1 Identification

· Product name
  · Trade name: Cyclopentadienylcobalt dicarbonyl, min. 95%
  · Item number: 27-0550
  · CAS Number: 12078-25-0
  · EC number: 235-139-8

· Details of the supplier of the safety data sheet
  · Manufacturer/Supplier: Strem Chemicals, Inc.
    7 Mulliken Way
    NEWBURYPORT, MA 01950
    USA
    info@strem.com
  · Information department: Technical Department
  · Emergency telephone number:
    EMERGENCY: CHEMTREC: +1 (800) 424-9300
    During normal opening times: +1 (978) 499-1600

2 Hazard(s) identification

· Classification of the substance or mixture

  GHS02 Flame

  Flam. Liq. 3 H226 Flammable liquid and vapor.

  GHS06 Skull and crossbones

  Acute Tox. 3 H301 Toxic if swallowed.
  Acute Tox. 3 H311 Toxic in contact with skin.

  GHS08 Health hazard

  Carc. 2 H351 Suspected of causing cancer.

  GHS07

  Acute Tox. 4 H332 Harmful if inhaled.

· Label elements
  · GHS label elements
    The substance is classified and labeled according to the Globally Harmonized System (GHS).
Trade name: Cyclopentadienylcobalt dicarbonyl, min. 95%

- **Hazard pictograms**

  ![Hazard pictograms](image)

- **Signal word** Danger

- **Hazard-determining components of labeling:**
  Cyclopentadienylcobalt dicarbonyl, min. 95%

- **Hazard statements**
  - H226 Flammable liquid and vapor.
  - H301+H311 Toxic if swallowed or in contact with skin.
  - H332 Harmful if inhaled.
  - H351 Suspected of causing cancer.

- **Precautionary statements**
  - P231 Handle under inert gas.
  - P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
  - P301+P310 IF SWALLOWED: Immediately call a POISON CENTER/doctor.
  - P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
  - P422 Store contents under inert gas.
  - P403+P235 Store in a well-ventilated place. Keep cool.
  - P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

- **Classification system:**
  - **NFPA ratings (scale 0 - 4)**
    - Health = 2
    - Fire = 3
    - Reactivity = 0
  - **HMIS-ratings (scale 0 - 4)**
    - Health = *2
    - Fire = 3
    - Reactivity = 0

- **Other hazards**
  - Results of PBT and vPvB assessment
    - **PBT:** Not applicable.
    - **vPvB:** Not applicable.

### 3 Composition/information on ingredients

- **Chemical characterization: Substances**
- **CAS No. Description**
  12078-25-0 Cyclopentadienylcobalt dicarbonyl, min. 95%
- **Identification number(s)**
- **EC number:** 235-139-8
4 First-aid measures

- Description of first aid measures
- General information:
  Immediately remove any clothing soiled by the product. Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident. In case of irregular breathing or respiratory arrest provide artificial respiration.
- After inhalation:
  Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist. In case of unconsciousness place patient stably in side position for transportation.
- After skin contact:
  Immediately wash with water and soap and rinse thoroughly.
- 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.

Information for doctor:

- 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:
  CO2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
- For safety reasons unsuitable extinguishing agents: Water with full jet
- Special hazards arising from the substance or mixture: No further relevant information available.
- Advice for firefighters
  Protective equipment: Mouth respiratory protective device.

6 Accidental release measures

- Personal precautions, protective equipment and emergency procedures
  Wear protective equipment. Keep unprotected persons away.
- Environmental precautions:
  Prevent seepage into sewage system, workpits and cellars.
- Methods and material for containment and cleaning up:
  Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust). Dispose contaminated material as waste according to item 13. Ensure adequate ventilation.
- 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.
- Protective Action Criteria for Chemicals

- PAC-1:
  Substance is not listed.

- PAC-2:
  Substance is not listed.
7 Handling and storage

- **Handling**: Handle under inert gas.
- **Precautions for safe handling**
  - Ensure good ventilation/exhaustion at the workplace.
  - Open and handle receptacle with care.
  - Prevent formation of aerosols.
- **Information about protection against explosions and fires**:
  - Keep ignition sources away - Do not smoke.
  - Protect against electrostatic charges.
  - Keep respiratory protective device available.
- **Conditions for safe storage, including any incompatibilities**
- **Storage**:
  - Keep cool.
  - Store contents under inert gas.
- **Requirements to be met by storerooms and receptacles**:
  - No special requirements.
- **Information about storage in one common storage facility**:
  - Not required.
- **Further information about storage conditions**:
  - Keep receptacle tightly sealed.
- **Specific end use(s)**:
  - No further relevant information available.

