



Crude Dicyclopentadiene

Version 2.9

Revision Date 2023-11-20

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 (+612 9186 1132) China: 0532 8388 9090
 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
 EUROPE: BIG +32.14.584545 (phone) or +32.14583516 (telefax)
 Austria: VIZ +43 1 406 43 43 (24 hours/day, 7 days/week)
 Belgium: 070 245 245 (24 hours/day, 7 days/week)
 Bulgaria: +359 2 9154 233
 Croatia: +3851 2348 342 (24 hours/day, 7 days/week)
 Cyprus: 1401
 Czech Republic: Toxicological Information Center +420 224 919 293, +420 224 915 402
 Denmark: Danish Poison Center (Gifftlinjen): +45 8212 1212
 Estonia: BIG +32.14.584545 (phone) or +32.14583516 (telefax)
 Finland: 0800 147 111 09 471 977 (24 hours/day)
 France: ORFILA number (INRS): + 33 (0) 1 45 42 59 59 (24 hours/day, 7 days/week)
 Germany: BIG +32.14.584545 (phone) or +32.14583516 (telefax)
 Greece: (0030) 2107793777 (24 hours/day, 7 days/week)
 Hungary: +36-80-201-199 (24 hours/day, 7 days/week)
 Iceland: 543 2222 (24 hours/day, 7 days/week)
 Ireland: BIG +32.14.584545 (phone) or +32.14583516 (telefax)
 Italy: BIG +32.14.584545 (phone) or +32.14583516 (telefax)
 Latvia: State Fire and Rescue Service, phone number: 112; Toxicology and Sepsis Clinic
 Poisoning and Drug Information Center, Hipokrāta 2, Rīga, Latvia, LV-1038, phone number +371
 67042473. (24 hours.)
 Liechtenstein: BIG +32.14.584545 (phone) or +32.14583516 (telefax)

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Lithuania: +370 (85) 2362052
 Luxembourg: (+352) 8002 5500 (24 hours/day, 7 days/week)
 Malta: +356 2395 2000
 The Netherlands: NVIC: +31 (0)88 755 8000
 Norway: 22 59 13 00 (24 hours/day, 7 days/week)
 Poland: BIG +32.14.584545 (phone) or +32.14583516 (telefax)
 Portugal: CIAV phone number: +351 800 250 250
 Romania: +40213183606
 Slovakia: +421 2 5477 4166
 Slovenia: Phone number: 112
 Spain: National Emergency Telephone Number of Spanish Poison Centre: +34 91 562 04 20 (24 hours/day, 7 days/week)
 Sweden: 112 – ask for Poisons Information

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
 Specific target organ toxicity - repeated exposure, Category 2, Inhalation, color vision
 Aspiration hazard, Category 1

Labeling

Symbol(s)



Signal Word

: Danger

Hazard Statements

: H226: Flammable liquid and vapor.
 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.

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H350: May cause cancer.
 H361d: Suspected of damaging the unborn child.
 H372: Causes damage to organs (Auditory organs) through prolonged or repeated exposure.
 H373: May cause damage to organs (color vision) through prolonged or repeated exposure if inhaled.

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/ vapors/ 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/ attention.
 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.

Carcinogenicity:

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IARC	Group 1: Carcinogenic to humans	
	Benzene	71-43-2
	Group 2A: Probably carcinogenic to humans	
	Styrene	100-42-5
NTP	Group 2B: Possibly carcinogenic to humans	
	Ethylbenzene	100-41-4
	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	:	24 Unit Hydro DCPD DCPD Fractionator bottoms
Molecular formula	:	UVCB

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

SECTION 4: First aid measures

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. Do not give milk or alcoholic beverages. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician. Take victim immediately to hospital.

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SECTION 5: Firefighting measures

Flash point	:	52°C (126°F) Method: ASTM D 56
Autoignition temperature	:	465°C (869°F)
Suitable extinguishing media	:	Alcohol-resistant foam. Carbon dioxide (CO ₂). Dry chemical.
Unsuitable extinguishing media	:	High volume water jet.
Specific hazards during fire fighting	:	Do not allow run-off from fire fighting to enter drains or water courses.
Special protective equipment for fire-fighters	:	Wear self-contained breathing apparatus for firefighting if necessary.
Further information	:	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.
Fire and explosion protection	:	Do not spray on a naked flame or any 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.
Hazardous decomposition products	:	No data available.

