1 Identification

Product identifier

Product name: 2,3-Dichloro-5,6-dicyano-1,4-benzoquinone

Stock number: A11879, L00189
CAS Number: 84-58-2
EC number: 201-542-2

Relevant identified uses of the substance or mixture and uses advised against.

Identified use: SU24 Scientific research and development

Details of the supplier of the safety data sheet

Manufacturer/Supplier:
Alfa Aesar
Thermo Fisher Scientific Chemicals, Inc.
30 Bond Street
Ward Hill, MA 01835-8099
Tel: 800-343-0660
Fax: 800-322-4757
Email: tech@alfa.com
www.alfa.com

Information Department: Health, Safety and Environmental Department
Emergency telephone number:
During normal business hours (Monday-Friday, 8am-7pm EST), call (800) 343-0660. After normal business hours, call Carechem 24 at (866) 928-0789.

2 Hazard(s) identification

Classification of the substance or mixture in accordance with 29 CFR 1910 (OSHA HCS)

GHS06 Skull and crossbones

Acute Tox. 3 H301 Toxic if swallowed.

Hazards not otherwise classified No information known.

Label elements

GHS label elements The product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)

Hazard pictograms

GHS06

Signal word Danger

Hazard statements

H301 Toxic if swallowed.

Precautionary statements

P264 Wash thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P301+P310 IF SWALLOWED: Immediately call a POISON CENTER/ doctor/…
P321 Specific treatment (see on this label).
P405 Store locked up.
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

WHMIS classification

D1A - Very toxic material causing immediate and serious toxic effects
F - Dangerously reactive material

Classification system

HMIS ratings (scale 0-4)
(Hazardous Materials Identification System)

- Health (acute effects) = 2
- Flammability = 1
- Physical Hazard = 1

Other hazards

Results of PBT and vPvB assessment

PBT: Not applicable.
vPvB: Not applicable.

3 Composition/information on ingredients

Chemical characterization: Substances

CAS#: Description:
84-58-2 2,3-Dichloro-5,6-dicyano-1,4-benzoquinone

Identification number(s):
EC number: 201-542-2

4 First-aid measures

Description of first aid measures

General information

Immediately remove any clothing soiled by the product.
In case of irregular breathing or respiratory arrest provide artificial respiration.

After inhalation

Supply fresh air. If required, provide artificial respiration. Keep patient warm.
Seek immediate medical advice.

After skin contact

Immediately wash with water and soap and rinse thoroughly.

(Contd. on page 2)
Seek immediate medical advice.

After eye contact Rinse opened eye for several minutes under running water. Then consult a doctor.

After swallowing Do not induce vomiting; immediately call for medical help.

Most important symptoms and effects, both acute and delayed No further relevant information available.

Indication of any immediate medical attention and special treatment needed No further relevant information available.

5 Fire-fighting measures

Extinguishing media

Suitable extinguishing agents Carbon dioxide, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

For safety reasons unsuitable extinguishing agents Water

Special hazards arising from the substance or mixture

If this product is involved in a fire, the following can be released:

Carbon monoxide and carbon dioxide

Hydrogen cyanide (HCN)

Nitrogen oxides (NOx)

Hydrogen chloride (HCl)

Advice for firefighters

Protective equipment:

Wear self-contained respirator.

Wear fully protective impervious suit.

6 Accidental release measures

Personal precautions, protective equipment and emergency procedures

Mount respiratory protective device.

Wear protective equipment. Keep unprotected persons away.

Ensure adequate ventilation.

Environmental precautions: Do not allow material to be released to the environment without proper governmental permits.

Methods and material for containment and cleaning up:

Dispose of contaminated material as waste according to section 13.

Do not flush with water or aqueous cleansing agents.

Prevention of secondary hazards: No special measures required.

Reference to other sections

See Section 7 for information on safe handling.

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

7 Handling and storage

Handling

Precautions for safe handling

Handle under dry protective gas.

Keep container tightly sealed.

Store in cool, dry place in tightly closed containers.

Ensure good ventilation at the workplace.

Information about protection against explosions and fires: No information known.

Conditions for safe storage, including any incompatibilities

Storage

Requirements to be met by storerooms and receptacles: No special requirements.

