

SAFETY DATA SHEET



DI-CUP® R

1. PRODUCT AND COMPANY IDENTIFICATION

Company

Arkema Inc.
900 First Avenue
King of Prussia, Pennsylvania 19406

Functional Additives

Customer Service Telephone Number: (800) 331-7654
(Monday through Friday, 8:00 AM to 5:00 PM EST)

Emergency Information

Transportation: CHEMTREC: (800) 424-9300
(24 hrs., 7 days a week)
Medical: Rocky Mountain Poison Center: (866) 767-5089
(24 hrs., 7 days a week)

Product Information

Product name: DI-CUP® R
Synonyms: Dicumyl peroxide
Molecular formula: [C6H5C(CH3)2O]2
Chemical family: Dicumyl peroxide
Product use: initiator/catalyst

SECTION 2: HAZARDS IDENTIFICATION

Emergency Overview

Color: White - yellow (Slightly)
Physical state: solid
Form: crystalline
Odor: pungent, unpleasant

***Classification of the substance or mixture:**

Organic peroxides, Type F, H242
Skin irritation, Category 2, H315
Eye irritation, Category 2B, H320
Reproductive toxicity, Category 1B, H360
Chronic aquatic toxicity, Category 2, H411

*For the full text of the H-Statements mentioned in this Section, see Section 16.

GHS-Labeling

Hazard pictograms:



Signal word:

Danger

Hazard statements:

- H242 : Heating may cause a fire.
- H315 + H320 : Causes skin and eye irritation.
- H360 : May damage fertility or the unborn child.
- H411 : Toxic to aquatic life with long lasting effects.

Supplemental Hazard Statements:

- May form combustible dust concentrations in air.
- Organic peroxide.
- Hazardous decomposition may occur.

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.
- P220 : Keep/Store away from clothing/ combustible materials.
- P234 : Keep only in original container.
- P264 : Wash skin thoroughly after handling.
- P273 : Avoid release to the environment.
- P280 : Wear protective gloves or eye protection or face protection.
- P281 : Use personal protective equipment as required.

Response:

- P302 + P352 : IF ON SKIN: Wash with plenty of soap and water.
- 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.
- 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.
- P391 : Collect spillage.

Storage:

- P405 : Store locked up.
- P410 : Protect from sunlight.
- P411 + P235 : Maximum storage temperature is specified on label and in section 7 of SDS. Keep cool.
- P420 : Store away from other materials.

Disposal:

- P501 : Dispose of contents or container to an approved waste disposal plant.

Supplemental information:**Potential Health Effects:**

Mechanical irritation effects from dust exposure are possible at ambient temperature.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS-No.	Wt/Wt	GHS Classification**
Peroxide, bis(1-methyl-1-phenylethyl)	80-43-3	>= 99 - <= 100 %	H242, H315, H320, H360, H411

**For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: FIRST AID MEASURES

4.1. Description of necessary first-aid measures:

Inhalation:

If inhaled, remove victim to fresh air.

Skin:

In case of contact, immediately flush skin with plenty of water. Get medical attention. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse.

Eyes:

Immediately flush eye(s) with plenty of water. Get medical attention.

Ingestion:

If swallowed, DO NOT induce vomiting. Get medical attention. Never give anything by mouth to an unconscious person.

4.2. Most important symptoms and effects, both acute and delayed:

For most important symptoms and effects (acute and delayed), see Section 2 (Hazard Statements and Supplemental Information if applicable) and Section 11 (Toxicology Information) of this SDS.

4.3. Indication of any immediate medical attention and special treatment needed:

Unless otherwise noted in Notes to Physician, no specific treatment noted; treat symptomatically.

SECTION 5: FIREFIGHTING MEASURES

Extinguishing media (suitable):

Water spray, Foam, Dry chemical

Extinguishing media (unsuitable):

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High volume water jet

Protective equipment:

Fire fighters and others who may be exposed to products of combustion should wear full fire fighting turn out gear (full Bunker Gear) and self-contained breathing apparatus (pressure demand / NIOSH approved or equivalent).

Further firefighting advice:

Do not use a solid stream of water.

A solid stream of water can cause a dust explosion.

Fight fire with large amounts of water from a safe distance.

Cool closed containers exposed to fire with water spray.

Closed containers of this material may explode when subjected to heat from surrounding fire.

After a fire, wait until the material has cooled to room temperature before initiating clean-up activities.

