SAFETY DATA SHEET

1,4-Benzoquinone Solution

1. Identification

Product identifier 1,4-Benzoquinone Solution
Other means of identification None.
Product application
This SDS provides health and safety information for any (unacidified) benzoquinone component of the following vials or kits

<table>
<thead>
<tr>
<th>GE Analytical Instruments part number</th>
<th>Product name</th>
</tr>
</thead>
<tbody>
<tr>
<td>STD 30008, STD 30025, STD 30042, STD 69008, STD 77503</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>GE Analytical Instruments kit number</th>
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<tbody>
<tr>
<td>STD 31003, 31004, 31007, 74408, 77004, 90022, 90023, 90025, 99002, 99003</td>
</tr>
</tbody>
</table>

Recommended use Reference Standard
Recommended restrictions None known.

Company/undertaking identification
GE Analytical Instruments Inc
6060 Spine Road
Boulder, CO 80301
T 303-444-2009

Emergency telephone
1-800-535-5053 INFOTRAC (North America)
Outside of N.A., call collect: 1-352-323-3500
GE (800) 877-1940

2. Hazard(s) identification

Physical hazards Not classified.
Health hazards Not classified.
OSHA defined hazards Not classified.

Label elements
Hazard symbol None.
Signal word None.
Hazard statement The mixture does not meet the criteria for classification.

Precautionary statement
Prevention
Observe good industrial hygiene practices.
Response
Wash hands after handling.
Storage
Store away from incompatible materials.
Disposal
Dispose of waste and residues in accordance with local authority requirements.

Hazard(s) not otherwise classified (HNOC) None known.
Supplemental information None.
3. Composition/information on ingredients

Mixtures

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Common name and synonyms</th>
<th>CAS number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td></td>
<td>7732-18-5</td>
<td>&gt;99.99</td>
</tr>
<tr>
<td>P-BENZOQUINONE</td>
<td></td>
<td>106-51-4</td>
<td>&lt;0.0012</td>
</tr>
</tbody>
</table>

Composition comments

Information for specific product ingredients as required by the U.S. OSHA HAZARD COMMUNICATION STANDARD is listed. Refer to additional sections of this SDS for our assessment of the potential hazards of this formulation.

4. First-aid measures

Inhalation
No treatment required.

Skin contact
Wash off with soap and plenty of water.

Eye contact
Flush immediately with plenty of running water.

Ingestion
Immediately give 1-2 glasses of water, if victim is fully conscious.

Most important symptoms/effects, acute and delayed
Not available.

5. Fire-fighting measures

Suitable extinguishing media
This product does not represent a fire hazard since it contains a high amount of water. Use extinguishing media appropriate for the surrounding materials.

Unsuitable extinguishing media
None.

Specific hazards arising from the chemical
None known.

Special protective equipment and precautions for firefighters
No special protective equipment required.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures
See Section 8 of the SDS for Personal Protective Equipment.

Methods and materials for containment and cleaning up
Contain and recover by physical means. Water contaminated with this product may be sent to a sanitary sewer treatment facility, or a permitted waste treatment facility, in accordance with any local agreements.

Environmental precautions
No special environmental precautions required.

7. Handling and storage

Precautions for safe handling
No special requirements.

Conditions for safe storage, including any incompatibilities
Reasonable and safe chemical storage. Store in a closed container away from incompatible materials.

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>P-BENZOQUINONE (CAS 106-51-4)</td>
<td>PEL</td>
<td>0.4 mg/m3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.1 ppm</td>
</tr>
</tbody>
</table>

US. ACGIH Threshold Limit Values

<table>
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<tr>
<td>P-BENZOQUINONE (CAS 106-51-4)</td>
<td>TWA</td>
<td>0.1 ppm</td>
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US. NIOSH: Pocket Guide to Chemical Hazards

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<td>0.4 mg/m3</td>
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<td></td>
<td></td>
<td>0.1 ppm</td>
</tr>
</tbody>
</table>
Biological limit values
No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls
Provide adequate ventilation.

Individual protection measures, such as personal protective equipment
  Eye/face protection  Safety glasses.
  Skin protection
    Hand protection  Chemical resistant gloves.
  Other  No special protective equipment required.
  Respiratory protection  In case of insufficient ventilation, use a breathing mask with filter type: A2-P2
  Thermal hazards  Not applicable.

9. Physical and chemical properties

Appearance
  Color  Colorless
  Physical state  Liquid

Odor
  Slight chlorine odor  Chlorine

pH (concentrated product)  6.5

Melting point/freezing point  32 °F (0 °C)

Initial boiling point and boiling range
  212 °F (100 °C)

Flash point  > 212 °F (> 100 °C)

Evaporation rate  1 (Water=1)

Flammability (solid, gas)  Not available.

Upper/lower flammability or explosive limits
  Flammability limit - lower (%)  Not available.
  Flammability limit - upper (%)  Not available.
  Explosive limit - lower (%)  Not available.
  Explosive limit - upper (%)  Not available.

Vapor pressure  18.7 mm Hg

Vapor density  1

Relative density  1

Solubility(ies)
  Solubility (water)  Soluble in water

Partition coefficient (n-octanol/water)  Not available.

Auto-ignition temperature  Not available.

Decomposition temperature  Not available.

Viscosity  Not available.

10. Stability and reactivity

Reactivity  The product is stable and non-reactive under normal conditions of use, storage and transport.

