LUPEROX® D-16

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: LUPEROX® D-16
Synonyms: t-Butyl cumyl peroxide
Molecular formula: C(13)H(20)O(2)
Chemical family: Organic peroxide - dialkyl peroxides
Molecular weight: 208.33 g/mol
Product use: Initiator

2. HAZARDS IDENTIFICATION

Emergency Overview

Color: slightly, yellow
Physical state: liquid
Odor: pungent, unpleasant

***Classification of the substance or mixture:**
Flammable liquids, Category 4, H227
Organic peroxides, Type F, H242
Skin irritation, Category 2, H315
Skin sensitisation, Category 1, H317
Carcinogenicity, Category 2, H351
Chronic aquatic toxicity, Category 2, H411

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

GHS-Labelling

Hazard pictograms:

Signal word: **Warning**

Hazard statements:

H227 : Combustible liquid.
H242 : Heating may cause a fire.
H315 : Causes skin irritation.
H317 : May cause an allergic skin reaction.
H351 : Suspected of causing cancer.
H411 : Toxic to aquatic life with long lasting effects.

Supplemental Hazard Statements:

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.
P261 : Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P264 : Wash skin thoroughly after handling.
P272 : Contaminated work clothing should not be allowed out of the workplace.
P273 : Avoid release to the environment.
P280 : Wear protective gloves/ eye protection/ face protection.
P281 : Use personal protective equipment as required.

Response:
P302 + P352 : IF ON SKIN: Wash with plenty of soap and water.
P308 + P313 : IF exposed or concerned: Get medical advice/ attention.
P333 + P313 : If skin irritation or rash occurs: 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 for extinction.
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/ container to an approved waste disposal plant.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS-No.	Wt/Wt	GHS Classification**
Peroxide, 1,1-dimethylethyl 1-methyl-1-phenylethyl	3457-61-2	>= 96 %	H242, H315, H411
Benzene, (1-methylethenyl)-	98-83-9	< 3 %	H226, H335, H304, H317, H341, H351, H411

Ethanone, 1-phenyl-	98-86-2	< 2 %	Not classified
Hydroperoxide, 1,1-dimethylethyl	75-91-2	< 0.7 %	H242, H226, H302, H311, H330, H314, H318, H317, H341, H411

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

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 soap and 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.

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

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

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

4.3. Indication of immediate medical attention and special treatment needed, if necessary:

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

5. FIREFIGHTING MEASURES

Extinguishing media (suitable):
Water spray, Foam, Dry chemical, Carbon dioxide (CO2)

Extinguishing media (unsuitable):
Water may be ineffective.

Do not use a solid water stream as it may scatter and spread fire.

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:
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:
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
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 generation of vapors. Contain and collect spillage with non-combustible absorbent material such as sodium bicarbonate, sodium carbonate, calcium carbonate, clean sand or non-acidic clay and then wet down (dampen) the mixture with water. DO NOT USE peat moss. 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. 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.

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.
Avoid breathing vapor or mist.
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.
Check that all equipment is properly grounded and installed to satisfy electrical classification requirements.
Emptied container retains product residue.
Observe all labeled safeguards until container is cleaned, reconditioned or destroyed.
Container hazardous when empty.
Follow label warnings even after container is emptied.
RESIDUAL VAPORS 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.

Storage

General information on storage conditions:
Keep in a dry, cool place. Keep container closed when not in use. Store in upright position only. 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 OSHA 29 CFR 1910.106 and NFPA 30, 70, 77, and 497.

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

Storage incompatibility – General:
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.

Temperature tolerance – Do not store above:
100 °F (38 °C)

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Airborne Exposure Guidelines:

Benzene, (1-methylethenyl)- (98-83-9)

US. ACGIH Threshold Limit Values

Time weighted average	10 ppm

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Ceiling Limit Value	100 ppm (480 mg/m3)

Ethanone, 1-phenyl- (98-86-2)

US. ACGIH Threshold Limit Values

Time weighted average	10 ppm

US. OARS. WEELs Workplace Environmental Exposure Level Guide

Time weighted average	10 ppm (50 mg/m3)
Remarks:	Listed

Only those components with exposure limits are printed in this section. Limits with skin contact designation above have skin contact effect. Air sampling alone is insufficient to accurately quantitate exposure. Measures to prevent significant cutaneous absorption may be required. Limits with a sensitizer designation above mean that exposure to this material may cause allergic reactions.