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**

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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 a naked flame or any 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****US**

Components	Basis	Value	Control parameters	Note
Dicyclopentadiene	ACGIH	TWA	0.5 ppm,	
	OSHA Z-1-A	TWA	5 ppm, 30 mg/m3	
	ACGIH	STEL	1 ppm,	
	ACGIH	TWA	0.5 ppm,	URT irr, LRT irr, eye irr,
Ethylbenzene	ACGIH	STEL	1 ppm,	
	OSHA Z-1	TWA	100 ppm, 435 mg/m3	
	OSHA Z-1-A	TWA	100 ppm, 435 mg/m3	
	OSHA Z-1-A	STEL	125 ppm, 545 mg/m3	
Toluene	ACGIH	TWA	20 ppm,	A3,
	ACGIH	TWA	20 ppm,	A4,
	OSHA Z-2	TWA	200 ppm,	
	OSHA Z-2	CEIL	300 ppm,	
	OSHA Z-2	Peak	500 ppm,	
	OSHA Z-1-A	TWA	100 ppm, 375 mg/m3	
	OSHA Z-1-A	STEL	150 ppm, 560 mg/m3	
	Styrene	OSHA Z-2	TWA	100 ppm,
OSHA Z-2		CEIL	200 ppm,	
OSHA Z-2		Peak	600 ppm,	
OSHA Z-1-A		TWA	50 ppm, 215 mg/m3	
Benzene	OSHA Z-1-A	STEL	100 ppm, 425 mg/m3	
	ACGIH	TWA	10 ppm,	OTO, A3,
	ACGIH	STEL	40 ppm,	OTO, A3,
	ACGIH	TWA	0.5 ppm,	A1, Skin,
	ACGIH	STEL	2.5 ppm,	A1, Skin,
	OSHA Z-1-A	TWA	1 ppm,	
	OSHA Z-1-A	CEIL	5 ppm,	
	OSHA Z-2	Peak	50 ppm,	
	OSHA 29 CFR 1910.1028(c)	TWA	1 ppm,	
	OSHA 29 CFR 1910.1028(c)	STEL	5 ppm,	
OSHA CARC	PEL	1 ppm,		
OSHA CARC	STEL	5 ppm,		

A1 Confirmed human carcinogen

A3 Confirmed animal carcinogen with unknown relevance to humans

A4 Not classifiable as a human carcinogen

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eye irr Eye irritation
 LRT irr Lower Respiratory Tract irritation
 OTO Ototoxicant
 Skin Danger of cutaneous absorption
 URT irr Upper Respiratory Tract irritation

Immediately Dangerous to Life or Health Concentrations (IDLH)

Substance name	CAS-No.	Control parameters	Update
Ethylbenzene	100-41-4	Immediately Dangerous to Life or Health Concentration Value 800 parts per million	1995-03-01
Toluene	108-88-3	Immediately Dangerous to Life or Health Concentration Value 500 parts per million	1995-03-01
Styrene	100-42-5	Immediately Dangerous to Life or Health Concentration Value 700 parts per million	1995-03-01
Benzene	71-43-2	Immediately Dangerous to Life or Health Concentration Value 500 parts per million	1995-03-01

