

SECTION 1: Identification

1.1. Identification

Product form	: Substance
Trade name	: DCPD
Chemical name	: 3a,4,7,7a-tetrahydro-4,7-methanoindene
CAS-No.	: 77-73-6
Product code	: P455
Formula	: C10H12
Synonyms	: DCPD; Bicyclopentadiene; 1,3-Cyclopentadiene dimers; 3a,4,7,7a-Tetrahydro-4,7-methaneindene

1.2. Recommended use and restrictions on use

Use of the substance/mixture	: Polymer production
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1.3. Supplier

Braskem America, Inc.
1735 Market Street
Philadelphia, PA 19103-7583
Tel: (800) 396 – 5252
productsafety@braskem.com

1.4. Emergency telephone number

Emergency number	: CHEMTREC: +1-703-527-3887 (INTERNATIONAL) 1-800-424-9300 (NORTH AMERICA)
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SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS US classification

Flammable liquids Category 2	Highly flammable liquid and vapor
Acute toxicity (oral) Category 4	Harmful if swallowed
Acute toxicity (inhalation) Category 2	Fatal if inhaled
Skin corrosion/irritation Category 2	Causes skin irritation
Serious eye damage/eye irritation Category 2A	Causes serious eye irritation
Germ cell mutagenicity Category 1B	May cause genetic defects
Carcinogenicity Category 1A	May cause cancer
Reproductive toxicity Category 2	Suspected of damaging fertility or the unborn child
Specific target organ toxicity – Single exposure, Category 3, Respiratory tract irritation	May cause respiratory irritation
Specific target organ toxicity (repeated exposure) Category 2	May cause damage to organs (central nervous system) through prolonged or repeated exposure (oral)
Aspiration hazard Category 1	May be fatal if swallowed and enters airways

2.2. GHS Label elements, including precautionary statements

GHS US labeling

Hazard pictograms (GHS US)



Signal word (GHS US)

: Danger

Hazard statements (GHS US)

: Highly flammable liquid and vapor
Harmful if swallowed
May be fatal if swallowed and enters airways

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	<p>Causes skin irritation Causes serious eye irritation Fatal if inhaled May cause respiratory irritation May cause genetic defects May cause cancer Suspected of damaging fertility or the unborn child May cause damage to organs (central nervous system) through prolonged or repeated exposure (oral)</p>
Precautionary statements (GHS US)	<p>: Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep container tightly closed. Ground/bond container and receiving equipment. Use explosion-proof electrical, lighting, ventilating equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Do not breathe mist, spray, vapors. Wash hands thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Wear eye protection, protective clothing, protective gloves. [In case of inadequate ventilation] wear respiratory protection. If swallowed: Immediately call a poison center or doctor. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If inhaled: Remove person to fresh air and keep comfortable for breathing. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a doctor, a POISON CENTER. Rinse mouth. Do NOT induce vomiting. If skin irritation occurs: Get medical advice/attention. If eye irritation persists: Get medical advice/attention. Take off contaminated clothing and wash it before reuse. In case of fire: Use dry extinguishing powder, carbon dioxide (CO₂), alcohol resistant foam to extinguish. Store in a well-ventilated place. Keep container tightly closed. Store in a well-ventilated place. Keep cool. Store locked up. Dispose of contents/container to comply with applicable local, national and international regulation..</p>

2.3. Other hazards which do not result in classification

Other hazards which do not result in classification	: Electrostatic charges may be generated during handling. Gas/vapor heavier than air. May accumulate in confined spaces, particularly at or below ground level. Burning liquid may float on water. May spread fire. Combustion produces toxic gases. Combustion produces irritating gases. Very toxic to aquatic life with long lasting effects.
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2.4. Unknown acute toxicity (GHS US)

No additional information available

SECTION 3: Composition/Information on ingredients

3.1. Substances

Substance type	: Mono-constituent
Name	: 3a,4,7,7a-tetrahydro-4,7-methanoindene
CAS-No.	: 77-73-6
Concentration	: ≥ 82%

