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

Product information
Product Name: Crude Dicyclopentadiene  
Material: 1104300

Use: Chemical intermediate

Company: Chevron Phillips Chemical Company LP  
10001 Six Pines Drive  
The Woodlands, TX 77380

Emergency telephone:
Health:  
866.442.9628 (North America)  
1.832.813.4984 (International)

Transport:
CHEMTREC 800.424.9300 or 703.527.3887(int'l)  
Asia: CHEMWATCH (+61 2 9186 1132) China: 0532 8388 9090  
EUROPE: BIG +32.14.584545 (phone) or +32.14583516 (telefax)  
Mexico CHEMTREC 01-800-681-9531 (24 hours)  
South America SOS-Cotec Inside Brazil: 0800.111.767 Outside Brazil: +55.19.3467.1600  
Argentina: +(54)-1159839431

Responsible Department: Product Safety and Toxicology Group  
E-mail address: SDS@CPChem.com  
Website: www.CPChem.com

SECTION 2: Hazards identification

Classification of the substance or mixture  
This product has been classified in accordance with the hazard communication standard 29 CFR 1910.1200; the SDS and labels contain all the information as required by the standard.

Classification:
- Flammable liquids, Category 3  
- Acute toxicity, Category 4, Oral  
- Acute toxicity, Category 4, Inhalation  
- Skin irritation, Category 2  
- Eye irritation, Category 2A  
- Germ cell mutagenicity, Category 1B  
- Carcinogenicity, Category 1A
Reproductive toxicity, Category 2
Specific target organ toxicity - single exposure, Category 3,
Respiratory system
Specific target organ toxicity - repeated exposure, Category 1,
Auditory organs
Aspiration hazard, Category 1

Labeling

Symbol(s) : 

Signal Word : Danger

H302 + H332: Harmful if swallowed or if inhaled.
H304: May be fatal if swallowed and enters airways.
H315: Causes skin irritation.
H319: Causes serious eye irritation.
H335: May cause respiratory irritation.
H340: May cause genetic defects.
H350: May cause cancer.
H361: Suspected of damaging fertility or the unborn child.
H372: Causes damage to organs (Auditory organs) through prolonged or repeated exposure.

Precautionary Statements : Prevention:
P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P233 Keep container tightly closed.
P240 Ground/bond container and receiving equipment.
P241 Use explosion-proof electrical/ventilating/lighting/equipment.
P242 Use only non-sparking tools.
P243 Take precautionary measures against static discharge.
P260 Do not breathe dust/fume/gas/mist/vapor/spray.
P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/protective clothing/eye protection/face protection.

Response:
P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER/doctor.
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304 + P340 + P312 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308 + P313 IF exposed or concerned: Get medical advice/
**Crude Dicyclopentadiene**

**Carcinogenicity:**

**IARC**
- Group 1: Carcinogenic to humans
  - Benzene: 71-43-2
- Group 2B: Possibly carcinogenic to humans
  - Ethylbenzene: 100-41-4
  - Styrene: 100-42-5

**NTP**
- Known to be human carcinogen
  - Benzene: 71-43-2
- Reasonably anticipated to be a human carcinogen
  - Styrene: 100-42-5

**SECTION 3: Composition/information on ingredients**

**Synonyms**: Resin Oil Stream
- 24 Unit Hydro
- Rerun Bottoms 24 Unit
- Resin Oil Stream (Rerun Bottoms)
- DCPD

**Molecular formula**: UVCB

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distillates (petroleum), steam-cracked, C8-12 fraction</td>
<td>68477-54-3</td>
<td>100</td>
</tr>
<tr>
<td>Dicyclopentadiene</td>
<td>77-73-6</td>
<td>0-75</td>
</tr>
<tr>
<td>Ethylbenzene</td>
<td>100-41-4</td>
<td>0-2</td>
</tr>
<tr>
<td>Toluene</td>
<td>108-88-3</td>
<td>0-1</td>
</tr>
<tr>
<td>Styrene</td>
<td>100-42-5</td>
<td>0-1</td>
</tr>
<tr>
<td>Benzene</td>
<td>71-43-2</td>
<td>0-0.2</td>
</tr>
</tbody>
</table>

**SECTION 4: First aid measures**

**P331** Do NOT induce vomiting.
**P332 + P313** If skin irritation occurs: Get medical advice/attention.
**P337 + P313** If eye irritation persists: Get medical advice/attention.
**P362** Take off contaminated clothing and wash before reuse.
**P370 + P378** In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

**Storage:**
- P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
- P403 + P235 Store in a well-ventilated place. Keep cool.
- P405 Store locked up.

