



Material Safety Data

Product Name : DCPD

긴급전화번호 (Emerhency Telephone Number)

061 - 688 - 6140 (주간, Day)

061 - 688 - 6284 (야간, Night)

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

1. Product

○ Product Name : DCPD

○ UN NO. : 1993

2. Advisable use and Restriction

○ Advisable use : Raw material for producing Petroleum resin

○ Restriction : Do not handle until all safety precautions have been read and understood.

3. Manufacturer information

○ Manufacture company : YEOCHUN NCC

○ Address: 2 Yeosusandan-3ro(205-6,Pyeongyeo-dong), Yeosu, Jeollanam-Do, Korea (555-210)

○ Telephone: 82-61-688-6140 (Day) / 82-61-688-6284 (Night)

2. HAZARD IDENTIFICATION

1. Hazard classification

- FLAMMABLE LIQUIDS Category 2
- ACUTE TOXICITY(Oral) Category 4
- ACUTE TOXICITY(Inhalation-Dust/mist) Category 4
- SKIN CORROSION/IRRITATION Category 2
- SERIOUS EYE DAMAGE/EYE IRRITATION Category 2
- CARCINOGENICITY Category 1A
- GERM CELL MUTAGENICITY Category 1B
- SPECIFIC TARGET ORGAN TOXICITY SINGLE EXPOSURE Category 3(Respiratory tract irritation)
- SPECIFIC TARGET ORGAN TOXICITY REPEATED EXPOSURE Category 2
- ASPIRATION HAZARD Category 1
- LONG-TERM AQUATIC HAZARD Category 2

2. Allocation label elements

○ Symbol



○ Signal Word : Danger

○ Hazard statements

H225 Highly flammable liquid and vapour.

H302 Harmful if swallowed.

H304 May be fatal if swallowed and enters airways.

H315 Causes skin irritation.

H319 Causes serious eye irritation.

H332 Harmful if inhaled.

H335 May cause respiratory irritation.

H340 May cause genetic defects.

H350 May cause cancer.

H373 Causes damage to organs(blood vessel system) through prolonged or repeated exposure.

H411 Toxic to aquatic life with long lasting effects.

○ 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.

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.

P264 Wash thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

P271 Use only outdoors or in a well-ventilated area.

P273 Avoid release to the environment.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

– Response

P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.

P301 + P312 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.

P302 + P352 IF ON SKIN: Wash with plenty of soap and water.

P303 + P361 + P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing.
Rinse skin with water/shower.

P304 + P340 IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.

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.

P312 Call a POISON CENTER or doctor/physician if you feel unwell.

P314 Get medical advice/attention if you feel unwell.

P321 Specific treatment.

P330 Rinse mouth.

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 + P364 Take off contaminated clothing and wash it before reuse.
 P370 + P378 In case of fire: Use alcohol foam, carbon dioxide or water spray for extinction.
 P391 Collect spillage.

– 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 (in accordance with local/ regional/ national/ international regulation)

3. Other hazard information not included in hazard classification (NFPA)

Chemical Name	NFPA Level		
	Health	Flammability	Reactivity
Dicyclopentadiene	3	3	1
NAPHTHA, PETROLEUM, LIGHT STRAIGHT-RUN	3	4	0
Benzene	1	3	0

3. INGREDIENT INFORMATION

Components	Common name	CAS No.	PCT(W%)
Dicyclopentadiene	DCPD	77-73-6	75 ~ 83
NAPHTHA, PETROLEUM, LIGHT STRAIGHT-RUN	NAPHTHA, PETROLEUM, LIGHT STRAIGHT-RUN	64741-46-4	15 ~ 25
Benzene	Benzene	71-43-2	0.5 ~ 2

4. FIRST AID MEASURES

1. Following eye contact

- Get medical aid immediately.
- Seek immediate medical assistance.
- _ In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.

2. Following skin contact

- _ For hot product, immediately immerse in or flush the affected area with large amounts of cold water to dissipate heat.
- For minor skin contact, avoid spreading material on unaffected skin.
- Get medical aid immediately.
- _ In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
- Wash skin with soap and water.
- _ In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.