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Name	Product identifier	%	GHS US classification
1,3-Pentadiene	CAS-No.: 504-60-9	1.5 – 3.5	Flam. Liq. 2, H225
1,3-Pentadiene, (E)-	CAS-No.: 2004-70-8	1 – 2	Flam. Liq. 2, H225 Skin Irrit. 2, H315 Eye Irrit. 2, H319 Asp. Tox. 1, H304
cyclopentane	CAS-No.: 287-92-3	0.8 – 1.5	Flam. Liq. 2, H225
1,3-Pentadiene, (Z)-	CAS-No.: 1574-41-0	≤ 1.5	Flam. Liq. 2, H225 Asp. Tox. 1, H304
Cyclopentene	CAS-No.: 142-29-0	0.9 – 1.4	Flam. Liq. 2, H225 Acute Tox. 4 (Oral), H302 Acute Tox. 4 (Dermal), H312 Skin Irrit. 2, H315 Asp. Tox. 1, H304
Cyclopentadiene	CAS-No.: 542-92-7	0.3 – 0.8	Flam. Liq. 3, H226 Acute Tox. 3 (Oral), H301 Acute Tox. 4 (Dermal), H312 Acute Tox. 4 (Inhalation), H332 Skin Irrit. 2, H315 Eye Irrit. 2A, H319 STOT SE 3, H335
2-Methyl-2-butene	CAS-No.: 513-35-9	≤ 0.4	Flam. Liq. 2, H225 Acute Tox. 4 (Oral), H302 Skin Irrit. 2, H315 Muta. 2, H341 Carc. 2, H351 STOT SE 3, H336 Asp. Tox. 1, H304
Benzene	CAS-No.: 71-43-2	≤ 0.1	Flam. Liq. 2, H225 Skin Irrit. 2, H315 Eye Irrit. 2, H319 Muta. 1B, H340 Carc. 1A, H350 STOT RE 1, H372 Asp. Tox. 1, H304

Comments : Contains inhibitor

3.2. Mixtures

Not applicable

SECTION 4: First-aid measures

4.1. Description of first aid measures

- | | |
|---------------------------------------|--|
| First-aid measures after inhalation | : Remove victim to fresh air. Seek medical attention immediately. Do not apply mouth-to-mouth resuscitation. If breathing stops, give artificial respiration. |
| First-aid measures after skin contact | : After contact with skin, take off immediately all contaminated clothing, and wash immediately with plenty of water and soap. Remove the victim away from contaminated area. Seek immediate medical advice. |
| First-aid measures after eye contact | : In case of eye contact, immediately rinse with clean water for 10-15 minutes. Get medical advice/attention. Remove contact lenses, if present and easy to do. Continue rinsing. |

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First-aid measures after ingestion : Do not induce vomiting. If swallowed, rinse mouth with water (only if the person is conscious). Keep victim warm and rested. Never give anything by mouth to an unconscious person. Seek immediate medical advice.

4.2. Most important symptoms and effects (acute and delayed)

Symptoms/effects : Suspected of damaging fertility or the unborn child.
Symptoms/effects after inhalation : Fatal if inhaled. May cause respiratory irritation. Overexposure to vapors may result in cough. Depression of the central nervous system, headaches, dizziness, drowsiness, loss of coordination.
Symptoms/effects after skin contact : Causes skin irritation.
Symptoms/effects after eye contact : Causes serious eye irritation.
Symptoms/effects after ingestion : Harmful if swallowed. Ingestion may cause nausea, vomiting and diarrhea. May be fatal if swallowed and enters airways. May cause damage to organs (central nervous system) through prolonged or repeated exposure (Oral).

4.3. Immediate medical attention and special treatment, if necessary

Treat symptomatically.

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media : dry chemical powder, alcohol-resistant foam, carbon dioxide (CO₂).
Unsuitable extinguishing media : Do not use water jet.

5.2. Specific hazards arising from the chemical

Fire hazard : Highly flammable liquid and vapor. Remove ignition sources. Heavier than air, vapors may travel long distances along ground, ignite and flash back to source. May form explosive peroxides. Combustion produces irritating gases. On combustion forms: Carbon monoxide.
Explosion hazard : Flammable vapors can accumulate in head space of closed systems. May form flammable/explosive vapor-air mixture.

5.3. Special protective equipment and precautions for fire-fighters

Firefighting instructions : Do not attempt to take action without suitable protective equipment. Hose down area with water. In case of fire: Evacuate area. Fight fire remotely due to the risk of explosion. In case of fire: Stop leak if safe to do so. Cool tanks/drums with water spray/remove them into safety.
Protection during firefighting : Full protective flameproof clothing. Fight fire from safe distance and protected location. Wear a self contained breathing apparatus.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : Evacuate area.