Do not allow run-off from fire fighting to enter drains or water courses.

Fire fighting equipment should be thoroughly decontaminated after use.

Fire and explosion hazards:

Dust clouds generated during handling and/or storage can form explosive mixtures with air. Dust explosion characteristics vary with the particle size, particle shape, moisture content, contaminants, and other variables.

Note: Check that all equipment is properly grounded and installed to satisfy electrical classification requirements. As with any dry material, pouring this material or allowing it to free-fall or to be conveyed through chutes or pipes can accumulate and generate electrostatic sparks, potentially causing ignition of the material itself, or of any flammable materials which may come into contact with the material or its container.

Contact with incompatible materials or exposure to temperatures exceeding the SADT may result in a self accelerating decomposition reaction with release of flammable vapors which may autoignite.

When burned, the following hazardous products of combustion can occur:

Carbon oxides

Aromatic derivatives

Hazardous organic compounds

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, Emergency procedures, Methods and materials for containment/clean-up:

Prevent further leakage or spillage if you can do so without risk. Evacuate area of all unnecessary personnel. Ventilate the area. Eliminate all ignition sources. Avoid dust formation and dispersal of dust in the air. Wet down (dampen) the spilled material with water. Sweep or scoop up using non-sparking tools and place into suitable properly labeled containers for prompt disposal. The sweepings should be wetted down further with water. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Implement workplace practices such that dusts are not allowed to accumulate on surfaces, as these may form an explosive mixture if they are released into the atmosphere in sufficient concentration. Consult a regulatory specialist to determine appropriate state or local reporting requirements, for assistance in waste characterization and/or hazardous waste disposal and other requirements listed in pertinent environmental permits.

Protective equipment:

Appropriate personal protective equipment is set forth in Section 8.

SECTION 7: HANDLING AND STORAGE**Handling****General information on handling:**

Contact with materials to avoid or exposure to temperatures exceeding the SADT may result in a self-accelerating decomposition reaction with release of flammable vapors which may autoignite.

Do not taste or swallow.

Do not get in eyes, on skin, or on clothing.

Do not breathe dust.

Keep away from heat, sparks and flames.

No smoking.

Use only with adequate ventilation.

Wash thoroughly after handling.

Prevent product contamination.

Keep container tightly closed and away from combustible materials.

Keep only in the original container.

Avoid creating dust in handling, transfer or clean up.

Prevent dust accumulation.

Implement routine housekeeping practices to ensure that dusts do not accumulate on surfaces.

Check that all equipment is properly grounded and installed to satisfy electrical classification requirements.

Dry powders can build static electricity charges when subjected to the friction of transfer and mixing operations.

Container hazardous when empty.

Follow label warnings even after container is emptied.

RESIDUAL DUSTS MAY EXPLODE ON IGNITION.

DO NOT CUT, DRILL, GRIND, OR WELD ON OR NEAR THIS CONTAINER.

Do not reuse container as it may retain hazardous product residue.

Improper disposal or reuse of this container may be dangerous and/or illegal.

Emptied container retains product residue.

Storage**General information on storage conditions:**

Keep in a dry, cool place. Store in closed containers, in a secure area to prevent container damage and subsequent spillage. Segregated or detached storage is preferred. Store in well ventilated area away from heat and sources of ignition such as flame, sparks and static electricity. Ensure that all storage and handling equipment is properly grounded and installed to satisfy electrical classification requirements. Store out of direct sunlight in a cool well-ventilated place. Store in original container. Store away from combustibles and materials to avoid. Refer also to National Fire Protection Association (NFPA) Code 400, Hazardous Materials Code. Static electricity may accumulate when transferring material. All metal and groundable storage containers, including but not limited to drums, cylinders, Returnable Intermodal Bulk Containers (RIBCs) and Class C Flexible Intermodal Bulk Containers (FIBCs) must be bonded and grounded during filling and emptying operations. Observe all federal, state and local regulations and National Fire Protection Association (NFPA) Codes, which pertain to the specific local conditions of storage and use, including NFPA 654.

Storage stability – Remarks:

Follow the recommended storage temperatures provided in this Section in order to maintain stability and oxygen content.