Biological exposure indices**US**

Substance name	CAS-No.	Control parameters	Sampling time	Update
Ethylbenzene	100-41-4	Sum of mandelic acid and phenyl glyoxylic acid: 0.15 g/g creatinine Nonspecific (Urine)	End of shift (As soon as possible after exposure ceases)	2016-03-01
Toluene	108-88-3	Toluene: 0.02 mg/l (In blood)	Prior to last shift of workweek	2010-03-01
		Toluene: 0.03 mg/l (Urine)	End of shift (As soon as possible after exposure ceases)	2010-03-01
		o-Cresol: 0.3 mg/g Creatinine Background (Urine) With hydrolyses ()	End of shift (As soon as possible after exposure ceases)	2010-03-01
Styrene	100-42-5	Mandelic acid plus phenylglyoxylic acid: 400 mg/g Creatinine Nonspecific (Urine)	End of shift (As soon as possible after exposure ceases)	2016-03-01
		Styrene: 40 µg/l (Urine)	End of shift (As soon as possible after exposure ceases)	2016-03-01
Benzene	71-43-2	S-Phenylmercapturic acid: 25 µg/g creatinine Background (Urine)	End of shift (As soon as possible after exposure ceases)	2010-03-01
		t,t-Muconic acid: 500 µg/g creatinine Background (Urine)	End of shift (As soon as possible after exposure ceases)	2010-03-01

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

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- Respiratory protection : If ventilation or other engineering controls are not adequate to maintain minimal oxygen content of 19.5% by volume under normal atmospheric pressure, a supplied-air NIOSH approved respirator may be appropriate. If exposure to harmful levels of airborne material may occur, a NIOSH approved respirator that provides protection may be appropriate, such as:. Air-Purifying Respirator for Organic Vapors. Full-Face Air-Purifying Respirator for Organic Vapors, Dusts and Mists. A positive pressure, air-supplying respirator may be appropriate if there is potential for uncontrolled release, aerosolization, 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 (126°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)

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Molecular formula	: UVCB
Molecular weight	: Not applicable
pH	: Not applicable
Freezing point	: <27°C (<80°F)
Pour point	No data available
Boiling point/boiling range	: 38°C (101°F)
Vapor pressure	: 0.06 PSI at 38°C (100°F) Method: Reid
Relative density	: No data available
Density	: 0.9814 g/cm ³
Water solubility	: 0.0081 g/l
Partition coefficient: n-octanol/water	: log Pow: 3.3
Viscosity, kinematic	: 1.25 cSt at 100°C (212°F)
Relative vapor density	: 4.66 (Air = 1.0)
Evaporation rate	: 0.13 (N-Butyl Acetate = 1)

SECTION 10: Stability and reactivity

Reactivity	: Stable under recommended storage conditions.
Chemical stability	: 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. Hazardous reactions: Vapors may form explosive mixture with air.
Conditions to avoid	: Heat, flames and sparks.

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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

Crude Dicyclopentadiene Acute inhalation toxicity : LC50: 1.42 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: Acute toxicity estimate

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

Crude Dicyclopentadiene Skin irritation : May irritate skin.

Crude Dicyclopentadiene Eye irritation : May irritate eyes.

Crude Dicyclopentadiene 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

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

Genotoxicity in vitro

Dicyclopentadiene : Test Type: Ames test
Result: negative

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	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
	Test Type: Sister Chromatid Exchange Assay Result: negative
	Test Type: Mouse lymphoma assay Result: negative
	Test Type: Cytogenetic assay Result: negative
Styrene	Test Type: Ames test Result: negative
	Test Type: Cytogenetic assay Result: positive
	Test Type: Reverse mutation assay Result: negative
	Test Type: Mouse lymphoma assay Result: negative
	Test Type: Sister Chromatid Exchange Assay Result: positive
	Test Type: Mammalian cell gene mutation assay Result: negative
Benzene	Test Type: Ames test Result: negative
	Test Type: Cytogenetic assay Result: positive
	Test Type: Mouse lymphoma assay Result: positive
	Test Type: Sister Chromatid Exchange Assay Result: negative
Genotoxicity in vivo	
Ethylbenzene	: Test Type: Mouse micronucleus assay Species: Mouse Result: negative
Toluene	Test Type: Cytogenetic assay

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

Species: Mouse
 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

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

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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 : Carcinogenicity: Weight of evidence does not support
 classification as a carcinogen
 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: Some evidence of adverse effects on
 development, based on 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.