6.1.1. For non-emergency personnel

Protective equipment : Wear suitable protective clothing, gloves and eye/face protection. For further information refer to section 8: "Exposure controls/personal protection".
Emergency procedures : Remove all sources of ignition. Stop leak if safe to do so.

6.1.2. For emergency responders

Protective equipment : Wear suitable protective clothing. For further information refer to section 8: "Exposure controls/personal protection".
Emergency procedures : Remove all sources of ignition. Stop leaks if it can be done without personal risk. Evacuate unnecessary personnel.

6.2. Environmental precautions

Use water spray to disperse the vapors. Absorb remaining liquid with sand or inert absorbent and remove to safe place. Do not allow uncontrolled discharge of product into the environment. Notify authorities if product enters sewers or public waters.

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6.3. Methods and material for containment and cleaning up

- For containment : Soak up with inert absorbent material (for example sand, sawdust, a universal binder, silica gel).
- Methods for cleaning up : Absorb remaining liquid with sand or inert absorbent and remove to safe place. Clean up any spills as soon as possible, using an absorbent material to collect it. Do not absorb in sawdust, paper, cloth or other combustible absorbents.

6.4. Reference to other sections

For disposal of residues refer to section 13 : "Disposal considerations". For further information refer to section 8: "Exposure controls/personal protection".

SECTION 7: Handling and storage

7.1. Precautions for safe handling

- Additional hazards when processed : Handling this product may result in electrostatic accumulation. Use proper grounding procedures.
- Precautions for safe handling : Use only outdoors or in a well-ventilated area. Avoid ignition sources. Use only non-sparking tools. Use grounded electrical/mechanical equipment. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood.
- Hygiene measures : Handle in accordance with good industrial hygiene and safety practice. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Do not eat, drink or smoke in areas where product is used.

7.2. Conditions for safe storage, including any incompatibilities

- Technical measures : Keep container closed when not in use. Keep away from sources of ignition.
- Storage conditions : Keep away from open flames, hot surfaces and sources of ignition. Store in dry, cool, well-ventilated area. Store at room temperature. Hazardous polymerization will not occur. Contains inhibitor. To prevent further polymerization Dicyclopentadiene is inhibited with 4-tert-butylcatechol (TBC).
- Incompatible materials : Strong oxidizing agents. Reducing agents. Certain plastics, rubbers and coatings. Halogens.
- Storage area : Keep away from sources of ignition.
- Packaging materials : Stainless steel. Carbon steel. Cylinders. Drums.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

DCPD (77-73-6)	
USA - ACGIH - Occupational Exposure Limits	
Local name	Dicyclopentadiene
ACGIH OEL TWA [ppm]	5 ppm
ACGIH OEL STEL [ppm]	1 ppm (including Cyclopentadiene)
Remark (ACGIH)	URT, LRT, & eye irr
Regulatory reference	ACGIH 2023
Cyclopentadiene (542-92-7)	
USA - ACGIH - Occupational Exposure Limits	
Local name	Cyclopentadiene
ACGIH OEL TWA	203 mg/m ³
ACGIH OEL TWA [ppm]	0.5 ppm
ACGIH OEL STEL [ppm]	1 ppm

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Cyclopentadiene (542-92-7)	
Remark (ACGIH)	TLV® Basis: URT, LRT, & eye irr; CNS eff
Regulatory reference	ACGIH 2023
USA - OSHA - Occupational Exposure Limits	
Local name	Cyclopentadiene
OSHA PEL (TWA) [1]	200 mg/m³
OSHA PEL (TWA) [2]	75 ppm
Regulatory reference (US-OSHA)	OSHA Annotated Table Z-1
Benzene (71-43-2)	
USA - ACGIH - Occupational Exposure Limits	
Local name	Benzene
ACGIH OEL TWA [ppm]	0.5 ppm
ACGIH OEL STEL [ppm]	2.5 ppm
Remark (ACGIH)	TLV® Basis: Leukemia. Notations: Skin; A1 (Confirmed Human Carcinogen); BEI
ACGIH chemical category	Confirmed Human Carcinogen, Skin - potential significant contribution to overall exposure by the cutaneous route
Regulatory reference	ACGIH 2023
USA - ACGIH - Biological Exposure Indices	
Local name	BENZENE
BEI (BLV)	25 µg/g Kreatinin Parameter: S-Phenylmercapturic acid - Medium: urine - Sampling time: End of shift - Notations: B 500 µg/g Kreatinin Parameter: t,t-Muconic acid - Medium: urine - Sampling time: End of shift - Notations: B
Regulatory reference	ACGIH 2023
USA - OSHA - Occupational Exposure Limits	
Local name	Benzene
OSHA PEL (TWA) [2]	10 ppm
OSHA PEL (STEL) [2]	5 ppm (see 29 CFR 1910.1028)
OSHA PEL C [ppm]	25 ppm
Acceptable maximum peak above the acceptable ceiling concentration for an 8-hr shift	50 ppm 10 mins.
Regulatory reference (US-OSHA)	OSHA Annotated Table Z-2
USA - IDLH - Occupational Exposure Limits	
IDLH [ppm]	500 ppm
USA - NIOSH - Occupational Exposure Limits	
NIOSH REL TWA [ppm]	0.1 ppm
NIOSH REL STEL [ppm]	1 ppm

