Electro-Chemical Devices

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QUINHYDRONE

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1. Product Identification

Synonyms: 2,5-Cyclohexadiene-1,4-dione, comp. with 1,4-benzenediol (1:1); p-Benzoquinone compd. with hydroquinone; green hydroquinone
CAS No.: 106-34-3
Molecular Weight: 218.20
Chemical Formula: C6H6O2.C6H4O2
Product Codes: U755

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2. Hazards Identification

Emergency Overview

DANGER! MAY BE FATAL IF SWALLOWED. AFFECTS CENTRAL NERVOUS SYSTEM. CAUSES SEVERE SKIN AND EYE IRRITATION. MAY CAUSE ALLERGIC SKIN REACTION. HARMFUL IF INHALED. CAUSES IRRITATION TO RESPIRATORY TRACT.

SAF-T-DATA(tm) Ratings (Provided here for your convenience)

Health Rating: 2 - Moderate (Poison)
Flammability Rating: 1 - Slight
Reactivity Rating: 1 - Slight
Contact Rating: 3 - Severe (Life)
Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES
Storage Color Code: Blue (Health)

Potential Health Effects

Information on the human health effects from exposure to this substance is limited. Health hazards on this data sheet are based on two related compounds: hydroquinone (CAS 123-31-9) and p-benzoquinone (CAS 106-51-4).

Inhalation:
Causes irritation to the respiratory tract. Symptoms may include coughing, shortness of breath. Systemic effects have not been proven by this route.
Ingestion:
For Hydroquinone:
Highly Toxic. May cause hyperactivity, stupor, fall in blood pressure, hyperpnea, abdominal pain, diarrhea, intense thirst, sweating, tinnitis, nausea, dizziness, a sensation of suffocation, an increased rate of respiration, vomiting, pallor, muscular twitching, headache, cyanosis, delirium, and collapse (from respiratory failure). Estimated lethal dose lies between 5 to 12 grams (usually because of respiratory failure from methemoglobin formation which leaves the blood unable to carry oxygen). May cause green to brownish-green urine.

For p-Benzoquinone:
No specific information found for this route of exposure. Expected to cause irritation to gastrointestinal tract. Animal data indicate a high level of toxicity.
Skin Contact:
Causes severe irritation, redness and pain. Alkaline solutions can cause skin sensitization.
Eye Contact:
Vapors and contact cause severe irritation and possible corneal ulceration.
Chronic Exposure:
Repeated exposure to vapor or dust can cause brownish staining of the conjunctiva which may be followed by changes to the cornea leading to loss of visual acuity. Repeated exposure may also cause skin effects.
Aggravation of Pre-existing Conditions:
Persons with pre-existing skin or eye disorders or impaired respiratory function may be more susceptible to the effects of this substance.

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3. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous

Quinhydrone	106-34-3	90 - 100%	Yes

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4. First Aid Measures

Inhalation:
Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.
Ingestion:
If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. Get medical attention immediately.
Skin Contact:
Wipe off excess material from skin then immediately flush skin with plenty of soap and water for at least 15 minutes. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.
Eye Contact:
Immediately flush eyes with plenty of water for at least 15 minutes, lifting upper and lower eyelids occasionally. Get medical attention.

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5. Fire Fighting Measures

Fire:
May pose a fire hazard when exposed to heat, flame, or oxidizing agents.
For Hydroquinone:
Flash point: 165C (329F) (closed cup).
Autoignition temperature: 516C (960F)

For p-Benzoquinone
Flashpoint: 38 - 93C (100 - 200F)
Autoignition temperature: 560C (1040F)
Explosion:
Fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.
Fire Extinguishing Media:
Dry chemical, alcohol foam or carbon dioxide. Water or foam may cause frothing.
Special Information:

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

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6. Accidental Release Measures

Remove all sources of ignition. Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Clean up spills in a manner that does not disperse dust into the air. Use non-sparking tools and equipment. Reduce airborne dust and prevent scattering by moistening with water. Pick up spill for recovery or disposal and place in a closed container.

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7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Isolate from any source of heat or ignition. Isolate from oxidizing materials. Protect from direct sunlight. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

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8. Exposure Controls/Personal Protection

Airborne Exposure Limits:
For Hydroquinone:
-OSHA Permissible Exposure Limit (PEL):
2 mg/m3 (TWA).
-ACGIH Threshold Limit Value (TLV):
2 mg/m3 (TWA)
For p-Benzoquinone:
-OSHA Permissible Exposure Limit (PEL):
0.1 ppm (0.4 mg/m3) (TWA).
-ACGIH Threshold Limit Value (TLV):
0.1 ppm (0.44 mg/m3) (TWA)
Ventilation System:
A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.
Personal Respirators (NIOSH Approved):
If the exposure limit is exceeded, and engineering controls are not feasible, a full-face piece respirator

with an organic vapor cartridge and particulate filter (NIOSH type N100 filter) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P particulate filter. For emergencies or instances where the exposure levels are not known, use a full-face piece positive-pressure, air-supplied respirator. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres. This compound possibly exists in both particulate and vapor phase. A gas/vapor cartridge should be used in addition to the particulate filter (NIOSH type N95 or better filter). If the vapor concentration alone exceeds the exposure limits, use a supplied air respirator, because warning properties are unknown for these compounds. Breathing air quality must meet the requirements of the OSHA respiratory protection standard (29CFR1910.134).