**Disposal:**
- P501 Dispose of contents/container to an approved waste disposal plant.
## General advice
Move out of dangerous area. Show this material safety data sheet to the doctor in attendance. Material may produce a serious, potentially fatal pneumonia if swallowed or vomited.

## If inhaled
If unconscious, place in recovery position and seek medical advice. If symptoms persist, call a physician.

## In case of skin contact
If skin irritation persists, call a physician. If on skin, rinse well with water. If on clothes, remove clothes.

## In case of eye contact
Immediately flush eye(s) with plenty of water. Remove contact lenses. Protect unharmed eye. Keep eye wide open while rinsing. If eye irritation persists, consult a specialist.

## If swallowed
Keep respiratory tract clear. Do NOT induce vomiting. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician. Take victim immediately to hospital.

## SECTION 5: Firefighting measures

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Flash point</strong></td>
<td>52 °C (125 °F)</td>
</tr>
<tr>
<td>Method</td>
<td>ASTM D 56</td>
</tr>
<tr>
<td><strong>Autoignition temperature</strong></td>
<td>465 °C (869 °F)</td>
</tr>
<tr>
<td><strong>Suitable extinguishing media</strong></td>
<td>Alcohol-resistant foam. Carbon dioxide (CO2). Dry chemical.</td>
</tr>
<tr>
<td><strong>Unsuitable extinguishing media</strong></td>
<td>High volume water jet.</td>
</tr>
<tr>
<td><strong>Specific hazards during fire fighting</strong></td>
<td>Do not allow run-off from fire fighting to enter drains or water courses.</td>
</tr>
<tr>
<td><strong>Special protective equipment for fire-fighters</strong></td>
<td>Wear self-contained breathing apparatus for firefighting if necessary.</td>
</tr>
<tr>
<td><strong>Further information</strong></td>
<td>Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. For safety reasons in case of fire, cans should be stored separately in closed containments. Use a water spray to cool fully closed containers.</td>
</tr>
<tr>
<td><strong>Fire and explosion protection</strong></td>
<td>Do not spray on an open flame or any other incandescent material. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Keep away from open flames, hot surfaces and sources of ignition.</td>
</tr>
<tr>
<td><strong>Hazardous decomposition products</strong></td>
<td>No data available.</td>
</tr>
</tbody>
</table>

**SDS Number:** 100000013685
Crude Dicyclopentadiene

SECTION 6: Accidental release measures

Personal precautions: Use personal protective equipment. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.

Environmental precautions: Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. If the product contaminates rivers and lakes or drains inform respective authorities.

Methods for cleaning up: Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).

SECTION 7: Handling and storage

Handling

Advice on safe handling: Avoid formation of aerosol. Do not breathe vapors/dust. Avoid exposure - obtain special instructions before use. Avoid contact with skin and eyes. For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. Take precautionary measures against static discharges. Provide sufficient air exchange and/or exhaust in work rooms. Open drum carefully as content may be under pressure. Dispose of rinse water in accordance with local and national regulations.

Advice on protection against fire and explosion: Do not spray on an open flame or any other incandescent material. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Keep away from open flames, hot surfaces and sources of ignition.

Storage

Requirements for storage areas and containers: No smoking. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Observe label precautions. Electrical installations / working materials must comply with the technological safety standards.

Use: Chemical intermediate

SECTION 8: Exposure controls/personal protection

Ingredients with workplace control parameters

<table>
<thead>
<tr>
<th>Components</th>
<th>Basis</th>
<th>Value</th>
<th>Control parameters</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dicyclopentadiene</td>
<td>OSHA Z-1-A</td>
<td>TWA</td>
<td>5 ppm, 30 mg/m³</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ACGIH</td>
<td>TWA</td>
<td>0.5 ppm,</td>
<td>URT irr, LRT irr, eye irr,</td>
</tr>
<tr>
<td></td>
<td>ACGIH</td>
<td>STEL</td>
<td>1 ppm,</td>
<td></td>
</tr>
<tr>
<td>Ethylbenzene</td>
<td>OSHA Z-1</td>
<td>TWA</td>
<td>150 ppm, 435 mg/m³</td>
<td>(b).</td>
</tr>
</tbody>
</table>

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**Crude Dicyclopentadiene**

**Version 2.6**  
**Revision Date 2019-06-24**

<table>
<thead>
<tr>
<th>Substance</th>
<th>OSHA Z-1-A TWA</th>
<th>100 ppm, 435 mg/m³</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OSHA Z-1-A STEL</td>
<td>125 ppm, 545 mg/m³</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Substance</th>
<th>ACGIH TWA</th>
<th>20 ppm, cochlear imp, kidney dam (nephropathy), URT irr, BEI, A3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ACGIH STEL</td>
<td>40 ppm, CNS impair, URT irr, peripheral neuropathy, BEI, A4</td>
</tr>
</tbody>
</table>