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cyclopentane (287-92-3)	
USA - ACGIH - Occupational Exposure Limits	
Local name	Cyclopentane
ACGIH OEL TWA	1720 mg/m ³
ACGIH OEL TWA [ppm]	1000 ppm (EX - Explosion hazard)
Remark (ACGIH)	TLV® Basis: CNS impair
Regulatory reference	ACGIH 2023
USA - NIOSH - Occupational Exposure Limits	
NIOSH REL (TWA)	1720 mg/m ³
NIOSH REL TWA [ppm]	600 ppm
2-Methyl-2-butene (513-35-9)	
USA - ACGIH - Occupational Exposure Limits	
Local name	2-Methyl-2-butene
ACGIH OEL TWA [ppm]	10 ppm
Remark (ACGIH)	TLV® Basis: Clastogenic eff
Regulatory reference	ACGIH 2023

8.2. Appropriate engineering controls

Appropriate engineering controls : Ensure adequate ventilation. Mechanical ventilation is recommended. Use explosion-proof equipment.

8.3. Individual protection measures/Personal protective equipment

Materials for protective clothing:				
Wear suitable protective clothing				
Hand protection:				
Impermeable protective gloves. Do not reuse gloves. For short time exposure risk (e.g. single splash), other material may be usable. It is recommended that the glove supplier be consulted to ensure the protective gloves are resistant to chemicals in this product. Do not use : Butyl-rubber protective gloves				
Type	Material	Permeation	Thickness (mm)	Penetration
Disposable gloves	Viton	< 80 Minutes.	0.7	Not known
Eye protection:				
Protective goggles				
Skin and body protection:				
Avoid contact with skin. Avoid repeated or prolonged skin contact. Remove contaminated clothing and shoes				

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Respiratory protection:

An approved organic vapor respirator/supplied air or self-contained breathing apparatus must be used when vapor concentration exceeds applicable exposure limits. Observe the wear time limits

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Liquid
Appearance	: Clear.
Color	: Slightly yellow
Odor	: Pungent
Odor threshold	: No data available
pH	: Not applicable
Melting point	: No data available
Freezing point	: No data available
Boiling point	: 49 °C (120.2 °F; ASTM D86)
Flash point	: -15 °C (5 °F; Closed cup; ASTM D56)
Relative evaporation rate (butyl acetate=1)	: No data available
Flammability (solid, gas)	: No data available
Vapor pressure	: 7 – 15 kPa (37.8 °C; 100.04 °F)
Relative vapor density at 20°C	: No data available
Relative density	: 0.9584 – 0.9598 g/cm ³
Solubility	: No data available
Partition coefficient n-octanol/water (Log Pow)	: No data available
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosion limits	: No data available
Explosive properties	: No data available
Oxidizing properties	: No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

Highly flammable liquid and vapor. Can form explosive peroxides by prolonged contact with air. Attacks some forms of plastics, rubber, and coatings.

10.2. Chemical stability

Stable at ambient temperature and under normal conditions of use.

10.3. Possibility of hazardous reactions

Contains inhibitor. Hazardous polymerization will not occur. Can form explosive peroxides by prolonged contact with air.

10.4. Conditions to avoid

Avoid ignition sources. Strong oxidizing agents. Incompatible materials.

10.5. Incompatible materials

Strong oxidizing agents. Strong reducing agents. Certain plastics, rubbers and coatings. Halogens.