Storage incompatibility – General:

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Store away from excessive heat, sources of ignition, and reactive materials. Store separate from:

Strong acids
Strong oxidizing agents
Reducing agents
Accelerators
Friedel - Crafts reaction catalyst
Brass
Copper
Iron

For all Organic Peroxides, compatible materials of contact are stainless steel 304 or 316 (preferred), high-density polyethylene (HDPE), polytetrafluoroethylene or glass linings.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Airborne Exposure Guidelines:

Engineering controls:

Investigate engineering techniques to reduce exposures below airborne exposure limits or to otherwise reduce exposures. Provide ventilation if necessary to minimize exposures or to control exposure levels to below airborne exposure limits (if applicable see above). If practical, use local mechanical exhaust ventilation at sources of air contamination such as open process equipment.

Check that all dust control equipment such as local exhaust ventilation, material transport systems, and air-material separation devices involved in handling this product contain explosion relief vents or an explosion suppression system or an oxygen-deficient environment. Isolation devices may be appropriate to prevent propagation from one unit to another. Ensure that dust-handling systems are designed in a manner to prevent the escape of dust into the work area (i.e., there is no leakage from the equipment). Consult ACGIH ventilation manual or NFPA Standard 91 for design of exhaust systems.

Respiratory protection:

Do not breathe dust. Where airborne exposure is likely or airborne exposure limits are exceeded (if applicable, see above), use NIOSH approved respiratory protection equipment appropriate to the material and/or its components. Full facepiece equipment is recommended and, if used, replaces need for face shield and/or chemical goggles. Consult respirator manufacturer to determine appropriate type equipment for a given application. Observe respirator use limitations specified by NIOSH or the manufacturer. For emergency and other conditions where there may be a potential for significant exposure or where exposure limit may be significantly exceeded, use an approved full face positive-pressure, self-contained breathing apparatus or positive-pressure airline with auxiliary self-contained air supply. Respiratory protection programs must comply with 29 CFR § 1910.134.

Skin protection:

Wear appropriate chemical resistant protective clothing and chemical resistant gloves to prevent skin contact. Consult glove manufacturer to determine appropriate type glove material for given application. Rinse immediately if skin is contaminated. Wash contaminated clothing and clean protective equipment before reuse. Provide a safety shower at any location where skin contact can occur. Wash thoroughly after handling.

Eye protection:

Where there is potential for eye contact, wear chemical goggles and have eye flushing equipment immediately available.

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SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Color:	White - yellow (Slightly)
Physical state:	solid
Form:	crystalline
Odor:	pungent, unpleasant
Odor threshold:	No data available
Flash point	> 199 °F (93 °C) (Method: Seta Flash Method)
Auto-ignition temperature:	No data available.
Lower flammable limit (LFL):	Not determined
Upper flammable limit (UFL):	Not determined
pH:	Not applicable
Density:	Not applicable
Specific Gravity (Relative density):	1.00 Water=1 (liquid)
Vapor pressure:	15.40 mmHg (100 °F (38 °C))
Vapor density:	9.3 kg/m ³
Boiling point/boiling range:	Decomposes before boiling. Rate of decomposition increases with rising temperature.
Melting point/range:	No data available.
Freezing point:	No data available
Evaporation rate:	< 1 (n-butyl acetate = 1)
Solubility in water:	Negligible
Viscosity, dynamic:	No data available
Oil/water partition coefficient:	log Pow: = 5.6, at 77 °F (25 °C)
Self-Accelerating	196 °F (91 °C) 40 pound container

Product code: 103199

Version 3.1

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**Decomposition
Temperature (SADT):****Thermal decomposition:** No data available.**Active oxygen content:** 5.86 %**Flammability:** See GHS Classification in Section 2 if applicable**SECTION 10: STABILITY AND REACTIVITY****Stability:**

This material is chemically unstable and should only be handled under specified conditions. See HANDLING AND STORAGE section of this MSDS for specified conditions.

Hazardous reactions:

Hazardous polymerization does not occur.

Materials to avoid:

Strong acids
Strong oxidizing agents
Reducing agents
Accelerators
Friedel - Crafts reaction catalyst
Brass
Copper
Iron

For all Organic Peroxides, compatible materials of contact are stainless steel 304 or 316 (preferred), high-density polyethylene (HDPE), polytetrafluoroethylene or glass linings.