**Styrene**

<table>
<thead>
<tr>
<th>Substance</th>
<th>OSHA Z-2 TWA</th>
<th>100 ppm,</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OSHA Z-2 Peak</td>
<td>600 ppm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Substance</th>
<th>OSHA Z-1-A TWA</th>
<th>50 ppm, 215 mg/m³</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OSHA Z-1-A STEL</td>
<td>100 ppm, 425 mg/m³</td>
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</table>

<table>
<thead>
<tr>
<th>Substance</th>
<th>ACGIH TWA</th>
<th>20 ppm,</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ACGIH STEL</td>
<td>40 ppm</td>
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</table>

**Toluene**

<table>
<thead>
<tr>
<th>Substance</th>
<th>OSHA Z-2 TWA</th>
<th>200 ppm,</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OSHA Z-2 Peak</td>
<td>500 ppm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Substance</th>
<th>OSHA Z-1-A TWA</th>
<th>100 ppm, 375 mg/m³</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OSHA Z-1-A STEL</td>
<td>150 ppm, 560 mg/m³</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Substance</th>
<th>ACGIH TWA</th>
<th>0.5 ppm, leukemia, BEI, A1, Skin</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ACGIH STEL</td>
<td>2.5 ppm, leukemia, BEI, A1, Skin</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Substance</th>
<th>OSHA Z-1-A TWA</th>
<th>1 ppm,</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OSHA Z-2 Peak</td>
<td>50 ppm,</td>
</tr>
</tbody>
</table>

| Substance       | OSHA Z-2  
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OSHA Z-2 Peak</td>
</tr>
</tbody>
</table>

**Benzene**

<table>
<thead>
<tr>
<th>Substance</th>
<th>ACGIH TWA</th>
<th>0.5 ppm, leukemia, BEI, A1, Skin</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ACGIH STEL</td>
<td>2.5 ppm, leukemia, BEI, A1, Skin</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Substance</th>
<th>OSHA Z-1-A TWA</th>
<th>1 ppm,</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OSHA Z-2 Peak</td>
<td>50 ppm,</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Substance</th>
<th>OSHA 29 CFR 1910.1028(c) TWA</th>
<th>1 ppm,</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OSHA 29 CFR 1910.1028(c) STEL</td>
<td>5 ppm,</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Substance</th>
<th>OSHA CARC PEL</th>
<th>1 ppm,</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OSHA CARC STEL</td>
<td>5 ppm,</td>
</tr>
</tbody>
</table>

(a) This standard applies to the industry segments exempt from the 1 ppm 8-hour TWA and 5 ppm STEL of the benzene standard at 1910.1028.

(b) The value in mg/m³ is approximate.

A1 Confirmed human carcinogen

A3 Confirmed animal carcinogen with unknown relevance to humans

A4 Not classifiable as a human carcinogen

CNS impair Central Nervous System impairment

cochlear imp Cochlear impair

eye irr Eye irritation

female repro Female reproductive

kidney dam Kidney damage (nephropathy)

leukemia Leukemia

LRT irr Lower Respiratory Tract irritation

neuropathy Peripheral neuropathy

pregnancy loss Pregnancy loss

Skin Danger of cutaneous absorption

URT irr Upper Respiratory Tract irritation

visual impair Visual impairment

**Engineering measures**

Adequate ventilation to control airborne concentrations below the exposure guidelines/limits. Consider the potential hazards of this material (see Section 2), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

**Personal protective equipment**

**Respiratory protection**

Wear a supplied-air NIOSH approved respirator unless ventilation or other engineering controls are adequate to maintain minimal oxygen content of 19.5% by volume under normal atmospheric pressure. Wear a NIOSH approved respirator that provides protection when working with this material if exposure to harmful levels of airborne material may occur, such as: Air-Purifying Respirator for Organic Vapors.
Use a positive pressure, air-supplying respirator if there is potential for uncontrolled release, exposure levels are not known, or other circumstances where air-purifying respirators may not provide adequate protection.

Hand protection : The suitability for a specific workplace should be discussed with the producers of the protective gloves. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.

Eye protection : Eye wash bottle with pure water. Tightly fitting safety goggles.

Skin and body protection : Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place. Wear as appropriate: Flame retardant antistatic protective clothing. Workers should wear antistatic footwear.

Hygiene measures : When using do not eat or drink. When using do not smoke. Wash hands before breaks and at the end of workday.