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10.6. Hazardous decomposition products

Carbon oxides (CO, CO₂). hydrocarbon substances with low molecular weight and their oxidation products. Explosive decomposition on exposure to air: peroxidation resulting in increased fire or explosion risk.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral) : Harmful if swallowed.
Acute toxicity (dermal) : Not classified (Based on available data, the classification criteria are not met)
Acute toxicity (inhalation) : Fatal if inhaled.

DCPD (77-73-6)

LD50 dermal rat	> 2000 mg/kg
LC50 Inhalation - Rat	1910 mg/m ³ (Exposure time: 6 h Source: ECHA_API)
ATE US (oral)	500 mg/kg body weight
ATE US (gases)	100 ppmV/4h
ATE US (vapors)	1.91 mg/l/4h
ATE US (dust, mist)	1.91 mg/l/4h

Cyclopentadiene (542-92-7)

LC50 Inhalation - Rat	39 mg/l
ATE US (oral)	100 mg/kg body weight
ATE US (dermal)	1100 mg/kg body weight
ATE US (gases)	4500 ppmV/4h
ATE US (vapors)	11 mg/l/4h
ATE US (dust, mist)	1.5 mg/l/4h

Benzene (71-43-2)

LD50 oral rat	> 2000 mg/kg
LD50 dermal rabbit	> 8200 mg/kg (Source: JAPAN_GHS)
LC50 Inhalation - Rat	44.66 mg/l/4h
ATE US (vapors)	44.66 mg/l/4h
ATE US (dust, mist)	44.66 mg/l/4h

Cyclopentene (142-29-0)

LD50 oral rat	2140 µl/kg (Source: NLM_CIP)
LD50 dermal rabbit	1231 mg/kg (Source: ECHA_API)
LC50 Inhalation - Rat	> 22.9 mg/l/4h
ATE US (oral)	500 mg/kg body weight
ATE US (dermal)	1100 mg/kg body weight

cyclopentane (287-92-3)

LC50 Inhalation - Rat	> 25.3 mg/l/4h
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2-Methyl-2-butene (513-35-9)	
LD50 oral rat	700 mg/kg
LD50 dermal rat	> 2000 mg/kg (Source: OECD_SIDS)
LC50 Inhalation - Rat [ppm]	> 61000 ppm/4h
ATE US (oral)	700 mg/kg body weight

Skin corrosion/irritation	: Causes skin irritation. pH: Not applicable
Serious eye damage/irritation	: Causes serious eye irritation. pH: Not applicable
Respiratory or skin sensitization	: Not classified (Based on available data, the classification criteria are not met)
Germ cell mutagenicity	: May cause genetic defects.
Carcinogenicity	: May cause cancer.

Benzene (71-43-2)	
IARC group	1 - Carcinogenic to humans
National Toxicity Program (NTP) Status	Known Human Carcinogens, Evidence of Carcinogenicity
In OSHA Hazard Communication Carcinogen list	Yes
In OSHA Specifically Regulated Carcinogen list	Yes

Reproductive toxicity	: Suspected of damaging fertility or the unborn child.
STOT-single exposure	: May cause respiratory irritation.

Cyclopentadiene (542-92-7)	
STOT-single exposure	May cause respiratory irritation.

2-Methyl-2-butene (513-35-9)	
STOT-single exposure	May cause drowsiness or dizziness.

STOT-repeated exposure	: May cause damage to organs (central nervous system) through prolonged or repeated exposure (oral).
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Benzene (71-43-2)	
NOAEL (oral,rat,90 days)	100 mg/kg body weight Animal: rat, Animal sex: male, Guideline: OECD Guideline 408 (Repeated Dose 90-Day Oral Toxicity Study in Rodents)
STOT-repeated exposure	Causes damage to organs (hematopoietic system) through prolonged or repeated exposure.

Aspiration hazard	: May be fatal if swallowed and enters airways.
Viscosity, kinematic	: No data available

Benzene (71-43-2)	
Viscosity, kinematic	0.689 mm²/s

Likely routes of exposure	: Ingestion. Inhalation. Skin and eye contact.
Symptoms/effects	: Suspected of damaging fertility or the unborn child.
Symptoms/effects after inhalation	: Fatal if inhaled. May cause respiratory irritation. Overexposure to vapors may result in cough. Depression of the central nervous system, headaches, dizziness, drowsiness, loss of coordination.
Symptoms/effects after skin contact	: Causes skin irritation.
Symptoms/effects after eye contact	: Causes serious eye irritation.
Symptoms/effects after ingestion	: Harmful if swallowed. Ingestion may cause nausea, vomiting and diarrhea. May be fatal if swallowed and enters airways. May cause damage to organs (central nervous system) through prolonged or repeated exposure (Oral).
Other information	: Likely routes of exposure: ingestion, inhalation, skin and eye.