Conditions / hazards to avoid:

See HANDLING AND STORAGE section of this MSDS for specified conditions. SADT - Self Accelerating Decomposition Temperature. Lowest temperature at which the tested package size will undergo a self-accelerating decomposition reaction. This reaction will generate flammable vapors which may autoignite. The length of time to generate a decomposition reaction, after the SADT has been reached or exceeded, is dependent upon how much the SADT has been exceeded and the length of time needed for the reaction exotherm (heat spike from increasing decomposition rate) to initiate a rapid decomposition reaction. Typically, SADT is inversely proportional to package size. Larger packages will have a lower SADT due to smaller ratio to heat transfer area to volume of product.

Hazardous decomposition products:

Temperatures at or above SADT can result in the release of hazardous decomposition products which are flammable and may autoignite.

Thermal decomposition giving flammable and toxic products :

Carbon oxides
Aromatic derivatives
Hazardous organic compounds

SECTION 11: TOXICOLOGICAL INFORMATION

DI-CUP® R

Data on this material and/or a similar material are summarized below.

Data for DI-CUP® R**Acute toxicity****Oral:**

No deaths occurred. (rat) LD0 > 2,000 mg/kg.

Dermal:

No deaths occurred. (rat) LD0 > 2,000 mg/kg.

Inhalation:

No deaths occurred. (rat, rabbit) 6 h LC0 >= 0.224 mg/l. (40 %) (dust/mist, maximum achieved concentration)

Skin Irritation:

Practically non-irritating. (rabbit) (4 h)

Eye Irritation:

Not irritating. (rabbit)

Skin Sensitization:

Not a sensitizer. LLNA: Local Lymph Node Assay. (mouse) No skin allergy was observed.

Repeated dose toxicity

Subchronic oral administration to rat / affected organ(s): liver, kidney / signs: changes in organ weights, clinical chemistry changes

Genotoxicity**Assessment in Vitro:**

No genetic changes were observed in laboratory tests using: bacteria, animal cells

Developmental toxicity

Exposure during pregnancy. oral (rat) / Birth defects were observed. (levels produced toxic effects in the mothers and offspring)

Human experience**Inhalation:**

Respiratory tract: Dust and/or vapor are reported to cause irritation when proper industrial hygiene controls/procedures are not used.

Nose: irritation, nosebleeds, appearance of visible blood vessels in the nose. (repeated or prolonged exposure) (based on reports of occupational exposure to workers)

Skin contact:

Irritant but not a sensitizer.

Eye contact:

Dust and/or vapor are reported to cause irritation when proper industrial hygiene controls/procedures are not used. (based on reports of occupational exposure to workers)

SECTION 12: ECOLOGICAL INFORMATION**Chemical Fate and Pathway**

Data on this material and/or a similar material are summarized below.

Data for DI-CUP® R**Biodegradation:**

Not readily biodegradable. (28 d) biodegradation 44 %

Bioaccumulation:

56 d = 137 - 1,470 (Carp)

Octanol Water Partition Coefficient:

log Pow: = 5.6, at 77 °F (25 °C)

Photodegradation:

Air reaction with OH radicals Half-life direct photolysis: 23 h

Air reaction with OH radicals Half-life direct photolysis: 23 h

Mobility and Distribution in the Environment:

Strong adsorption / Log Koc= 3.56

Strong adsorption / Log Koc= 3.56

Ecotoxicology

Data on this material and/or a similar material are summarized below.

Data for DI-CUP® R**Aquatic invertebrates:**

No effect up to the limit of solubility. Daphnia magna (Water flea) 48 h EC50 > 100 mg/l (Nominal concentration)

Algae:

No effect up to the limit of solubility. Pseudokirchneriella subcapitata (algae) 72 h EC50 > 20 mg/l (Nominal concentration)

Microorganisms:

Respiration inhibition / Activated sludge 30 min NOEC > 1,000 mg/l

Chronic toxicity to aquatic invertebrates:

Toxic. Reproduction Test / Daphnia magna (Water flea) 21 d NOEC r = 0.117 mg/l

Chronic toxicity to aquatic plants:

Practically nontoxic. Pseudokirchneriella subcapitata (green algae) 72 h NOEC r = 10 mg/l

SECTION 13: DISPOSAL CONSIDERATIONS**Waste disposal:**

Take appropriate measures to prevent release to the environment.

Disposal via incineration is recommended. Dispose of in accordance with federal, state and local regulations. Consult a regulatory specialist to determine appropriate state or local reporting requirements, for assistance in waste characterization and/or hazardous waste disposal and other requirements listed in pertinent environmental permits. Note: Chemical additions to, processing of, or otherwise altering this material may make this waste management information incomplete, inaccurate, or otherwise inappropriate. Furthermore, state and local waste disposal requirements may be more restrictive or otherwise different from federal laws and regulations.