**SECTION 9: Physical and chemical properties**

**Information on basic physical and chemical properties**

**Appearance**
- Physical state : Liquid
- Color : Colorless to pale yellow
- Odor : Pungent
- Odor Threshold : No data available

**Safety data**
- Flash point : 52 °C (125 °F)  
  Method: ASTM D 56
- Lower explosion limit : 0.8 %(V)
- Upper explosion limit : 6.3 %(V)
- Oxidizing properties : No
- Autoignition temperature : 465 °C (869 °F)
- Molecular formula : UVCB
- Molecular weight : Not applicable
- pH : Not applicable
- Freezing point : < 27 °C (< 80 °F)
- Pour point : No data available

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### Boiling point/boiling range
- **Value:** 38 °C (101 °F)

### Vapor pressure
- **Value:** 0.06 PSI
- **Temperature:** 38 °C (100 °F)
- **Method:** Reid

### Relative density
- **Value:** No data available

### Density
- **Value:** 0.9814 g/cm³

### Water solubility
- **Value:** 0.0081 g/l

### Partition coefficient: n-octanol/water
- **Value:** log Pow: 3.3

### Viscosity, kinematic
- **Value:** 1.25 cSt
- **Temperature:** 100 °C (212 °F)

### Relative vapor density
- **Value:** 4.66
- **Reference:** Air = 1.0

### Evaporation rate
- **Value:** 0.13
- **Reference:** N-Butyl Acetate = 1

### SECTION 10: Stability and reactivity

#### Chemical stability
- **Description:** This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

#### Possibility of hazardous reactions

#### Hazardous reactions
- **Further information:** No decomposition if stored and applied as directed.

#### Conditions to avoid
- **Heat, flames and sparks.**

#### Materials to avoid
- **Corrosive to copper and copper bearing alloys.**

#### Hazardous decomposition products
- **No data available**

#### Other data
- **No decomposition if stored and applied as directed.**

### SECTION 11: Toxicological information

#### Crude Dicyclopentadiene

#### Acute oral toxicity
- **LD50 Oral:** 460.58 mg/kg
- **Species:** Rat
- **Method:** Acute toxicity estimate

---

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Crude Dicyclopentadiene

Acute inhalation toxicity: No data available

Acute dermal toxicity:
- LD50 Dermal: > 2,000 mg/kg
  - Species: Rabbit
  - Method: Acute toxicity estimate

Skin irritation: May irritate skin.

Eye irritation: May irritate eyes.

Sensitization: Did not cause sensitization on laboratory animals. Information given is based on data obtained from similar substances.

Repeated dose toxicity

Dicyclopentadiene:
- Species: Rat, female
- Sex: female
- Application Route: oral gavage
- NOEL: 20 mg/kg
- Sex: male
- NOEL: 4 mg/kg

Ethylbenzene:
- Species: Rat, male
- Sex: male
- Application Route: Inhalation
- Dose: 200, 400, 600, 800 ppm
- Exposure time: 13 weeks
- Number of exposures: 6 hours/day, 6 days/week
- NOEL: 200 ppm
- Test substance: yes
- Target Organs: Ototoxicity

Toluene:
- Species: Rat
- Application Route: Inhalation
- Dose: 0, 100, 625, 1250, 3000 ppm
- Exposure time: 15 wk
- Number of exposures: 6.5 h/d, 5 d/wk
- NOEL: 625 ppm

Species: Mouse
- Application Route: Inhalation
- Dose: 0, 100, 625, 1250, 3000 ppm
- Exposure time: 14 wk
- Number of exposures: 6.5 h/d, 5 d/wk
- NOEL: 100 ppm

Styrene:
- Species: Mouse, Male and female
- Sex: Male and female
- Application Route: Oral
- Dose: 0, 150, 300 mg/kg
Exposure time: 78 wk
Number of exposures: 5 d/wk
NOEL: 150 mg/kg
Lowest observable effect level: 300 mg/kg

Species: Rat, male
Sex: male
Application Route: Inhalation
Dose: 0. 500, 650, 850, 1000 ppm
Exposure time: 4 wk
Number of exposures: 6 h/d, 5 d/wk
NOEL: 500 ppm
Target Organs: Ototoxicity

Benzene
Species: Rat, female
Sex: female
Application Route: oral gavage
Dose: 0, 25, 50, 100 mg/kg
Exposure time: 103 wk
Number of exposures: 5 d/wk
NOEL: < 25 mg/kg
Lowest observable effect level: 25 mg/kg

Species: Rat, male
Sex: male
Application Route: oral gavage
Dose: 0, 50, 100, 200 mg/kg
Exposure time: 103 wk
Number of exposures: 5 d/wk
NOEL: < 50 mg/kg
Lowest observable effect level: 50 mg/kg

Species: Mouse
Application Route: oral gavage
Dose: 0, 25, 50, 100 mg/kg
Exposure time: 103 wk
NOEL: < 25 mg/kg