Skin Protection:

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Eye Protection:

Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

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9. Physical and Chemical Properties

Appearance:

Green crystalline solid.

Odor:

No information found.

Solubility:

Slightly soluble in cold water, soluble in hot water

Density:

1.4

pH:

No information found.

% Volatiles by volume @ 21C (70F):

0

Boiling Point:

Sublimes.

Melting Point:

171C (340F)

Vapor Density (Air=1):

No information found.

Vapor Pressure (mm Hg):

No information found.

Evaporation Rate (BuAc=1):

No information found.

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10. Stability and Reactivity

Stability:

Stable under ordinary conditions of use and storage.

Hazardous Decomposition Products:

Quinone and oxides of carbon may be formed when this material is heated to decomposition.

Hazardous Polymerization:

Will not occur.

Incompatibilities:

Sodium hydroxide, strong alkalis, and oxidizers.

Conditions to Avoid:

Heat, flame, ignition sources, incompatibles, light, and air.

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11. Toxicological Information

For Quinhydrone: Oral rat LD50: 225 mg/kg

--------\Cancer Lists\----------

---NTP Carcinogen---

Ingredient	Known	Anticipated	IARC Category
Quinhydrone (106-34-3)	No	No	None

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12. Ecological Information

Environmental Fate:

No information found.

Environmental Toxicity:

No information found.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

Domestic (Land, D.O.T.)

Proper Shipping Name: TOXIC SOLID, ORGANIC, N.O.S. (QUINHYDRONE)
Hazard Class: 6.1
UN/NA: UN2811
Packing Group: III
Information reported for product/size: 500G

International (Water, I.M.O.)

Proper Shipping Name: TOXIC SOLID, ORGANIC, N.O.S. (QUINHYDRONE)
Hazard Class: 6.1
UN/NA: UN2811
Packing Group: III
Information reported for product/size: 500G

International (Air, I.C.A.O.)

Proper Shipping Name: TOXIC SOLID, ORGANIC, N.O.S. (QUINHYDRONE)
Hazard Class: 6.1
UN/NA: UN2811
Packing Group: III
Information reported for product/size: 500G

15. Regulatory Information

--------\Chemical Inventory Status - Part 1\--------

Ingredient	TSCA	EC	Japan	Australia
Quinhydrone (106-34-3)	Yes	Yes	No	Yes

--------\Chemical Inventory Status - Part 2\----------

	--Canada--			
Ingredient	Korea	DSL	NDSL	Phil.
Quinhydrone (106-34-3)	No	Yes	No	Yes

--------\Federal, State & International Regulations - Part 1\----------

	-SARA 302-		------SARA 313------	
Ingredient	RQ	TPQ	List	Chemical Catg.
Quinhydrone (106-34-3)	No	No	No	No

--------\Federal, State & International Regulations - Part 2\----------

	-RCRA-	-TSCA-	
Ingredient	CERCLA	261.33	8(d)
Quinhydrone (106-34-3)	No	No	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No

SARA 311/312: Acute: Yes Chronic: Yes Fire: No Pressure: No

Reactivity: No (Pure / Solid)

Australian Hazchem Code: None allocated.
Poison Schedule: None allocated.
WHMIS:
This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

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16. Other Information

NFPA Ratings: Health: **3** Flammability: **2** Reactivity: **1**
Label Hazard Warning:
DANGER! MAY BE FATAL IF SWALLOWED. AFFECTS CENTRAL NERVOUS SYSTEM. CAUSES SEVERE SKIN AND EYE IRRITATION. MAY CAUSE ALLERGIC SKIN REACTION. HARMFUL IF INHALED. CAUSES IRRITATION TO RESPIRATORY TRACT.
Label Precautions:
Avoid contact with eyes, skin and clothing.
Avoid breathing dust.
Keep container closed.
Use with adequate ventilation.
Wash thoroughly after handling.
Label First Aid:
If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. Get medical attention immediately. In case of contact, wipe off excess material from skin then immediately flush eyes or skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. Get medical attention. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.
Product Use:
Laboratory Reagent.
Revision Information:
No Changes.
Disclaimer:
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