Information about storage in one common storage facility:

This product is moisture sensitive.

Specific end use(s) No further relevant information available.

8 Exposure controls/personal protection

Additional information about design of technical systems:

Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

Control parameters

Components with limit values that require monitoring at the workplace:

The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.

Additional information: No data

Eye protection: Safety glasses

Body protection: Protective work clothing.

9 Physical and chemical properties

Information on basic physical and chemical properties

General information

Appearance: Powder
Color: Yellow
Odor: Not determined
Odor threshold: Not determined.

Change in condition
- Melting point/Melting range: 214-218 °C (417-424 °F)
- Boiling point/Boiling range: Not determined
- Sublimation temperature / start: Not determined
- Flammability (solid, gaseous): Not determined.
- Ignition temperature: Not determined
- Decomposition temperature: Not determined
- Auto ignition: Not determined.

Flammability (solid, gaseous): Not determined.
Ignition temperature: Not determined
Decomposition temperature: Not determined
Auto igniting: Not determined.

Vapor pressure: Not applicable.
Density: Not determined
Relative density: Not determined.
Vapor density: Not applicable.
Evaporation rate: Not applicable.

Solubility in / Miscibility with Water: Not determined
Partition coefficient (n-octanol/water): Not determined.

Viscosity:
- dynamic: Not applicable.
- kinematic: Not applicable.

Other information No further relevant information available.

10 Stability and reactivity
Reactivity No information known.
Chemical stability Stable under recommended storage conditions.
Thermal decomposition / conditions to be avoided: Decomposition will not occur if used and stored according to specifications.
Possibility of hazardous reactions Reacts with strong oxidizing agents
Contact with water releases toxic gases
Contact with acids releases toxic gases
Conditions to avoid No further relevant information available.
Incompatible materials:
- Oxidizing agents
- Water/moisture

Hazardous decomposition products:
- Carbon monoxide and carbon dioxide
- Hydrogen cyanide
- Nitrogen oxides
- Hydrogen chloride (HCl)

11 Toxicological information
Information on toxicological effects
Acute toxicity:
- Toxic if swallowed.
The Registry of Toxic Effects of Chemical Substances (RTECS) contains acute toxicity data for this substance.
- LD/LC50 values that are relevant for classification: No data
- Skin irritation or corrosion: May cause irritation
- Eye irritation or corrosion: May cause irritation
- Sensitization: No sensitizing effects known.
- Germ cell mutagenicity: The Registry of Toxic Effects of Chemical Substances (RTECS) contains mutation data for this substance.
- Carcinogenicity: No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH.
- Reproductive toxicity: No effects known.
- Specific target organ system toxicity - repeated exposure: No effects known.
- Specific target organ system toxicity - single exposure: No effects known.
- Aspiration hazard: No effects known.
- Subacute to chronic toxicity: No effects known.
- Additional toxicological information: To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

12 Ecological information
Toxicity
- Aquatic toxicity: No further relevant information available.
- Persistence and degradability: No further relevant information available.
- Bioaccumulative potential: No further relevant information available.
- Mobility in soil: No further relevant information available.
- Additional ecological information:
  - General notes: Do not allow product to reach ground water, water course or sewage system.
  - Do not allow material to be released to the environment without proper governmental permits.
  - Danger to drinking water if even small quantities leak into the ground.
  - Avoid transfer into the environment.
- Results of PBT and vPvB assessment
  - PBT: Not applicable.
  - vPvB: Not applicable.
- Other adverse effects: No further relevant information available.

13 Disposal considerations
Waste treatment methods
Recommendation: Consult state, local or national regulations to ensure proper disposal.
14 Transport information