Genotoxicity in vitro
Dicyclopentadiene: Test Type: Ames test
Result: negative

Test Type: Chromosome aberration test in vitro
Result: negative

Ethylbenzene
Test Type: Ames test
Result: negative

Test Type: Unscheduled DNA synthesis assay
Result: negative

Toluene
Test Type: Ames test
Result: negative
**Crude Dicyclopentadiene**

**Genotoxicity in vivo**

- **Ethylbenzene**
  - Test Type: Mouse micronucleus assay
  - Species: Mouse
  - Result: negative

- **Toluene**
  - Test Type: Cytogenetic assay
  - Result: negative
  - Test Type: Mouse micronucleus assay
  - Result: negative

- **Styrene**
  - Remarks: No significant adverse effects were reported

- **Benzene**
  - Test Type: Mouse micronucleus assay
  - Result: positive

**Carcinogenicity**

- **Toluene**
  - Species: Rat
## Crude Dicyclopentadiene

**Dose:** 0, 600, 1200 ppm  
**Exposure time:** 2 yrs  
**Number of exposures:** 6.5 h/d, 5 d/wk  
**Remarks:** No evidence of carcinogenicity

### Benzene

**Species:** Rat  
**Sex:** female  
**Dose:** 0, 25, 50, 250 mg/kg  
**Exposure time:** 103 wks  
**Number of exposures:** daily, 5 days/week  
**Test substance:** yes  
**Remarks:** zymbal gland carcinomas, squamous cell papillomas

**Species:** Rat  
**Sex:** male  
**Dose:** 0, 50, 100, 200 mg/kg  
**Exposure time:** 103 wks  
**Number of exposures:** daily, 5 days/week  
**Test substance:** yes  
**Remarks:** zymbal gland carcinomas, squamous cell papillomas

**Species:** Mouse  
**Sex:** male and female  
**Dose:** 25, 50, 100 mg/kg  
**Exposure time:** 103 wks  
**Number of exposures:** daily, 5 days/week  
**Test substance:** yes  
**Remarks:** Clear evidence of multiple organ carcinogenicity.

### Reproductive toxicity

#### Dicyclopentadiene

**Species:** Rat  
**Sex:** male  
**Application Route:** oral gavage  
**NOAEL Parent:** 100 mg/kg

**Species:** Rat  
**Sex:** female  
**Application Route:** oral gavage  
**NOAEL Parent:** 20 mg/kg  
**NOAEL F1:** 20 mg/kg

#### Toluene

**Species:** Rat  
**Application Route:** Inhalation  
**Dose:** 0, 100, 500, 2000 ppm  
**Test period:** 95 d  
**NOAEL Parent:** 2000 ppm

### Developmental Toxicity

**Toluene**  
**Species:** Rat
Crude Dicyclopentadiene

Application Route: Inhalation
Dose: 0, 100, 500, 2000 ppm
Test period: 95 d
NOAEL Teratogenicity: 400-750 ppm

Crude Dicyclopentadiene
Aspiration toxicity
May be fatal if swallowed and enters airways. Substances known to cause human aspiration toxicity hazards or to be regarded as if they cause human aspiration toxicity hazard.

CMR effects

Ethylbenzene
Mutagenicity: In vivo tests did not show mutagenic effects
Teratogenicity: Did not show teratogenic effects in animal experiments.
Reproductive toxicity: No toxicity to reproduction

Toluene
Carcinogenicity: Not classifiable as a human carcinogen.
Mutagenicity: Animal testing did not show any mutagenic effects.
Teratogenicity: Some evidence of adverse effects on development, based on animal experiments.
Reproductive toxicity: Some evidence of adverse effects on sexual function and fertility, and/or on development, based on animal experiments.

Styrene
Carcinogenicity: This substance has been reported to cause tumors in certain animal species.
Mutagenicity: In vitro tests showed mutagenic effects which were not observed with in vivo test.
Teratogenicity: Did not show teratogenic effects in animal experiments.
Reproductive toxicity: No toxicity to reproduction

Benzene
Carcinogenicity: Human carcinogen.
Mutagenicity: In vivo tests showed mutagenic effects
Teratogenicity: Did not show teratogenic effects in animal experiments.
Reproductive toxicity: Animal testing did not show any effects on fertility.

Crude Dicyclopentadiene
Further information
Solvents may degrease the skin.

SECTION 12: Ecological information

Toxicity to fish

Dicyclopentadiene
LC50: 3.7 mg/l
Exposure time: 48 h
Species: Oryzias latipes (Orange-red killifish)

Ethylbenzene
LC50: 4.3 mg/l
Exposure time: 96 h
Species: Marone saxatilis (striped bass)
Crude Dicyclopentadiene

Toluene
LC50: 18 - 36 mg/l
Exposure time: 96 h
Species: Pimephales promelas (fathead minnow)

Styrene
LC50: 4.02 mg/l
Exposure time: 96 h
Species: Pimephales promelas (fathead minnow)
flow-through test Test substance: yes
Toxic to fish.