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.

Consult ACGIH ventilation manual or NFPA Standard 91 for design of exhaust systems.

Respiratory protection:
Avoid breathing vapor or mist. 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. Wear chemical goggles, a face shield, and chemical resistant clothing such as a rubber apron when splashing may occur. Rinse immediately if skin is contaminated. Remove contaminated clothing immediately and wash before reuse. 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.

9. PHYSICAL AND CHEMICAL PROPERTIES

Color:	slightly, yellow
Physical state:	liquid
Odor:	pungent, unpleasant
Odor threshold:	No data available
Flash point	158 °F (70 °C) (Method: Seta Flash Method)
Lower flammable limit (LFL):	No data available
Upper flammable limit (UFL):	No data available
pH:	Not applicable
Density:	940 kg/m3 (68 °F (20 °C))
Specific Gravity (Relative density):	0.94 (68 °F(20 °C))Water=1 (liquid)
Vapor pressure:	13.999 mmHg (68 °F (20 °C))
Vapor density:	7.2 kg/m3

Boiling point/boiling range:	Decomposes on heating. Rate of decomposition increases with rising temperature.
Melting point/range:	No data available.
Freezing point:	41 °F (5 °C)
Evaporation rate:	< 1 diethyl ether=1
Solubility in water:	68 °F (20 °C) Negligible
Solubility in other solvents: [qualitative and quantative]	Soluble in most organic solvents
Viscosity, dynamic:	No data available
Molecular weight:	208.33 g/mol
Oil/water partition coefficient:	No data available.
Self-Accelerating Decomposition Temperature (SADT):	measured 185 °F (85 °C) 35 pound container
Thermal decomposition:	No data available
Active oxygen content:	< 7.6 %
Flammability:	See GHS Classification in Section 2

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. See Hazardous Decomposition Products below.

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
Hazardous organic compounds

11. TOXICOLOGICAL INFORMATION

Data on this material and/or its components are summarized below.

Data for LUPEROX® D-16

Acute toxicity

Oral:
Acute toxicity estimate 4,593 mg/kg.

Dermal:
Acute toxicity estimate > 5,000 mg/kg.

Inhalation:
4 h Acute toxicity estimate > 40 mg/l. (vapor)

Genotoxicity

Assessment in Vitro:
No genetic changes were observed in laboratory tests using: bacteria, animal cells, human cells, (data for a similar material)

Data for Peroxide, 1,1-dimethylethyl 1-methyl-1-phenylethyl (3457-61-2)

Acute toxicity

Oral:
May be harmful if swallowed. (rat) LD50 = 4,700 mg/kg.

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

Inhalation:
No deaths occurred. (rat) 4 h LC0 = 1.2 mg/l. (vapour)

Skin Irritation:
Causes skin irritation. (rabbit) Irritation Index: 2.9/8. (4 h)

Eye Irritation:
Not irritating. (rabbit) Irritation Index: 0.

Skin Sensitization:
Not a sensitizer. Guinea pig maximization test. (guinea pig) Skin allergy was observed. (Weak response)

Repeated dose toxicity
Subchronic oral administration to rat / affected organ(s): liver, kidney / signs: reduced body weight, tremors, changes in organ weights, changes in organ structure or function

Genotoxicity

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

Reproductive effects
Reproductive/Developmental Effects Screening Assay. Oral (rat) / At high dose : Effects on fertility and offspring / (toxic effects also observed in the parental animals at these doses)

Data for Benzene, (1-methylethenyl)- (98-83-9)

Acute toxicity

Oral:
May be harmful if swallowed. (rat) LD50 = 4,900 mg/kg.

Dermal:
Practically nontoxic. (rabbit) LD0 = 14,560 mg/kg.

Specific target organ toxicity - single exposure:
May cause respiratory irritation.

Skin Irritation:
Practically non-irritating. (rabbit)

Eye Irritation:
Causes mild eye irritation. (rabbit) Irritation Index: 4.9/110.