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SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : Very toxic to aquatic life with long lasting effects.

Benzene (71-43-2)	
LC50 - Fish [1]	10.7 – 14.7 mg/l (Exposure time: 96 h - Species: Pimephales promelas [flow-through] Source: EPA)
EC50 - Crustacea [1]	8.76 – 15.6 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])
LC50 - Fish [2]	5.3 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss [flow-through] Source: EPA)
EC50 - Crustacea [2]	10 mg/l (Exposure time: 48 h - Species: Daphnia magna)
EC50 72h - Algae [1]	29 mg/l (Species: Pseudokirchneriella subcapitata)
EC50 72h - Algae [2]	100 mg/l Test organisms (species): Raphidocelis subcapitata (previous names: Pseudokirchneriella subcapitata, Selenastrum capricornutum)
NOEC chronic fish	0.8 mg/l Test organisms (species): Pimephales promelas Duration: '32 d'
2-Methyl-2-butene (513-35-9)	
LC50 - Fish [1]	4.99 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss [semi-static] Source: ECHA)
EC50 - Crustacea [1]	3 mg/l (Exposure time: 48 h - Species: Daphnia magna)

12.2. Persistence and degradability

DCPD (77-73-6)	
Persistence and degradability	Not readily biodegradable.
Benzene (71-43-2)	
Persistence and degradability	Readily biodegradable in water.

12.3. Bioaccumulative potential

DCPD (77-73-6)	
BCF - Fish [1]	58.9 – 384 Cyprinus carpio (Common carp)
BCF - Fish [2]	53 Lepomis macrochirus (Bluegill)
Bioaccumulative potential	The product presents low bioaccumulative potential in aquatic organisms.
Benzene (71-43-2)	
BCF - Fish [1]	3.5 – 4.4
Bioconcentration factor (BCF REACH)	> 2000
Partition coefficient n-octanol/water (Log Pow)	2.13 Source: CHemIDplus, IPCS
Bioaccumulative potential	not bioaccumulable.

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2-Methyl-2-butene (513-35-9)

BCF - Fish [1]

(low potential to bioaccumulate)

12.4. Mobility in soil

DCPD (77-73-6)

Ecology - soil

Product is volatile. Mobility in soil.

12.5. Other adverse effects

Effect on the ozone layer : No additional information available

Other information : Avoid release to the environment.

SECTION 13: Disposal considerations

13.1. Disposal methods





Regional legislation (waste) : Dispose of at authorized waste collection point.

Waste treatment methods : Dispose of contents/container in accordance with licensed collector's sorting instructions.

Additional information : Dispose of contaminated material at an authorized site. Do not re-use empty containers.

SECTION 14: Transport information

In accordance with DOT / TDG / IMDG / IATA

DOT	TDG	IMDG	IATA
14.1. UN number			
3295	UN3295	3295	3295
14.2. Proper Shipping Name			
Hydrocarbons, liquid, n.o.s. (DICYCLOPENTADIENE)	HYDROCARBONS, LIQUID, N.O.S. (DICYCLOPENTADIENE)	HYDROCARBONS, LIQUID, N.O.S. (DICYCLOPENTADIENE)	Hydrocarbons, liquid, n.o.s. (DICYCLOPENTADIENE)
14.3. Transport hazard class(es)			
3	3	3	3
			
14.4. Packing group			
II	II	II	II
14.5. Environmental hazards			
Dangerous for the environment: Yes	Dangerous for the environment: Yes	Dangerous for the environment: Yes Marine pollutant: Yes	Dangerous for the environment: Yes
Special precautions for user : Remarks : Special precautions: Refer to Section 7, Handling and Storage, for special precautions which a user needs to be aware of or is required to comply with regards to transport, Additional information : This product may be transport under nitrogen blanketing			