<table>
<thead>
<tr>
<th>UN-Number</th>
<th>DOT, IMDG, IATA</th>
<th>UN3439</th>
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</thead>
<tbody>
<tr>
<td>UN proper shipping name</td>
<td>DOT</td>
<td>Nitriles, solid, toxic, n.o.s. (2,3-Dichloro-5,6-dicyano-1,4-benzoquinone)</td>
</tr>
<tr>
<td>IMDG, IATA</td>
<td>NITRILES, SOLID, TOXIC, N.O.S. (2,3-Dichloro-5,6-dicyano-1,4-benzoquinone)</td>
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<table>
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<tr>
<th>Transport hazard class(es)</th>
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<tbody>
<tr>
<td>DOT</td>
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<tr>
<td>Label 6.1</td>
</tr>
<tr>
<td>IMDG, IATA</td>
</tr>
<tr>
<td>Label 6.1</td>
</tr>
</tbody>
</table>

| Packing group | DOT, IMDG, IATA | III |
| Environmental hazards: | Not applicable. |
| Special precautions for user | Warming: Toxic substances |
| EMS Number: | F-A,S-A |

| Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code | Not applicable. |

<table>
<thead>
<tr>
<th>Transport/Additional information:</th>
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</thead>
<tbody>
<tr>
<td>DOT</td>
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<tr>
<td>Marine Pollutant (DOT):</td>
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<tr>
<td>UN &quot;Model Regulation&quot;:</td>
</tr>
</tbody>
</table>

15 Regulatory information

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

GHS label elements: The product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)

<table>
<thead>
<tr>
<th>Hazard pictograms</th>
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<tr>
<td>GHS06</td>
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| Signal word | Danger |
| Hazard statements | H301 Toxic if swallowed. |
| Precautionary statements | P264 Wash thoroughly after handling. |
| | P270 Do not eat, drink or smoke when using this product. |
| | P301+P310 IF SWALLOWED: Immediately call a POISON CENTER/ doctor/… |
| | P321 Specific treatment (see on this label). |
| | P405 Store locked up. |
| | P501 Dispose of contents/container in accordance with local/regional/national/international regulations. |

National regulations

All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical substance Inventory.

All components of this product are listed on the Canadian Domestic Substances List (DSL).

| SARA Section 313 (specific toxic chemical listings) | Substance is not listed. |
| California Proposition 65 |
| Prop 65 - Chemicals known to cause cancer | Substance is not listed. |
| Prop 65 - Developmental toxicity | Substance is not listed. |
| Prop 65 - Developmental toxicity, female | Substance is not listed. |
| Prop 65 - Developmental toxicity, male | Substance is not listed. |

Information about limitation of use: For use only by technically qualified individuals.

Other regulations, limitations and prohibitive regulations

Substance of Very High Concern (SVHC) according to the REACH Regulations (EC) No. 1907/2006. Substance is not listed.

The conditions of restrictions according to Article 67 and Annex XVII of the Regulation (EC) No 1907/2006 (REACH) for the manufacturing, placing on the market and use must be observed.

Substance is not listed.

Annex XIV of the REACH Regulations (requiring Authorisation for use) Substance is not listed.

Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

16 Other information

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

Department issuing SDS: Global Marketing Department

Date of preparation / last revision: 11/23/2015 / -

Abbreviations and acronyms:

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

(Contd. of page 4)
**Product name:** 2,3-Dichloro-5,6-dicyano-1,4-benzoquinone

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>EINECS</td>
<td>European Inventory of Existing Commercial Chemical Substances</td>
</tr>
<tr>
<td>CAS</td>
<td>Chemical Abstracts Service (division of the American Chemical Society)</td>
</tr>
<tr>
<td>HMIS</td>
<td>Hazardous Materials Identification System (USA)</td>
</tr>
<tr>
<td>WHMIS</td>
<td>Workplace Hazardous Materials Information System (Canada)</td>
</tr>
<tr>
<td>LC50</td>
<td>Lethal concentration, 50 percent</td>
</tr>
<tr>
<td>LD50</td>
<td>Lethal dose, 50 percent</td>
</tr>
<tr>
<td>vPvB</td>
<td>very Persistent and very Bioaccumulative</td>
</tr>
<tr>
<td>ACGIH</td>
<td>American Conference of Governmental Industrial Hygienists (USA)</td>
</tr>
<tr>
<td>OSHA</td>
<td>Occupational Safety and Health Administration (USA)</td>
</tr>
<tr>
<td>NTP</td>
<td>National Toxicology Program (USA)</td>
</tr>
<tr>
<td>IARC</td>
<td>International Agency for Research on Cancer</td>
</tr>
<tr>
<td>EPA</td>
<td>Environmental Protection Agency (USA)</td>
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</tbody>
</table>