Benzene
LC50: 5.3 mg/l
Exposure time: 96 h
Species: Oncorhynchus mykiss (rainbow trout)
flow-through test Test substance: yes
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates

Dicyclopentadiene
: EC50: 8.0 mg/l
Exposure time: 48 h
Species: Daphnia magna (Water flea)

Ethylbenzene
LC50: 2.6 mg/l
Exposure time: 96 h
Species: Mysidopsis bahia (mysid shrimp)
EC50: 2.2 mg/l
Exposure time: 48 h
Species: Daphnia magna (Water flea)
Method: OECD Test Guideline 202

Toluene
EC50: 3.78 mg/l
Exposure time: 48 h
Species: Daphnia magna (Water flea)

Styrene
EC50: 4.7 mg/l
Exposure time: 48 h
Species: Daphnia magna (Water flea)
flow-through test

Benzene
EC50: 10 mg/l
Exposure time: 48 h
Species: Daphnia magna (Water flea)
static test Test substance: yes
Method: OECD Test Guideline 202

Toxicity to algae

Dicyclopentadiene
: EC50: 27.0 mg/l
Exposure time: 72 h
Species: Selenastrum capricornutum (algae)

Ethylbenzene
ErC50: 5.0 mg/l
Exposure time: 96 h
Species: Selenastrum capricornutum (algae)
Crude Dicyclopentadiene

**Toluene**
- EC50: 134 mg/l
- Exposure time: 72 h
- Species: Chlamydomonas angulosa (Green algae)

**Styrene**
- EC50: 4.9 mg/l
- Exposure time: 72 h
- Species: Selenastrum capricornutum (algae)

**Benzene**
- ErC50: 100 mg/l
- Exposure time: 72 h
- Species: Pseudokirchneriella subcapitata (green algae)
  - Test substance: yes
  - Method: OECD Test Guideline 201

**Toxicity to bacteria**

**Styrene**
- EC10: 0.28 mg/l
- Exposure time: 96 h
- Growth rate
- Species: Skeletonema costatum (Marine Algae)
- Test substance: yes

**Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)**

**Ethylbenzene**
- NOEC: 1 mg/l
- Exposure time: 7 d
- Species: Daphnia pulex (Water flea)
- semi-static test
- Analytical monitoring: yes

**Styrene**
- NOEC: 1.01 mg/l
- Exposure time: 21 d
- Species: Daphnia magna (Water flea)
- semi-static test
- Test substance: yes
- Method: OECD Test Guideline 211

**Biodegradability**
- Expected to be ultimately biodegradable

**Elimination information (persistence and degradability)**

**Bioaccumulation**

**Styrene**
- Does not significantly accumulate in organisms.

**Results of PBT assessment**

**Ethylbenzene**
- Non-classified vPvB substance, Non-classified PBT substance

**Toluene**
- Non-classified vPvB substance, Non-classified PBT substance

**Styrene**
- This substance is not considered to be very persistent and...
Crude Dicyclopentadiene

very bioaccumulating (vPvB). This substance is not considered to be persistent, bioaccumulating and toxic (PBT).

Benzene: This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).

Additional ecological information: An environmental hazard cannot be excluded in the event of unprofessional handling or disposal. Toxic to aquatic life with long lasting effects.

Ecotoxicology Assessment

Short-term (acute) aquatic hazard: Toxic to aquatic life.

Long-term (chronic) aquatic hazard: Toxic to aquatic life with long lasting effects.

SECTION 13: Disposal considerations

The information in this SDS pertains only to the product as shipped. Use material for its intended purpose or recycle if possible. This material, if it must be discarded, may meet the criteria of a hazardous waste as defined by US EPA under RCRA (40 CFR 261) or other State and local regulations. Measurement of certain physical properties and analysis for regulated components may be necessary to make a correct determination. If this material is classified as a hazardous waste, federal law requires disposal at a licensed hazardous waste disposal facility.

Product: The product should not be allowed to enter drains, water courses or the soil. Do not contaminate ponds, waterways or ditches with chemical or used container. Send to a licensed waste management company.

Contaminated packaging: Empty remaining contents. Dispose of as unused product. Do not re-use empty containers. Do not burn, or use a cutting torch on, the empty drum.

SECTION 14: Transport information

The shipping descriptions shown here are for bulk shipments only, and may not apply to shipments in non-bulk packages (see regulatory definition).