8 Exposure controls/personal protection

- **Additional information about design of technical systems**:
  - No further data; see item 7.
- **Control parameters**
- **Components with limit values that require monitoring at the workplace**:
  - Not required.
- **Additional information**:
  - The lists that were valid during the creation were used as basis.
- **Exposure controls**
- **Personal protective equipment**:
  - **General protective and hygienic measures**:
    - Keep away from foodstuffs, beverages and feed.
    - Immediately remove all soiled and contaminated clothing.
    - Wash hands before breaks and at the end of work.
    - Store protective clothing separately.
    - Avoid contact with the eyes and skin.
  - **Breathing equipment**:
    - A NIOSH approved respirator in accordance with 29 CFR 1910.134.
  - **Protection of hands**:

  **Protective gloves**

  The glove material has to be impermeable and resistant to the product/ the substance/ the preparation. Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture. Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
Trade name: Cyclopentadienylcobalt dicarbonyl, min. 95%

- **Material of gloves**
  The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

- **Penetration time of glove material**
  The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

- **Eye protection:**
  Tightly sealed goggles

### 9 Physical and chemical properties

- **Information on basic physical and chemical properties**
  
- **General Information**
    - **Appearance:**
      - Form: Liquid
      - Color: Dark red
      - Odor: Acrid
      - Odor threshold: Not determined.
    - **pH-value:** Not determined.
  
- **Change in condition**
  - **Melting point/Melting range:** Undetermined.
  - **Boiling point/Boiling range:** 37-38.5 °C (99-101 °F)

- **Flash point:** Not applicable.

- **Flammability (solid, gaseous):** Not determined.

- **Ignition temperature:**
  - **Decomposition temperature:** Not determined.
  - **Auto igniting:** Not determined.

- **Danger of explosion:**
  Product is not explosive. However, formation of explosive air/vapor mixtures are possible.

- **Explosion limits:**
  - **Lower:** Not determined.
  - **Upper:** Not determined.

- **Vapor pressure:** Not determined.

- **Density at 20 °C (68 °F):** 1.35 g/cm³ (11.26575 lbs/gal)
  - **Relative density:** Not determined.
  - **Vapor density:** Not determined.
  - **Evaporation rate:** Not determined.

- **Solubility in / Miscibility with**
  - **Water:** Not miscible or difficult to mix.

- **Partition coefficient (n-octanol/water):** Not determined.

- **Viscosity:**
  - **Dynamic:** Not determined.
Trade name: Cyclopentadienylcobalt dicarbonyl, min. 95%

<table>
<thead>
<tr>
<th>Kinematic:</th>
<th>Not determined.</th>
</tr>
</thead>
<tbody>
<tr>
<td>· Solvent content:</td>
<td></td>
</tr>
<tr>
<td>Organic solvents:</td>
<td>0.0 %</td>
</tr>
<tr>
<td>VOC content:</td>
<td>0.0 g/l / 0.00 lb/gl</td>
</tr>
<tr>
<td>· Other information</td>
<td>No further relevant information available.</td>
</tr>
</tbody>
</table>

10 Stability and reactivity

- Reactivity: No further relevant information available.
- Chemical stability
- Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications.
- Possibility of hazardous reactions: No dangerous reactions known.
- Conditions to avoid: No further relevant information available.
- Incompatible materials: No further relevant information available.
- Hazardous decomposition products: No dangerous decomposition products known.

11 Toxicological information

- Information on toxicological effects
- Acute toxicity:
- Primary irritant effect:
  - on the skin: No irritant effect.
  - on the eye: No irritating effect.
- Sensitization: No sensitizing effects known.
- Additional toxicological information:
- Carcinogenic categories
  - IARC (International Agency for Research on Cancer) 2B
  - NTP (National Toxicology Program)
    Substance is not listed.
  - OSHA-Ca (Occupational Safety & Health Administration)
    Substance is not listed.