- Launder contaminated clothing and shoes before re-use.
- Remove and isolate contaminated clothing and shoes.
- Seek immediate medical assistance.

3. Following inhalation

- Administer oxygen if breathing is difficult.
- Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
- Give artificial respiration if victim is not breathing.
- Keep victim warm and quiet.
- Move to fresh air.
- Seek immediate medical assistance.

4. Following ingestion

- Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
- Get medical aid immediately.
- If unconscious but breathing, never give anything by mouth.
- Seek immediate medical assistance.

5. Advice to physician

- Do not apply drugs of the adrenaline ephedrine group.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Exposures require specialized first aid with contact and medical follow-up .

5. FIRE FIGHTING MEASURES

1. Suitable/Unsuitable extinguishing media

- Suitable extinguishing media
 - CO₂.
 - Dry chemical.
 - For mixtures containing alcohol or polar solvent: Alcohol-resistant foam.
 - Regular foam.
 - Use alcohol foam, carbon dioxide, or water spray when fighting fires involving this material.
 - Use dry sand or earth to smother fire.
 - Water spray.
- Unsuitable extinguishing media
 - Direct water.
 - High-pressure water.

2. Specific hazards arising from the chemical

- Pyrolytic product
 - Can decompose at high temperatures forming toxic gases.
 - During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.
- Risk of fire and explosion

- Can form explosive mixtures at temperatures at or above the flashpoint.
- Containers may explode when heated.
- Fire may produce irritating and/or toxic gases.
- HIGHLY FLAMMABLE: Will be easily ignited by heat, sparks or flames.
- Highly flammable liquid and vapour.
- May ignited from heat, friction or contamination.
- May violently polymerize and result in fire and explosion.
- Runoff may create fire or explosion hazard.
- When heated, vapors may form explosive mixtures with air: indoors, outdoors and sewers explosion hazards.
- Vapor explosion hazard indoors, outdoors or in sewers.
- Vapors may form explosive mixtures with air.
- Vapors may travel to source of ignition and flash back.

3. Special protective equipment for firefighters

- Cautions : Most of liquids are lighter than water.
- Contact may cause burns to skin and eyes.
- Dike fire-control water for later disposal; do not scatter the material.
- Evacuate area and fight fire from a safe distance.
- Fire involving Tanks: ALWAYS stay away from tanks engulfed in fire.
- Fire involving Tanks: Cool containers with flooding quantities of water until well after fire is out.
- Fire involving Tanks: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Fire involving Tanks: For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.
- Fire involving Tanks: Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Move containers from fire area if you can do it without risk.
- Rescuers should put on appropriate protective gear.
- Runoff may cause pollution.
- Substance may be transported hot.

6. ACCIDENTAL RELEASE MEASURES

1. Health considerations and protective equipment

- A vapor suppressing foam may be used to reduce vapors.
- All equipment used when handling the product must be grounded.
- Clean up spills immediately, observing precautions in Protective Equipment section.
- Cover with plastic sheet to prevent spreading.
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Do not touch or walk through spilled material.
- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Isolate hazard area.
- Keep unnecessary and unprotected personnel from entering.
- Please note that materials and conditions to be avoided.
- Stop leak if you can do it without risk.
- The very fine particles can cause a fire or explosion, eliminate all ignition sources.

- Ventilate the contaminated area.
- 2. Environmental precautions
 - Keep out of waterways.
 - Prevent entry into waterways, sewers, basements or confined areas.
- 3. For cleaning up
 - Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
 - Absorb spill with inert material (e.g., dry sand or earth), then place in a chemical waste container.
 - Absorb the liquid and scrub the area with detergent and water.
 - Dike and collect water used to fight fire.
 - Large Spill: Dike far ahead of liquid spill for later disposal.
 - Small Spill: Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal.
 - Small Spill: Flush area with flooding quantities of water.
 - Use clean non-sparking tools to collect absorbed material.
 - With clean shovel place material into clean, dry container and cover loosely; move containers from spill area.