Skin Sensitization:
May cause an allergic skin reaction. LLNA: Local Lymph Node Assay. (mouse) Skin allergy was observed.

Repeated dose toxicity
Repeated oral administration to rat / affected organ(s): kidney, liver, adrenal gland, urinary bladder / signs: changes in organ structure or function, urinary calculi (stones), reduced body weight, changes in food or water consumption

Repeated inhalation administration to mouse / affected organ(s): respiratory tract, kidney, liver / signs: respiratory irritation, changes in organ structure or function, changes in organ weights, reduced body weight

Repeated inhalation administration to rat / affected organ(s): kidney, liver / signs: changes in organ structure or function, increased organ weight, reduced body weight

Chronic inhalation administration to guinea pig / affected organ(s): kidney, liver / signs: increased organ weight, reduced body weight

Chronic inhalation administration to rabbit / signs: reduced body weight

Chronic inhalation administration to monkey / No adverse systemic effects reported.

Carcinogenicity
Chronic inhalation administration to rat / affected organ(s): kidney / Increase in tumor incidence was reported.

Chronic inhalation administration to mouse / affected organ(s): liver / Increase in tumor incidence was reported.
Classified by the International Agency for Research on Cancer as: Group 2B: Possibly carcinogenic to humans.

Genotoxicity

Assessment in Vitro:
No genetic changes were observed in laboratory tests using: bacteria

Both positive and negative responses for genetic changes were observed in laboratory tests using: animal cells

Genotoxicity

Assessment in Vivo:
Both positive and negative responses for genetic changes were observed in laboratory tests using: mice

Developmental toxicity
Exposure during pregnancy. oral (rat) / No birth defects were observed. (levels produced toxic effects in the mothers and offspring)

Reproductive effects
Reproductive/Developmental Effects Screening Assay. oral (rat) / No toxicity to reproduction / (levels produced toxic effects in the mothers and offspring)

Human experience
Inhalation:
Nose: irritating. (studied using human volunteers)

Human experience
Eye contact:
Eye: irritating. (studied using human volunteers)

Data for Ethanone, 1-phenyl- (98-86-2)

Acute toxicity

Oral:
May be harmful if swallowed. (rat) LD50 = 2,081 mg/kg.

Dermal:
May be harmful in contact with skin. (rat) LD50 = 3,300 mg/kg.

Skin Irritation:
Causes mild skin irritation. (rabbit) Irritation Index: 2.12/8.

Eye Irritation:
Not irritating. (rabbit) Irritation Index: 0/110.

Skin Sensitization:
Not a sensitizer. Repeated skin exposure. (guinea pig) No skin allergy was observed

Repeated dose toxicity
Chronic inhalation administration to rat / affected organ(s): olfactory tissue / signs: damage

Repeated oral administration to rat / signs: changes in motor activity, changes in behavior

Subchronic dietary administration to rat / No adverse effects reported.

Genotoxicity

Assessment in Vitro:
No genetic changes were observed in laboratory tests using: bacteria

Both positive and negative responses for genetic changes were observed in laboratory tests using: animal cells

Genotoxicity

Assessment in Vivo:
No genetic changes were observed in a laboratory test using: mice

Developmental toxicity
Reproductive/Developmental Effects Screening Assay. Oral (rat) / Birth defects and toxicity were observed. at doses that produce effects in mothers

Reproductive effects
Reproductive/Developmental Effects Screening Assay. Oral (rat) / levels produced toxic effects in the mothers and offspring / (increased mortality in the offspring, reductions in birth weight)

Human experience
Skin contact:
Skin: No skin allergy was observed. (up to 2% controlled skin contact study)

Data for Hydroperoxide, 1,1-dimethylethyl (75-91-2)

Acute toxicity

Oral:
Harmful if swallowed. (rat) LD50 = 560 mg/kg. (70 %)

Dermal:
Toxic in contact with skin. (rabbit) LD50 = 440 mg/kg. (70 %) (as aqueous solution)

Inhalation:
Fatal if inhaled. (rat) 4 h LC50 = 1.85 mg/l (503 ppm). (vapor)

Skin Irritation:
Causes severe skin burns. (rabbit) (24 h) (70 %) (occluded exposure, aqueous solution)