Consult the appropriate domestic or international mode-specific and quantity-specific Dangerous Goods Regulations for additional shipping description requirements (e.g., technical name or names, etc.) Therefore, the information shown here, may not always agree with the bill of lading shipping description for the material. Flashpoints for the material may vary slightly between the SDS and the bill of lading.

US DOT (UNITED STATES DEPARTMENT OF TRANSPORTATION)
UN1268, PETROLEUM DISTILLATES, N.O.S., 3, III

IMO / IMDG (INTERNATIONAL MARITIME DANGEROUS GOODS)
UN1268, PETROLEUM DISTILLATES, N.O.S., 3, III, (52 °C), MARINE POLLUTANT, (DICYCLOPENTADIENE)

SDS Number:100000013685 16/20
Crude Dicyclopentadiene

IATA (INTERNATIONAL AIR TRANSPORT ASSOCIATION)
UN1268, PETROLEUM DISTILLATES, N.O.S., 3, III

ADR (AGREEMENT ON DANGEROUS GOODS BY ROAD (EUROPE))
UN1268, PETROLEUM DISTILLATES, N.O.S., 3, III, (D/E), ENVIRONMENTALLY HAZARDOUS, (DICYCLOPENTADIENE)

RID (REGULATIONS CONCERNING THE INTERNATIONAL TRANSPORT OF DANGEROUS GOODS (EUROPE))
UN1268, PETROLEUM DISTILLATES, N.O.S., 3, III, ENVIRONMENTALLY HAZARDOUS, (DICYCLOPENTADIENE)

ADN (EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY INLAND WATERWAYS)
UN1268, PETROLEUM DISTILLATES, N.O.S., 3, III, ENVIRONMENTALLY HAZARDOUS, (DICYCLOPENTADIENE)

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

SECTION 15: Regulatory information

National legislation

SARA 311/312 Hazards : Flammable (gases, aerosols, liquids, or solids)
Acute toxicity (any route of exposure)
Skin corrosion or irritation
Serious eye damage or eye irritation
Germ cell mutagenicity
Carcinogenicity
Reproductive toxicity
Specific target organ toxicity (single or repeated exposure)
Aspiration hazard

EPCRA - EMERGENCY PLANNING COMMUNITY RIGHT - TO – KNOW

CERCLA Reportable Quantity : 5000 lbs
Benzene

SARA 302 Reportable Quantity : This material does not contain any components with a SARA 302 RQ.

SARA 302 Threshold Planning Quantity : No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.
**Crude Dicyclopentadiene**

**Version 2.6**

**Revision Date 2019-06-24**

<table>
<thead>
<tr>
<th>SARA 304 Reportable Quantity</th>
<th>This material does not contain any components with a section 304 EHS RQ.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SARA 313 Components</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Benzene - 71-43-2</td>
</tr>
<tr>
<td></td>
<td>Styrene - 100-42-5</td>
</tr>
<tr>
<td></td>
<td>Toluene - 108-88-3</td>
</tr>
<tr>
<td></td>
<td>Dicyclopentadiene - 77-73-6</td>
</tr>
<tr>
<td></td>
<td>Ethylbenzene - 100-41-4</td>
</tr>
</tbody>
</table>

**Clean Air Act**

**Ozone-Depletion Potential**: This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

The following chemical(s) are listed as HAP under the U.S. Clean Air Act, Section 12 (40 CFR 61):
- Ethylbenzene - 100-41-4
- Toluene - 108-88-3
- Styrene - 100-42-5

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

The following chemical(s) are listed under the U.S. Clean Air Act Section 111 SOCMI Intermediate or Final VOC's (40 CFR 60.489):
- Ethylbenzene - 100-41-4
- Toluene - 108-88-3
- Styrene - 100-42-5

**US State Regulations**

**Pennsylvania Right To Know**
- Dicyclopentadiene - 77-73-6
- Ethylbenzene - 100-41-4
- Toluene - 108-88-3
- Styrene - 100-42-5
- Benzene - 71-43-2
Crude Dicyclopentadiene

Components

California Prop. 65

WARNING: This product can expose you to chemicals including [listed below], which is [are] known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov/food.

Benzene 71-43-2

WARNING: This product can expose you to chemicals including [listed below], which is [are] known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

Toluene 108-88-3

Notification status

Europe REACH : Not in compliance with the inventory
United States of America (USA) : On the inventory, or in compliance with the inventory
TSCA
Canada DSL : On the inventory, or in compliance with the inventory
Australia AICS : On the inventory, or in compliance with the inventory
New Zealand NZIoC : Not in compliance with the inventory
Japan ENCS : Not in compliance with the inventory
Korea KECI : On the inventory, or in compliance with the inventory
Philippines PICCS : Not in compliance with the inventory
China IECSC : On the inventory, or in compliance with the inventory

SECTION 16: Other information

NFPA Classification

Health Hazard: 2
Fire Hazard: 2
Reactivity Hazard: 1

Further information

Legacy SDS Number : CPC00525

Significant changes since the last version are highlighted in the margin. This version replaces all previous versions.