7. HANDLING AND STORAGE

1. Precautions for safe handling
 - Avoid any skin and eye contact when insert undiluted solution. Wash ... thoroughly after handling.
 - Caution: Dangerous fire hazard when exposed to heat, or flame, sparks.
 - Use adequate machine for prevention when package handling.
 - Wear an appropriate Personal protection. (See Exposure Controls/Personal Protection section.)
2. Conditions for safe storage (including any incompatibilities)
 - Choose a place that can be protected from strong oxidizers and acid.
 - Drum Handling: Must work at safe place., Loading more than 3 stack is prohibited.
 - Store containers: AVOID the place where can be damage and contamination.
 - Store in a cool/low-temperature, well-ventilated {dry} place {away from heat and ignition sources}

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

1. Exposure exposure limits, Biological exposure standard :

Components	Occupational exposure	ACGIH	Biological standard
Dicyclopentadiene	TWA : 5ppm	TWA : 5ppm	No data available
NAPHTHA, PETROLEUM, LIGHT STRAIGHT-RUN	No data available	No data available	No data available
Benzene	TWA : 0.5ppm STEL : 2.5ppm	TWA : 0.5ppm STEL : 2.5ppm	Based on 1ppm. Muconic acid 1 mg/g crea

2. Appropriate engineering controls
 - Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.
 - If user operations generate dust, fume, or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

- _ Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.
- _ Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits.

3. Personal protection equipment

- Respiratory protection
 - _ If high frequency of use or exposure, wear air respirator.
 - _ Wear breathing protection, which needs a confirmation from the Korea Occupational Safety and Health Agency.
- Eye protection
 - _ Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.
 - _ Provide emergency showers and eyewash.
 - _ Wear face shield to protect eyes from scattering dust or hazardous liquid.
 - _ Wear suitable protective goggles and face shields.
- Hand protection
 - _ Wear Non-moisture permeable chemical resistance protective gloves(latex, nitrile rubber, PC) for prevent skin contact.
 - _ Wear insulated gloves.
 - _ Wear suitable protective gloves.
- Body protection
 - _ Wear suitable protective clothing.
 - _ When contact is likely wear chemical resistant, oil and grease resistant, non-moisture permeable shoes and clothes.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Colorless transparent liquid
Odour	Camphor-like odour
Odour threshold	0.003 ppm
pH Values	N/A
Melting point/freezing point	Not more than -60℃
Initial boiling point and boiling range	59 ~ 178℃
Flash point	-8 ℃
Evaporation rate	No data available
Flammability(solid, gas)	Flammable liquid
Upper/lower flammability or explosive limits	0.8 ~ 6.3 Vol %
Vapour pressure	Less than 1 kPa (25 ℃)
Solubility(ies)	26.5 mg/l (25℃, Water)
Vapor Densities	4.56 (Air = 1)
Relative density	0.95 (60/60°F)

n-octanol/water partition coefficient	3.16 (Log Kow)
Auto ignition temperature	503 °C
Decomposition temperature	No data available
Viscosity	4cP (mPas (20 °C))
Molecular weight(mass)	132.2

10. STABILITY AND REACTIVITY

1. Stability and hazardous reactivity

- Can decompose at high temperatures forming toxic gases.
- Can form explosive mixtures at temperatures at or above the flashpoint.
- Containers may explode when heated.
- Fire may produce irritating and/or toxic gases.
- Fire may produce irritating, corrosive and/or toxic gases.
- HIGHLY FLAMMABLE: Will be easily ignited by heat, sparks or flames.
- Highly flammable liquid and vapour.
- May cause toxic effects if inhaled.
- May violently polymerize and result in fire and explosion.
- When heated, vapors may form explosive mixtures with air: indoors, outdoors and sewers explosion hazards.
- Runoff may create fire or explosion hazard.
- Some liquids produce vapors that may cause dizziness or suffocation.
- Some may burn but none ignite readily.
- Stable under normal temperatures and pressures.
- Vapor explosion hazard indoors, outdoors or in sewers.
- Vapors may form explosive mixtures with air.

2. Conditions to avoid

- Heat.
- Ignition source(heat, spark, flame, etc.).

3. Materials to avoid

- Combustibles, reducing material.
- Irritating and/or toxic gas.

4. Hazardous decomposition products

- Corrosive/toxic fume.
- During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.
- Irritating, corrosive and/or toxic gas.