Causes mild skin irritation. (guinea pig) (6 h) (5 %) (aqueous solution)

Eye Irritation:
Causes serious eye damage. (rabbit) (70 %) (aqueous solution)

Skin Sensitization:
May cause an allergic skin reaction. Guinea pig maximization test. Skin allergy was observed. (Strong sensitizer)

Repeated dose toxicity
Repeated inhalation administration to rat / affected organ(s): nose / signs: changes in body weight, irritation / (vapor)

Repeated oral administration to rat / affected organ(s): Stomach / signs: severe irritation

Genotoxicity

Assessment in Vitro:
Genetic changes were observed in laboratory tests using: bacteria, animal cells

Genotoxicity

Assessment in Vivo:
Both positive and negative responses for genetic changes were observed in laboratory tests using: mice

No genetic changes were observed in laboratory tests using: rats

Developmental toxicity
Exposure during pregnancy. oral (rat) / No birth defects were observed. (at doses that produce effects in mothers)

Reproductive effects
Reproductive/Developmental Effects Screening Assay. oral (rat) / No toxicity to reproduction.

12. ECOLOGICAL INFORMATION

Chemical Fate and Pathway

Data on this material and/or its components are summarized below.

Data for Peroxide, 1,1-dimethylethyl 1-methyl-1-phenylethyl (3457-61-2)

Biodegradation:
Not readily biodegradable. (58 d) biodegradation 0 % / OECD Test Guideline 301 F

Octanol Water Partition Coefficient:
log Pow: = 4.4, = 77 °F (25 °C) (Method: OECD Test Guideline 123)

Mobility and Distribution in the Environment:
Log Koc = 3.3

Data for Benzene, (1-methylethenyl)- (98-83-9)

Biodegradation:
Not readily biodegradable. (28 d) biodegradation 56 %

Bioaccumulation:
56 d BCF between 15 - 140 (Carp)

Octanol Water Partition Coefficient:
log Pow: = 3.48

Data for Ethanone, 1-phenyl- (98-86-2)

Biodegradation:
Readily biodegradable. (14 d) biodegradation 64.70 %

Biological Oxygen Demand:
10 d BOD = 56%ThOD (predominantly domestic sewage)
10 d BOD = 90%ThOD (activated sludge)

Bioaccumulation:
calculated 0.48

Octanol Water Partition Coefficient:
log Pow: = 1.63

Ecotoxicology
Data on this material and/or its components are summarized below.

Data for Peroxide, 1,1-dimethylethyl 1-methyl-1-phenylethyl (3457-61-2)

Aquatic invertebrates:
Toxic. Daphnia magna (Water flea) 48 h EC50 = 4.3 mg/l

Algae:
No effect up to the limit of solubility. Pseudokirchneriella subcapitata (green algae) 72 h ErC50 > 100 mg/l (nominal concentrations reported)

Microorganisms:
No effect up to the limit of solubility. Respiration inhibition / Activated sludge 58 h NOEC = 100 mg/l (nominal concentrations reported)

Chronic toxicity to aquatic plants:
Toxic. Pseudokirchneriella subcapitata (green algae) 72 h EC10 (growth rate) >= 0.5 mg/l

Data for Benzene, (1-methylethenyl)- (98-83-9)

Aquatic toxicity data:
Toxic. Danio rerio (zebra fish) 96 h LC50 = 2.97 mg/l

Aquatic invertebrates:
Toxic. Daphnia magna (Water flea) 48 h EC50 = 1.65 mg/l

Algae:
Harmful. Desmodesmus subspicatus (green algae) 72 h ErC50 = 11.4 mg/l

Microorganisms:
Respiration inhibition / Activated sludge 3 h EC50 (Respiration inhibition) > 2,000 mg/l

Chronic toxicity to aquatic invertebrates:
Toxic. Reproduction Test / Daphnia magna (Water flea) 21 d NOEC (Reproduction inhibition) = 0.401 mg/l

Chronic toxicity to aquatic plants:
Practically nontoxic. Desmodesmus subspicatus (green algae) 72 h NOEC r (Growth inhibition) = 2.26 mg/l

Data for Ethanone, 1-phenyl- (98-86-2)

