product:	No data available.
Specified substance(s)	
1,4-dihydroxybenzene; hydroquinone; quinol	EC-50 (Alga, 72 h): 0.33 mg/l NOEC: (Alga, 72 h): 0.019 mg/l

12.2 Persistence and degradability

Biodegradation

Product:	No data available.
Specified substance(s)	
1,4-dihydroxybenzene; hydroquinone; quinol	70 % (14 d, Ready Biodegradability: Modified MITI Test (I)) Readily biodegradable

Biological Oxygen Demand:

Product	No data available.
Specified substance(s)	
1,4-dihydroxybenzene; hydroquinone; quinol	No data available.

Chemical Oxygen Demand:

Product	No data available.
Specified substance(s)	
1,4-dihydroxybenzene; hydroquinone; quinol	No data available.

BOD/COD ratio

Product	No data available.
Specified substance(s)	
1,4-dihydroxybenzene; hydroquinone; quinol	No data available.

12.3 Bioaccumulative potential

Product:	No data available.
Specified substance(s)	
1,4-dihydroxybenzene; hydroquinone; quinol	No data available.

12.4 Mobility in soil: No data available.

Known or predicted distribution to environmental compartments

1,4-dihydroxybenzene; hydroquinone; quinol	0.97 - 1.7 (QSAR model)

12.5 Results of PBT and vPvB assessment: No data available.

1,4-dihydroxybenzene; hydroquinone; quinol	Not fulfilling PBT (persistent/bioaccumulative/toxic) criteria

12.6 Other adverse effects: No data available.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

General information: No data available.

Disposal methods: Dispose of waste and residues in accordance with local authority requirements. Incinerate. Since emptied containers retain product residue, follow label warnings even after container is emptied.

SECTION 14: Transport information

Important Note: Shipping descriptions may vary based on mode of transport, quantities, package size, and/or origin and destination. Consult your company's Hazardous Materials/Dangerous Goods expert for information specific to your situation.

DOT

Reportable Quantity: 45.4 kg (hydroquinone)
Marine pollutant.: hydroquinone

Possible Shipping Description(s):

UN 3077 Environmentally hazardous substance, solid, n.o.s. (hydroquinone) 9 III

IMDG - International Maritime Dangerous Goods Code

Marine pollutant.: (hydroquinone)

Possible Shipping Description(s):

UN 3077 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (hydroquinone) 9 III

IATA

Possible Shipping Description(s):

UN 3077 Environmentally hazardous substance, solid, n.o.s. (hydroquinone) 9 III

SECTION 15: Regulatory information

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

This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.
WHMIS (Canada) Status: controlled
WHMIS (Canada) Hazard Classification: D/1/B, D/2/B
OSHA: hazardous

TSCA (US Toxic Substances Control Act): This product is listed on the TSCA inventory. Any impurities present in this product are exempt from listing.

DSL (Canadian Domestic Substances List) and CEPA (Canadian Environmental Protection Act): This product is listed on the DSL or otherwise complies with CEPA new substance notification requirements.

AICS / NICNAS (Australian Inventory of Chemical Substances and National Industrial Chemicals Notification and Assessment Scheme): This product is listed on AICS or otherwise complies with NICNAS.

MITI (Japanese Handbook of Existing and New Chemical Substances): This product is listed in the Handbook or has been approved in Japan by new substance notification.

ECL (Korean Toxic Substances Control Act): This product is listed on the Korean inventory or otherwise complies with the Korean Toxic Substances Control Act.

SECTION 16: Other information

HMIS® Hazard Ratings: Health - 2*, Flammability - 1, Chemical Reactivity - 0

HMIS® rating involves data interpretations that may vary from company to company. They are intended only for rapid, general identification of the magnitude of the specific hazard. To deal adequately with the safe handling of this material, all the information contained in this MSDS must be considered.

Revision Information:	New SDS
Key literature references and sources for data:	No data available.
Training information:	No data available.
Issue date:	2013-02-12
SDS No.:	
Disclaimer:	This information is provided without warranty. The information is believed to be correct. This information should be used to make an independent determination of the methods to safeguard workers and the environment.