11. TOXICOLOGICAL INFORMATION

1. Exposure route information

- Oral, Dermal, Inhalation exposure is possible since Volatile liquid.

2. Health hazard information

- ※ No data of the product. thus data was described by the product component.

○ Acute toxicity

● Oral PRODUCT : Category 4 (ATE mix = 648.10 mg/kg)

- Dicyclopentadiene : Category 4 / LD50 512 mg/kg Rat (Rat, male, OECD Guideline 401, GLP)
- NAPHTHA, PETROLEUM, LIGHT STRAIGHT-RUN : N/A / LD50 5000 mg/kg Rat ※ ECHA
- Benzene : N/A / LD50 4700 mg/kg Mouse

● Dermal PRODUCT : N/A (ATE mix > 2000 mg/kg)

- Dicyclopentadiene : N/A / LD50 > 2000 mg/kg Rabbit (OECD Guideline 402, GLP)
- NAPHTHA, PETROLEUM, LIGHT STRAIGHT-RUN : N/A / LD50 > 2000 mg/kg/24h Rabbit ※ ECHA
- Benzene : N/A / LD50 > 8260 mg/kg Rat

● Inhalation-Gases PRODUCT : N/A

- Dicyclopentadiene : N/A
- NAPHTHA, PETROLEUM, LIGHT STRAIGHT-RUN : N/A
- Benzene : N/A

● Inhalation-Vapours PRODUCT : N/A (ATE mix = 4450 mg/L)

- Dicyclopentadiene : No data
- NAPHTHA, PETROLEUM, LIGHT STRAIGHT-RUN : No data
- Benzene : N/A / LC50 44.5 mg/L/4h Rat

● Inhalation-Dust/mist PRODUCT : Category 4 (ATE mix = 1.01 mg/L)

- Dicyclopentadiene : Category 3 / LC50 0.800 mg/L (145.5 ppm/4h Rat (OECD Guideline 403))
- NAPHTHA, PETROLEUM, LIGHT STRAIGHT-RUN : N/A
- Benzene : N/A

○ SKIN CORROSION/IRRITATION PRODUCT : Category 2

- Dicyclopentadiene : Category 2 / Skin corrosion/inflammatory test using rabbits resulted in reversible erythema and edema and moderate irritation. (OECD Guideline 404, GLP)
- NAPHTHA, PETROLEUM, LIGHT STRAIGHT-RUN : No data
- Benzene : Category 2 / Irritating Rabbit

○ SERIOUS EYE DAMAGE/EYE IRRITATION PRODUCT : Category 2

- Dicyclopentadiene : Category 2 / Severe eye damage/stimulation test result using rabbit showed reversible conjunctival edema and conjunctival damage within an hour, but recovered at 24, 48, 72 hours and no irritation was observed. (OECD Guideline 405, GLP)
- NAPHTHA, PETROLEUM, LIGHT STRAIGHT-RUN : No data
- Benzene : Category 2 / Irritating Rabbit

○ RESPIRATORY SENSITIZATION PRODUCT : No data

- Dicyclopentadiene : No data
- NAPHTHA, PETROLEUM, LIGHT STRAIGHT-RUN : No data
- Benzene : No data

○ SKIN SENSITIZATION PRODUCT : N/A

- Dicyclopentadiene : N/A / Not sensitising Guinea pig (OECD Guideline, 406 GLP)
- NAPHTHA, PETROLEUM, LIGHT STRAIGHT-RUN : No data
- Benzene : N/A / Not sensitising Guinea pig

○ CARCINOGENICITY PRODUCT : Category 1A

- Dicyclopentadiene : No data
 - OSHA : No data
 - Notice of Employment and Labor : No data

- NTP : No data
- IARC : No data
- EU CLP : No data
- ACGIH : No data
- NAPHTHA, PETROLEUM, LIGHT STRAIGHT–RUN : N/A / Not applicable if benzene content is less than 0.1%.
- OSHA : N/A
- Notice of Employment and Labor : N/A
- NTP : N/A
- IARC : N/A
- EU CLP : N/A / Not applicable if benzene content is less than 0.1%.
- ACGIH : N/A
- Benzene : 1A
- OSHA : No data
- Notice of Employment and Labor : No data
- NTP : K
- IARC : 1
- EU CLP : 1A
- ACGIH : A1