14.6. Special precautions for user

DOT

UN-No.(DOT) : UN3295

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DOT Special Provisions (49 CFR 172.102)	: 144 - If transported as a residue in an underground storage tank (UST), as defined in 40 CFR 280.12, that has been cleaned and purged or rendered inert according to the American Petroleum Institute (API) Standard 1604 (IBR, see 171.7 of this subchapter), then the tank and this material are not subject to any other requirements of this subchapter. However, sediments remaining in the tank that meet the definition for a hazardous material are subject to the applicable regulations of this subchapter. IB2 - Authorized IBCs: Metal (31A, 31B and 31N); Rigid plastics (31H1 and 31H2); Composite (31HZ1). Additional Requirement: Only liquids with a vapor pressure less than or equal to 110 kPa at 50 C (1.1 bar at 122 F), or 130 kPa at 55 C (1.3 bar at 131 F) are authorized. T7 - 4 178.274(d)(2) Normal..... 178.275(d)(3) TP1 - The maximum degree of filling must not exceed the degree of filling determined by the following: Degree of filling = $97 / 1 + a (tr - tf)$ Where: tr is the maximum mean bulk temperature during transport, and tf is the temperature in degrees celsius of the liquid during filling. TP8 - A portable tank having a minimum test pressure of 1.5 bar (150 kPa) may be used when the flash point of the hazardous material transported is greater than 0 C (32 F). TP28 - A portable tank having a minimum test pressure of 2.65 bar (265 kPa) may be used provided the calculated test pressure is 2.65 bar or less based on the MAWP of the hazardous material, as defined in 178.275 of this subchapter, where the test pressure is 1.5 times the MAWP.
DOT Packaging Exceptions (49 CFR 173.xxx)	: 150
DOT Packaging Non Bulk (49 CFR 173.xxx)	: 202
DOT Packaging Bulk (49 CFR 173.xxx)	: 242
DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27)	: 5 L
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75)	: 60 L
DOT Vessel Stowage Location	: B - (i) The material may be stowed "on deck" or "under deck" on a cargo vessel and on a passenger vessel carrying a number of passengers limited to not more than the larger of 25 passengers, or one passenger per each 3 m of overall vessel length; and (ii) "On deck only" on passenger vessels in which the number of passengers specified in paragraph (k)(2)(i) of this section is exceeded.
TDG	
UN-No. (TDG)	: UN3295
TDG Special Provisions	: 150 - An approved ERAP is required for the dangerous goods referred to in paragraph 7.2(1)(f) of Part 7 (Emergency Response Assistance Plan). SOR-2019-101
Explosive Limit and Limited Quantity Index	: 1 L
Excepted quantities (TDG)	: E2
Passenger Carrying Road Vehicle or Passenger Carrying Railway Vehicle Index	: 5 L
Emergency Response Guide (ERG) Number	: 128
IMDG	
Limited quantities (IMDG)	: 1 L
Excepted quantities (IMDG)	: E2
Packing instructions (IMDG)	: P001
IBC packing instructions (IMDG)	: IBC02
Tank instructions (IMDG)	: T7
Tank special provisions (IMDG)	: TP1, TP8, TP28
EmS-No. (Fire)	: F-E - FIRE SCHEDULE Echo - NON-WATER-REACTIVE FLAMMABLE LIQUIDS
EmS-No. (Spillage)	: S-D - SPILLAGE SCHEDULE Delta - FLAMMABLE LIQUIDS
Stowage category (IMDG)	: B
Properties and observations (IMDG)	: Immiscible with water.
MFAG-No	: 130
IATA	
PCA Excepted quantities (IATA)	: E2
PCA Limited quantities (IATA)	: Y341

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PCA limited quantity max net quantity (IATA)	: 1L
PCA packing instructions (IATA)	: 353
PCA max net quantity (IATA)	: 5L
CAO packing instructions (IATA)	: 364
CAO max net quantity (IATA)	: 60L
Special provision (IATA)	: A3, A324
ERG code (IATA)	: 3H

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

IBC code	: Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code :
IBC product name	: Dicyclopentadiene, Resin Grade, 81-89%.
Ship type	: Type 2
Pollutant category	: Y

SECTION 15: Regulatory information

15.1. US Federal regulations

DCPD (77-73-6)

Subject to reporting requirements of United States SARA Section 313

All components of this product are present and listed as Active on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory

Chemical(s) subject to the reporting requirements of Section 313 or Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986 and 40 CFR Part 372.