The information in this SDS pertains only to the product as shipped.

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.
# Crude Dicyclopentadiene

## SAFETY DATA SHEET

### Version 2.6

**Revision Date 2019-06-24**

### Key or legend to abbreviations and acronyms used in the safety data sheet

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACGIH</td>
<td>American Conference of Government Industrial Hygienists</td>
</tr>
<tr>
<td>AICS</td>
<td>Australia, Inventory of Chemical Substances</td>
</tr>
<tr>
<td>DSL</td>
<td>Canada, Domestic Substances List</td>
</tr>
<tr>
<td>NDSL</td>
<td>Canada, Non-Domestic Substances List</td>
</tr>
<tr>
<td>CNS</td>
<td>Central Nervous System</td>
</tr>
<tr>
<td>CAS</td>
<td>Chemical Abstract Service</td>
</tr>
<tr>
<td>EC50</td>
<td>Effective Concentration</td>
</tr>
<tr>
<td>EC50%</td>
<td>Effective Concentration 50%</td>
</tr>
<tr>
<td>EGEST</td>
<td>EOSCA Generic Exposure Scenario Tool</td>
</tr>
<tr>
<td>EOSCA</td>
<td>European Oilfield Specialty Chemicals Association</td>
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<tr>
<td>EINECS</td>
<td>European Inventory of Existing Chemical Substances</td>
</tr>
<tr>
<td>MAK</td>
<td>Germany Maximum Concentration Values</td>
</tr>
<tr>
<td>GHS</td>
<td>Globally Harmonized System</td>
</tr>
<tr>
<td>&gt;=</td>
<td>Greater Than or Equal To</td>
</tr>
<tr>
<td>IC50</td>
<td>Inhibition Concentration 50%</td>
</tr>
<tr>
<td>IARC</td>
<td>International Agency for Research on Cancer</td>
</tr>
<tr>
<td>IECSC</td>
<td>Inventory of Existing Chemical Substances in China</td>
</tr>
<tr>
<td>ENCS</td>
<td>Japan, Inventory of Existing and New Chemical Substances</td>
</tr>
<tr>
<td>KECI</td>
<td>Korea, Existing Chemical Inventory</td>
</tr>
<tr>
<td>&lt;=</td>
<td>Less Than or Equal To</td>
</tr>
<tr>
<td>LC50</td>
<td>Lethal Concentration 50%</td>
</tr>
<tr>
<td>LD50</td>
<td>Lethal Dose 50%</td>
</tr>
<tr>
<td>LOAEL</td>
<td>Lowest Observed Adverse Effect Level</td>
</tr>
<tr>
<td>NFPA</td>
<td>National Fire Protection Agency</td>
</tr>
<tr>
<td>NIOSH</td>
<td>National Institute for Occupational Safety &amp; Health</td>
</tr>
<tr>
<td>NTP</td>
<td>National Toxicology Program</td>
</tr>
<tr>
<td>NZIoC</td>
<td>New Zealand Inventory of Chemicals</td>
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<tr>
<td>NOAEL</td>
<td>No Observable Adverse Effect Level</td>
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<tr>
<td>NOEC</td>
<td>No Observed Effect Concentration</td>
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<tr>
<td>OSHA</td>
<td>Occupational Safety &amp; Health Administration</td>
</tr>
<tr>
<td>PEL</td>
<td>Permissible Exposure Limit</td>
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<tr>
<td>PICCS</td>
<td>Philippines Inventory of Commercial Chemical Substances</td>
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<tr>
<td>PRNT</td>
<td>Presumed Not Toxic</td>
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<tr>
<td>RCRA</td>
<td>Resource Conservation Recovery Act</td>
</tr>
<tr>
<td>STEL</td>
<td>Short-term Exposure Limit</td>
</tr>
<tr>
<td>SARA</td>
<td>Superfund Amendments and Reauthorization Act.</td>
</tr>
<tr>
<td>TLV</td>
<td>Threshold Limit Value</td>
</tr>
<tr>
<td>TWA</td>
<td>Time Weighted Average</td>
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<tr>
<td>TSCA</td>
<td>Toxic Substance Control Act</td>
</tr>
<tr>
<td>UVCB</td>
<td>Unknown or Variable Composition, Complex Reaction Products, and Biological Materials</td>
</tr>
<tr>
<td>WHMIS</td>
<td>Workplace Hazardous Materials Information System</td>
</tr>
</tbody>
</table>