○ GERM CELL MUTAGENICITY PRODUCT : Category 1B

- Dicyclopentadiene : N/A / Results of a test on the nucleus using in vivo mammalian red blood cells – Negative (OECD Guideline 474, GLP)
- NAPHTHA, PETROLEUM, LIGHT STRAIGHT–RUN : N/A / Negative – in vitro cell mutation test ** EU CLP: 1B(Does not apply this classification if the substance contains benzene less than 0.1% in weight ratio.)
- Benzene : 1B / Test results for chromosome aberrations using mammalian culture cells in vitro show positive effects. (OECD TG 473, OECD TG 479)

○ REPRODUCTIVE TOXICITY PRODUCT : N/A

- Dicyclopentadiene : N/A / Developmental toxicity test using rats results in pulmonary congestions, swelling of adrenal glands, and bleeding of gastric mucosa and thymus. (developmental toxicity NOAEL = 20 mg/kg) (OECD Guideline 422, GLP) The results of the maternal toxicity/teratogenic test using rats have no significant effect (maternal toxicity NOAEL = 750 ppm, teratogenicity NOAEL = 750 ppm) (EPA OPP 83–3).
- NAPHTHA, PETROLEUM, LIGHT STRAIGHT–RUN : N/A / 6–19 days after conception, 6 hours of inhalation exposure a day shows no maternal and developmental toxicity up to 9000 ppm concentration.
- Benzene : N/A / No evidence of malformation at the highest concentration was observed as a result of inhalation development toxicity test using rats. (NOAEC = 32 mg/m³ air)(OECD TG 414, GLP)

○ SPECIFIC TARGET ORGAN TOXICITY SINGLE EXPOSURE PRODUCT : Category 3(Respiratory tract irritation)

- Dicyclopentadiene : Category 3(Respiratory tract irritation) / Inhalation toxicity test result using rats resulted in quadriplegia, kidney, respiratory system, and liver damage.
- NAPHTHA, PETROLEUM, LIGHT STRAIGHT–RUN : No data
- Benzene : N/A / High concentration exposure indicates paralysis and mucous bleeding in the limbs, urinary tract, eyes and nose of rats.

○ SPECIFIC TARGET ORGAN TOXICITY REPEATED EXPOSURE PRODUCT : Category 2

- Dicyclopentadiene : N/A / No toxic effects related to test substances were observed to the highest concentration tested as a result of the 90–day repeat inhalation toxicity test (OECD TG413) using rats. NOAEC = 50 ppm (276 mg/m³)

- NAPHTHA, PETROLEUM, LIGHT STRAIGHT-RUN : No data
- Benzene : Category 1 / Cases of death from dysplasia of bone marrow, hyperplasia or blood cell reduction, blood toxicity, and dysplastic anemia have been reported in humans.
- ASPIRATION HAZARD PRODUCT : Category 1
 - Dicyclopentadiene : Category 1 / Dynamic viscosity = 1~5 mPa s (at 20 °C)
 - NAPHTHA, PETROLEUM, LIGHT STRAIGHT-RUN : No data
 - Benzene : Category 1 / The direct aspiration of liquid benzene into the lungs causes Pulmonary edema and bleeding occur. Human

12. ECOLOGICAL INFORMATION

1. Aquatic toxicity PRODUCT

- ACUTE AQUATIC HAZARD : Not classified, LONG-TERM AQUATIC HAZARD : Category 2

● Fish

- Dicyclopentadiene : LC50 157 mg/L/96h Fish(Ictalurus punctatus)
- NAPHTHA, PETROLEUM, LIGHT STRAIGHT-RUN : No data
- Benzene : LC50 5.3 mg/L/96h Fish(Oncorhynchus mykiss)

● Crustacea

- Dicyclopentadiene : EC50 4.2 mg/L/48h Aquatic invertebrates(Daphnia pulex(other guideline: ASTM (1980) E728-80))
- NAPHTHA, PETROLEUM, LIGHT STRAIGHT-RUN : No data
- Benzene : EC50 10 mg/L/48h Aquatic invertebrates(Daphnia magna)

● Aquatic algae

- Dicyclopentadiene : EbC50 27 mg/L/72h (Pseudokirchnerella subcapitata, OECD Guideline 201)
- NAPHTHA, PETROLEUM, LIGHT STRAIGHT-RUN : EC50 6.5 mg/L/72h Selenastrum capricornutum
- Benzene : EC50 32 mg/L/72h Aquatic algae(Selenastrum capricornutum)

2. Persistence and degradation

● Degradation

- Dicyclopentadiene : No data
- NAPHTHA, PETROLEUM, LIGHT STRAIGHT-RUN : No data
- Benzene : Disassembled in anaerobic condition.