12 Ecological information

- Toxicity
- Aquatic toxicity: No further relevant information available.
- Persistence and degradability: No further relevant information available.
- Behavior in environmental systems:
  - Bioaccumulative potential: No further relevant information available.
  - Mobility in soil: No further relevant information available.
- Additional ecological information:
  - General notes: Not known to be hazardous to water.
  - Results of PBT and vPvB assessment
    - PBT: Not applicable.
    - vPvB: Not applicable.
13 Disposal considerations

- Waste treatment methods
  - Recommendation: Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

- Uncleaned packagings:
  - Recommendation: Disposal must be made according to official regulations.

14 Transport information

- UN-Number
  - DOT, IMDG, IATA UN1993

- UN proper shipping name
  - DOT Flammable liquids, n.o.s.
  - IMDG, IATA FLAMMABLE LIQUID, N.O.S.

- Transport hazard class(es)
  - DOT
    - Class 3 Flammable liquids
    - Label 3

  - IMDG, IATA
    - Class 3 Flammable liquids
    - Label 3

- Packing group
  - DOT, IMDG, IATA III

- Environmental hazards:
  - Marine pollutant: No

- Special precautions for user
  - Warning: Flammable liquids

- EMS Number: F-E,S-E

- Stowage Category A

- Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable.
Trade name: Cyclopentadienylcobalt dicarbonyl, min. 95%

### Transport/Additional information:
- **DOT**
  - Quantity limitations
    - On passenger aircraft/rail: 60 L
    - On cargo aircraft only: 220 L

### IMDG
- Limited quantities (LQ): 5L
- Excepted quantities (EQ): Code: E1
  - Maximum net quantity per inner packaging: 30 ml
  - Maximum net quantity per outer packaging: 1000 ml

### UN "Model Regulation":
- UN 1993 FLAMMABLE LIQUIDS, N.O.S., 3, III

### 15 Regulatory information

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  - **Sara**
    - Section 355 (extremely hazardous substances):
      - Substance is not listed.
    - Section 313 (Specific toxic chemical listings):
      - Substance is listed.
  - **TSCA (Toxic Substances Control Act):**
    - Substance is not listed.
  - **Proposition 65**
    - Chemicals known to cause cancer:
      - Substance is not listed.
    - Chemicals known to cause reproductive toxicity for females:
      - Substance is not listed.
    - Chemicals known to cause reproductive toxicity for males:
      - Substance is not listed.
    - Chemicals known to cause developmental toxicity:
      - Substance is not listed.
  - **Carcinogenic categories**
    - EPA (Environmental Protection Agency)
      - Substance is not listed.
    - TLV (Threshold Limit Value established by ACGIH)
      - Substance is not listed.
    - NIOSH-Ca (National Institute for Occupational Safety and Health)
      - Substance is not listed.
  - **GHS label elements**
    - The substance is classified and labeled according to the Globally Harmonized System (GHS).
Trade name: Cyclopentadienylcobalt dicarbonyl, min. 95%

- Hazard pictograms

![GHS02](image1) ![GHS06](image2) ![GHS08](image3)

- Signal word Danger

- Hazard-determining components of labeling:
  Cyclopentadienylcobalt dicarbonyl, min. 95%

- Hazard statements
  H226 Flammable liquid and vapor.
  H301+H311 Toxic if swallowed or in contact with skin.
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- Precautionary statements
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  P301+P310 IF SWALLOWED: Immediately call a POISON CENTER/doctor.
  P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
  P422 Store contents under inert gas.
  P403+P235 Store in a well-ventilated place. Keep cool.
  P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

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

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- Department issuing SDS: Technical Department.
- Contact: Technical Director
- Date of preparation / last revision 07/17/2021 / -
- 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
  ACGIH: American Conference of Governmental Industrial Hygienists
  EINECS: European Inventory of Existing Commercial Chemical Substances
  CAS: Chemical Abstracts Service (division of the American Chemical Society)
  NFPA: National Fire Protection Association (USA)
  HMIS: Hazardous Materials Identification System (USA)
  VOC: Volatile Organic Compounds (USA, EU)
  PBT: Persistent, Bioaccumulative and Toxic
  vPvB: very Persistent and very Bioaccumulative
  NIOSH: National Institute for Occupational Safety
  OSHA: Occupational Safety & Health
  TLV: Threshold Limit Value
  PEL: Permissible Exposure Limit
  REL: Recommended Exposure Limit
  Flam. Liq. 3: Flammable liquids – Category 3
  Acute Tox. 3: Acute toxicity – Category 3
  Acute Tox. 4: Acute toxicity – Category 4
  Carc. 2: Carcinogenicity – Category 2