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Crude Dicyclopentadiene**Further information** : Solvents may degrease the skin.**SECTION 12: Ecological information****Ecotoxicity effects****Toxicity to fish**

Dicyclopentadiene	: LC50: 3.7 mg/l Exposure time: 48 h Species: <i>Oryzias latipes</i> (Orange-red killifish)
Ethylbenzene	LC50: 4.3 mg/l Exposure time: 96 h Species: <i>Marone saxatilis</i> (striped bass)
Toluene	LC50: 18 - 36 mg/l Exposure time: 96 h Species: <i>Pimephales promelas</i> (fathead minnow)
Styrene	LC50: 4.02 mg/l Exposure time: 96 h Species: <i>Pimephales promelas</i> (fathead minnow) flow-through test Test substance: yes Toxic to fish.
Benzene	LC50: 5.3 mg/l Exposure time: 96 h Species: <i>Oncorhynchus mykiss</i> (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: <i>Daphnia magna</i> (Water flea)
Ethylbenzene	LC50: 2.6 mg/l Exposure time: 96 h Species: <i>Mysidopsis bahia</i> (mysid shrimp)
	EC50: 2.2 mg/l Exposure time: 48 h Species: <i>Daphnia magna</i> (Water flea) Method: OECD Test Guideline 202
Toluene	EC50: 3.78 mg/l Exposure time: 48 h Species: <i>Daphnia magna</i> (Water flea)
Styrene	EC50: 4.7 mg/l Exposure time: 48 h Species: <i>Daphnia magna</i> (Water flea) flow-through test
Benzene	EC50: 10 mg/l

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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)

ErC50: 7.7 mg/l
 Exposure time: 72 h
 Species: Skeletonema costatum (Marine Algae)

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

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Biodegradability	: Expected to be ultimately biodegradable
Elimination information (persistence and degradability)	
Bioaccumulation	: No data available
Mobility	: No data available
Results of PBT assessment	: This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.
Additional ecological information	: 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

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IMO / IMDG (INTERNATIONAL MARITIME DANGEROUS GOODS)

UN1268, PETROLEUM DISTILLATES, N.O.S., 3, III, (52 °C c.c.), MARINE POLLUTANT, (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))

30, 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)

Maritime transport in bulk according to IMO instruments**SECTION 15: Regulatory information****National legislation**

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

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 : This material does not contain any components with a section 302 EHS TPQ.

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SARA 304 Reportable Quantity : This material does not contain any components with a section 304 EHS RQ.

SARA 313 Components : The following components are subject to reporting levels established by SARA Title III, Section 313:

: Dicyclopentadiene - 77-73-6
Ethylbenzene - 100-41-4
Toluene - 108-88-3
Styrene - 100-42-5
Benzene - 71-43-2

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 112 (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 SOCM I 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

: Distillates (petroleum), steam-cracked, C8-12 fraction - 68477-54-3
Dicyclopentadiene - 77-73-6
C9-C12 Codimers -

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Ethylbenzene - 100-41-4
 Toluene - 108-88-3
 Styrene - 100-42-5
 Benzene - 71-43-2

California Prop. 65
 Components

: 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.

Ethylbenzene	100-41-4
Styrene	100-42-5
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.

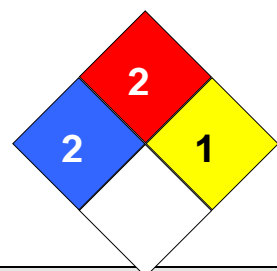
Toluene	108-88-3
Benzene	71-43-2

Notification status

Europe REACH	: Not in compliance with the inventory
Switzerland CH INV	: Not in compliance with the inventory
United States of America (USA) TSCA	: On or in compliance with the active portion of the TSCA inventory
Canada DSL	: On the inventory, or in compliance with the inventory
Australia AIIC	: 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	: A substance(s) in this product was not registered, notified to be registered, or exempted from registration by CPChem according to K-REACH regulations. Importation or manufacture of this product is still permitted provided the Korean Importer of Record has themselves notified the substance or the exported amount does not exceed the minimum threshold quantity of the non-registered substance(s).
Philippines PICCS	: Not in compliance with the inventory
Taiwan TCSI	: On the inventory, or 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



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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.

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