● n-octanol water partition coefficient

- Dicyclopentadiene : 0.94 log Kow
- NAPHTHA, PETROLEUM, LIGHT STRAIGHT-RUN : 6 log Kow ~ 2.1 log Kow
- Benzene : 2.13 log Kow

3. Bioaccumulative potential

● Bioaccumulation

- Dicyclopentadiene : 384
- NAPHTHA, PETROLEUM, LIGHT STRAIGHT-RUN : No data
- Benzene : BCF 3.5~24

● Biodegradation

- Dicyclopentadiene : 0 % 28 day (OECD TG301F, GLP)
- NAPHTHA, PETROLEUM, LIGHT STRAIGHT-RUN : No data
- Benzene : 50 % 28 day

4. Mobility in soil

- Soil adsorption coefficient(Koc)

- Dicyclopentadiene : Koc 1800
- NAPHTHA, PETROLEUM, LIGHT STRAIGHT-RUN : No data
- Benzene : 134.1 Koc

5. Other adverse effects

- Hazardous to ozone layer

- Dicyclopentadiene : N/A
- NAPHTHA, PETROLEUM, LIGHT STRAIGHT-RUN : N/A
- Benzene : N/A

- Others

- Dicyclopentadiene : LONG-TERM AQUATIC HAZARD Category 2 / Fish:Lepomis macrochirus: NOEC, 14d, = 0.98 mg/L, OECD TG 204, Aquatic algae:Pseudokirchnerella subcapitata: NOEC, 72h, = 18 mg/L, OECD Guideline 201
- NAPHTHA, PETROLEUM, LIGHT STRAIGHT-RUN : No data
- Benzene : LONG-TERM AQUATIC HAZARD Category 2 / NOEC 0.8 mg/L/32h Fish(Pimephales promelas)

13. DISPOSAL CONSIDERATIONS

1. Disposal methods

- Separating oil and water / Burning oil components / remaining water is treated in the water pollution control facilities.
- Dispose of container and unused contents in accordance with all applicable regulations.

2. Precautions (including disposal of contaminated container or package)

- Do not allow spill material to enter sewers, storm water drains, soil, etc.
- Empty containers may explode and residues can be ignited when pressured, cut, weld, heated.
- Empty containers may rupture when pressured.
- Empty containers recycled under environmental laws.
- Wear an appropriate Personal protection. (See Exposure Controls/Personal Protection section.)

14. TRANSPORT INFORMATION

1. UN No : 1993

2. Proper shipping name : FLAMMABLE LIQUID, N.O.S.

3. Class or division : 3

4. Packing group : II

5. Marine pollutant : Established

6. Special safety response for transportation or transportation measure :

○ Emergency measures in case of fire : F-E

○ Emergency measures in the effluent : S-E

* The product is chemically stable. (Stabilizer (Polymerization inhibitor) is included)

15. REGULATORY INFORMATION

- CLEAN AIR CONSERVATION ACT

- Benzene : Air Pollutants Subject to Watch for Harzard, Air pollutants, Specified Hazardous Air Pollutants, Volatile Organic Compound
- Dicyclopentadiene : Not established
- NAPHTHA, PETROLEUM, LIGHT STRAIGHT–RUN : Not established

- PERSISTENT ORGANIC POLLUTANTS CONTROL ACT

- Benzene : Not established
- Dicyclopentadiene : Not established
- NAPHTHA, PETROLEUM, LIGHT STRAIGHT–RUN : Not established