SECTION 14: TRANSPORT INFORMATION**US Department of Transportation (DOT)**

UN Number : 3110
Proper shipping name : Organic peroxide type F, solid
Technical name : (Dicumyl peroxide, >52-100%)
Class : 5.2
Marine pollutant : yes

International Maritime Dangerous Goods Code (IMDG)

UN Number : 3110
Proper shipping name : ORGANIC PEROXIDE TYPE F, SOLID
Technical name : (DICUMYL PEROXIDE, >52-100%)
Class : 5.2
Marine pollutant : yes
Flash point : > 199 °F (93 °C)

SECTION 15: REGULATORY INFORMATION**Chemical Inventory Status**

US. Toxic Substances Control Act	TSCA	The components of this product are all on the Active TSCA Inventory.
Canadian Domestic Substances List (DSL)	DSL	All components of this product are on the Canadian DSL
China. Inventory of Existing Chemical Substances in China (IECSC)	IECSC (CN)	All components of this product are listed or exempted
Japan. ENCS - Existing and New Chemical Substances Inventory	ENCS (JP)	All components of this product are listed or exempted

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Japan. ISHL - Inventory of Chemical Substances	ISHL (JP)	All components of this product are listed or exempted
Korea. Korean Existing Chemicals Inventory (KECI)	KECI (KR)	All components of this product are listed or exempted
Philippines Inventory of Chemicals and Chemical Substances (PICCS)	PICCS (PH)	All components of this product are listed or exempted
Australian Inventory of Industrial Chemicals	AU AIICL	All components of this product are listed or exempted
Taiwan Chemical Substance Inventory (TCSI)	TCSI	All components of this product are listed or exempted

United States – Federal Regulations

SARA Title III – Section 302 Extremely Hazardous Chemicals:

The components in this product are either not SARA Section 302 regulated or regulated but present in negligible concentrations.

SARA Title III - Section 311/312 Hazard Categories:

Acute Health Hazard, Chronic Health Hazard, Fire Hazard, Reactivity Hazard

SARA Title III – Section 313 Toxic Chemicals:

This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) - Reportable Quantity (RQ):

<u>Chemical name</u>	<u>CAS-No.</u>	<u>Reportable quantity</u>
Ethanone, 1-phenyl-	98-86-2	5000 lbs

United States – State Regulations

California Prop. 65

WARNING! This product contains a chemical known to the State of California to cause cancer.

<u>Chemical name</u>	<u>CAS-No.</u>
Cumene	98-82-8
Benzene, (1-methylethenyl)-	98-83-9

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California Prop. 65

WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

Chemical name
Benzene, (1-methylethenyl)-

CAS-No.
98-83-9

SECTION 16: OTHER INFORMATION

Full text of H-Statements referred to under sections 2 and 3.

- H242 Heating may cause a fire.
- H315 Causes skin irritation.
- H320 Causes eye irritation.
- H360 May damage fertility or the unborn child.
- H411 Toxic to aquatic life with long lasting effects.

Miscellaneous:

Other information:	Refer to National Fire Protection Association (NFPA) Code 654, Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids, for safe handling.
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Latest Revision(s):

Reference number:	200008422
Date of Revision:	12/09/2022
Date Printed:	12/09/2022

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The Company adheres to a strict policy that applies to the use of any of its products in medical device applications. This policy can be found at <https://www.arkema.com/global/en/social-responsibility/innovation-and-sustainable-solutions/responsible-product-management/medical-device-policy/> which is incorporated herein by reference and made a part hereof. Except as expressly authorized, the Company (i) has designated specific medical grade compositions for products used in medical device applications and Company products not so designated are not authorized for use in medical device applications and (ii) strictly prohibits the use of any of its products in medical device applications that are implanted in the body or in contact with bodily fluids or tissues for greater than 30 days. The Company does not design, manufacture and/or directly sell any medical devices. The Company does not

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co-design, or offer assistance to any purchaser of its products, in their design, manufacture and/or sale of products for medical devices. It is the sole responsibility of the manufacturer of medical devices to determine the suitability of all raw material, products and components, including any medical grade products, in order to ensure that the medical device is safe for end-use and complies with all applicable legal and regulatory requirements and to conduct all necessary tests and inspections.