Benzene	CAS-No. 71-43-2	≤ 0.1%
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1,3-Pentadiene (504-60-9)

CERCLA RQ	100 lb
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Benzene (71-43-2)

Listed on EPA Hazardous Air Pollutant (HAPS)

CERCLA RQ	10 lb received an adjusted RQ of 10 lbs based on potential carcinogenicity in an August 14, 1989 final rule
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15.2. International regulations

DCPD (77-73-6)

Listed on the NCI (Vietnam - National Chemical Inventory)
Listed on TECI (Thailand Existing Chemicals Inventory)

1,3-Pentadiene (504-60-9)

Listed on the NCI (Vietnam - National Chemical Inventory)
Listed on TECI (Thailand Existing Chemicals Inventory)

DCPD

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Cyclopentadiene (542-92-7)

Listed on the NCI (Vietnam - National Chemical Inventory)
Listed on TECI (Thailand Existing Chemicals Inventory)

Benzene (71-43-2)

Listed on IARC (International Agency for Research on Cancer)
Listed as carcinogen on NTP (National Toxicology Program)
Listed on the NCI (Vietnam - National Chemical Inventory)
Listed on TECI (Thailand Existing Chemicals Inventory)

Cyclopentene (142-29-0)

Listed on the NCI (Vietnam - National Chemical Inventory)

cyclopentane (287-92-3)

Listed on the NCI (Vietnam - National Chemical Inventory)
Listed on TECI (Thailand Existing Chemicals Inventory)

2-Methyl-2-butene (513-35-9)

Listed on the NCI (Vietnam - National Chemical Inventory)
Listed on TECI (Thailand Existing Chemicals Inventory)

1,3-Pentadiene, (E)- (2004-70-8)

Listed on the NCI (Vietnam - National Chemical Inventory)

1,3-Pentadiene, (Z)- (1574-41-0)

Listed on the NCI (Vietnam - National Chemical Inventory)

15.3. US State regulations

DCPD (77-73-6)

State or local regulations	U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List U.S. - Minnesota - Hazardous Substance List U.S. - Massachusetts - Right To Know List
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WARNING:

This product can expose you to Benzene, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

Component	State or local regulations
1,3-Pentadiene(504-60-9)	U.S. - Massachusetts - Right To Know List; U.S. - New Jersey - Right to Know Hazardous Substance List; U.S. - Pennsylvania - RTK (Right to Know) List
Cyclopentadiene(542-92-7)	U.S. - New Jersey - Right to Know Hazardous Substance List

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Component	State or local regulations
Benzene(71-43-2)	U.S. - New Jersey - Right to Know Hazardous Substance List; U.S. - Pennsylvania - RTK (Right to Know) List; U.S. - Minnesota - Hazardous Substance List; U.S. - Massachusetts - Right To Know List; U.S. - Pennsylvania - RTK (Right to Know) - Special Hazardous Substances; U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List; U.S. - Maine - Chemicals of Concern
Cyclopentene(142-29-0)	U.S. - New Jersey - Right to Know Hazardous Substance List; U.S. - Pennsylvania - RTK (Right to Know) List; U.S. - Massachusetts - Right To Know List
cyclopentane(287-92-3)	U.S. - New Jersey - Right to Know Hazardous Substance List
2-Methyl-2-butene(513-35-9)	U.S. - New Jersey - Right to Know Hazardous Substance List; U.S. - Pennsylvania - RTK (Right to Know) List; U.S. - Massachusetts - Right To Know List

SECTION 16: Other information

according to US HazCom 2012

Revision date

: 13 October 2023

Data sources

: MSDS. CSR - Chemical Safety Report.

Abbreviations and acronyms	
ACGIH	ACGIH (American Conference of Government Industrial Hygienists)
CLP	CLP - Classification, Labelling and Packaging
CSR	CSR - Chemical Safety Report
EC	EC - European Community
GHS	GHS - Globally Harmonised System
EEC	EEC - European Economic Community
SDS	SDS - Safety Data Sheet
REACH	REACH - Registration, Evaluation, Authorisation and Restriction of Chemicals
PVC	PVC (Polyvinyl chloride).

Safety Data Sheet (SDS), USA - Braskem

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product. It warns that the handling of any chemical substance requires the previous knowledge of its hazards for the user. It is up to the user of the product company providing this SDS to and promote the training of its employees about possible risks come upon of the product. The information contained herein is not absolute, but only general information on the use of the chemical and indication of safety and security measures.