- WATER QUALITY AND AQUATIC ECOSYSTEM CONSERVATION ACT

- Benzene : Certain hazardous substances water, Water Pollutants
- Dicyclopentadiene : Not established
- NAPHTHA, PETROLEUM, LIGHT STRAIGHT–RUN : Not established

- HIGH–PRESSURE GAS SAFETY CONTROL ACT

- Benzene : Flammable gas, Toxic gas
- Dicyclopentadiene : Not established
- NAPHTHA, PETROLEUM, LIGHT STRAIGHT–RUN : Not established

- EU Classification (CLASSIFICATION)

- Benzene : F; R11 Xi; R36/38 Carc.Cat.1; R45 Muta.Cat.2; R46 T; R48/23/24/25 Xn; R65
- Dicyclopentadiene : F; R11 Xn; R20/22 Xi; R36/37/38 N; R51–53
- NAPHTHA, PETROLEUM, LIGHT STRAIGHT–RUN : Carc.Cat.2; R45 Muta.Cat.2; R46 Xn; R65

- EU Classification (Risk Phrases)

- Benzene : R11, R36/38, R45, R46, R48/23/24/25, R65
- Dicyclopentadiene : R11, R20/22, R36/37/38, R51–53
- NAPHTHA, PETROLEUM, LIGHT STRAIGHT–RUN : R45, R46, R65

- EU Classification (Safety Phrases)

- Benzene : S:53–45
- Dicyclopentadiene : S:(2)–36/37–61
- NAPHTHA, PETROLEUM, LIGHT STRAIGHT–RUN : S:53–45

- 2006/507/EC

- Benzene : Not established
- Dicyclopentadiene : Not established
- NAPHTHA, PETROLEUM, LIGHT STRAIGHT–RUN : Not established

- 689/2008/EC

- Benzene : Severe restriction as an industrial chemical for public use (except motor fuels subject to Directive 98/70/EC)
- Dicyclopentadiene : Not established
- NAPHTHA, PETROLEUM, LIGHT STRAIGHT–RUN : Not established

- Designation, Reportable Quantities, and Notification

- Benzene : 10 lb final RQ (received an adjusted RQ of 10 lbs based on potential carcinogenicity in an August 14, 1989 final rule); 4.54 kg final RQ (received an adjusted RQ of 10 lbs based on potential carcinogenicity in an August 14, 1989 final rule)

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- Dicyclopentadiene : Not established
 - NAPHTHA, PETROLEUM, LIGHT STRAIGHT-RUN : Not established
 - Emergency Planning and Notification
 - Benzene : Not established
 - Dicyclopentadiene : Not established
 - NAPHTHA, PETROLEUM, LIGHT STRAIGHT-RUN : Not established
 - Toxic Chemical Release Reporting – Community Right-to-Know
 - Benzene : 0.1 % de minimis concentration
 - Dicyclopentadiene : 1.0 % de minimis concentration
 - NAPHTHA, PETROLEUM, LIGHT STRAIGHT-RUN : Not established
 - Process Safety Management of Highly Hazardous Chemicals
 - Benzene : Not established
 - Dicyclopentadiene : Not established
 - NAPHTHA, PETROLEUM, LIGHT STRAIGHT-RUN : Not established
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16. OTHER INFORMATION

1. Reference

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 - Arch. Environm. Contam. Toxicol. 11,487–490
 - CRC Press Inc. Boca Raton. USA.
 - Chemical Safety Card: Dicyclopentadiene, ICSC:0873
 - Chemosphere 14 (10) 1589–1616
 - Chemosphere 24, 439–451
 - Computer model
 - EU CLP
 - Environ. Toxicol. Chem. 12, 711–717
 - HSDB
 - IARC
 - IUCLID
 - J. Am. College Toxicology 11, 275–282
 - Mutagenesis 11, 455–462
 - NTP
 - OECD HPV
 - OECD SIDS
 - OSHA
 - PIM 063
 - Progress in Mutation Research, 5: 187–199
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- Publication
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- Toxic. Appl. Pharmacol. 27, 183-193
- Toxicol. Appl. Pharmacol. 7, 599-565
- Toxicology 4, 5-15
- Toxicology and Applied Pharmacology 84, 93-114
- ECHA
- KOSHA

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4. Other

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