Chemical stability  Material is stable under normal conditions.

Possibility of hazardous reactions  Hazardous polymerization does not occur.

Conditions to avoid  No special requirement.

Incompatible materials  None known.

Hazardous decomposition products  None known.

11. Toxicological information

Information on likely routes of exposure
  Inhalation  None known.
Skin contact
None known.

Eye contact
None known.

Ingestion
None known.

Symptoms related to the physical, chemical and toxicological characteristics
Not available.

Information on toxicological effects

Acute toxicity
Not classified.

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<tr>
<th>Product</th>
<th>Species</th>
<th>Test Results</th>
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<td>1,4-Benzoquinone Solution (CAS Mixture)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Acute</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dermal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td>Rabbit</td>
<td>&gt; 5000 mg/kg, (Calculated according to GHS additivity formula)</td>
</tr>
<tr>
<td>Oral</td>
<td>Rat</td>
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<tr>
<td><strong>Acute</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oral</td>
<td>Rat</td>
<td>130 mg/kg</td>
</tr>
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Skin corrosion/irritation
Not classified.

Serious eye damage/eye irritation
Not classified.

Respiratory or skin sensitization

Respiratory sensitization
Not classified.

Skin sensitization
Not classified.

Germ cell mutagenicity
Not classified.

Carcinogenicity

IARC Monographs. Overall Evaluation of Carcinogenicity
P-BENZOQUINONE (CAS 106-51-4) 3 Not classifiable as to carcinogenicity to humans.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)
Not listed.

Reproductive toxicity
Not classified.

Specific target organ toxicity - single exposure
Not classified.

Specific target organ toxicity - repeated exposure
Not classified.

Aspiration hazard
Not classified.

12. Ecological information

Ecotoxicity
No ecotoxicity data noted for the ingredient(s).

Bioaccumulative potential
Not available.

Partition coefficient n-octanol / water (log Kow)

| P-BENZOQUINONE | 0.2 |

Mobility in soil
Not available.

Other adverse effects
Not available.

Persistence and degradability
No data available

13. Disposal considerations

Disposal instructions
Dispose of contents/container in accordance with local/regional/national/international regulations.
Hazardous waste code
U197: p-Benzoquinone
The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from residues / unused products
Dispose of in accordance with local regulations.
Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner.

Contaminated packaging
Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport information

DOT
Not regulated as dangerous goods.

IATA
Not regulated as dangerous goods.

IMDG
Not regulated as dangerous goods.

15. Regulatory information

US federal regulations
All components of this product are included on or are in compliance with the U.S. TSCA regulations.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)
Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)
P-BENZOQUINONE (CAS 106-51-4) Listed.

SARA 304 Emergency release notification
Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)
Not listed.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories
Immediate Hazard - No
Delayed Hazard - No
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

SARA 302 Extremely hazardous substance
Not listed.

SARA 311/312 Hazardous chemical
No

SARA 313 (TRI reporting)
Not regulated.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List
P-BENZOQUINONE (CAS 106-51-4)

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)
Not regulated.

Safe Drinking Water Act (SDWA)
Not regulated.

Inventory status

Country(s) or region | Inventory name | On inventory (yes/no)*
--- | --- | ---
Canada | Domestic Substances List (DSL) | Yes
Canada | Non-Domestic Substances List (NDSL) | No
United States & Puerto Rico | Toxic Substances Control Act (TSCA) Inventory | Yes

* A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

US state regulations

US - Massachusetts RTK - Substance List
P-BENZOQUINONE (CAS 106-51-4)
US - Pennsylvania RTK - Hazardous Substances
P-BENZOQUINONE (CAS 106-51-4)

US - Rhode Island RTK
P-BENZOQUINONE (CAS 106-51-4)

US. California Controlled Substances. CA Department of Justice (California Health and Safety Code Section 11100)
Not listed.

US. New Jersey Worker and Community Right-to-Know Act
P-BENZOQUINONE (CAS 106-51-4)

US. Pennsylvania Worker and Community Right-to-Know Law
P-BENZOQUINONE (CAS 106-51-4)

US. California Proposition 65

US - California Proposition 65 - CRT: Listed date/Carcinogenic substance
No ingredient listed.

US - California Proposition 65 - CRT: Listed date/Developmental toxin
No ingredient listed.

US - California Proposition 65 - CRT: Listed date/Female reproductive toxin
No ingredient listed.

US - California Proposition 65 - CRT: Listed date/Male reproductive toxin
No ingredient listed.

16. Other information, including date of preparation or last revision

Issue date Apr-14-2015
Revision date Apr-16-2015
Version # 1.0

List of abbreviations

CAS: Chemical Abstract Service Registration Number
NFPA: National Fire Protection Association
ACGIH: American Conference of Governmental Industrial Hygienists
TWA: Time Weighted Average
STEL: Short Term Exposure Limit
LD50: Lethal Dose, 50%
LC50: Lethal Concentration, 50%
EC50: Effect Concentration, 50%
NOEL: No Observed Effect Level
COD: Chemical Oxygen Demand
BOD: Biochemical Oxygen Demand
TOC: Total Organic Carbon
TLV: Threshold Limit Value
IATA: International Air Transport Association
IMDG: International Maritime Dangerous Goods Code

References:
No data available

Disclaimer
The information provided in this 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.

Prepared by
This SDS has been prepared by GE Water & Process Technologies Regulatory Department (1-215-355-3300).