Aquatic toxicity data:
Practically nontoxic. Pimephales promelas (fathead minnow) 96 h LC50 = 162 mg/l

Aquatic invertebrates:
Practically nontoxic. Daphnia magna (Water flea) 48 h LC50 = 528 mg/l

Algae:
Harmful. Pseudokirchneriella subcapitata (green algae) 72 h ErC50 = 86.4 mg/l

Microorganisms:
Activated sludge 3 h IC50 (Respiration inhibition) > 1,000 mg/l
Tetrahymena pyriformis 40 h IC50 (Growth inhibition) = 346 mg/l

Chronic toxicity to aquatic plants:
Practically nontoxic. Growth inhibition / Pseudokirchneriella subcapitata (green algae) 72 d NOEC = 24.8 mg/l

13. DISPOSAL CONSIDERATIONS

Waste disposal:
Take appropriate measures to prevent release to the environment.

Dilution followed by incineration is the preferred method. Dilution ratio of 10:1 in a clean, compatible, combustible solvent (i.e., Fuel Oil #2, mineral oil) will reduce reactivity hazard during incineration and transportation. 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.

14. TRANSPORT INFORMATION

US Department of Transportation (DOT)

UN Number	:	3109
Proper shipping name	:	Organic peroxide type F, liquid
Technical name	:	(t-Butyl cumyl peroxide, >42-100%)
Class	:	5.2
Marine pollutant	:	yes

International Maritime Dangerous Goods Code (IMDG)

UN Number	:	3109
Proper shipping name	:	ORGANIC PEROXIDE TYPE F, LIQUID
Technical name	:	(TERT-BUTYL CUMYL PEROXIDE, >42-100%)
Class	:	5.2
Marine pollutant	:	yes
Flash point	:	158 °F (70 °C)

15. REGULATORY INFORMATION

Chemical Inventory Status

US. Toxic Substances Control Act	TSCA	The components of this product are all on the TSCA Inventory.
Canadian Domestic Substances List (DSL)	DSL	This product contains one or several components listed in the Canadian NDSL list. All other components are on the DSL list.
China. Inventory of Existing Chemical Substances in China (IECSC)	IECSC (CN)	Conforms to
Japan. ENCS - Existing and New Chemical Substances Inventory	ENCS (JP)	Conforms to
Japan. ISHL - Inventory of Chemical Substances	ISHL (JP)	Conforms to
Korea. Korean Existing Chemicals Inventory (KECI)	KECI (KR)	Conforms to
Philippines Inventory of Chemicals and Chemical Substances (PICCS)	PICCS (PH)	Conforms to
Australia Inventory of Chemical Substances (AICS)	AICS	Conforms to

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, Fire Hazard, Reactivity Hazard, Chronic Health Hazard

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

Chemical name	CAS-No.	De minimis concentration	Reportable threshold:
Ethanone, 1-phenyl-	98-86-2	1.0 %	10000 lbs (Otherwise used (non-manufacturing/processing)) 25000 lbs (Manufacturing and processing)

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

Chemical name	CAS-No.	Reportable quantity
Ethanone, 1-phenyl-	98-86-2	5000 lbs
Hydroperoxide, 1,1-dimethylethyl	75-91-2	100 lbs
Hydroperoxide, 1-methyl-1-phenylethyl	80-15-9	10 lbs

United States – State Regulations

New Jersey Right to Know

Chemical name	CAS-No.
Benzene, (1-methylethenyl)-	98-83-9

Ethanone, 1-phenyl-	98-86-2

Pennsylvania Right to Know

Chemical name	CAS-No.
Peroxide, 1,1-dimethylethyl 1-methyl-1-phenylethyl	3457-61-2
Benzene, (1-methylethenyl)-	98-83-9
Ethanone, 1-phenyl-	98-86-2
Hydroperoxide, 1-methyl-1-phenylethyl	80-15-9

Pennsylvania Right to Know – Environmentally Hazardous Substance(s)

Chemical name	CAS-No.
Ethanone, 1-phenyl-	98-86-2
Hydroperoxide, 1-methyl-1-phenylethyl	80-15-9

California Prop. 65
WARNING! This product contains a chemical known to the State of California to cause cancer.

Chemical name	CAS-No.
Benzene, (1-methylethenyl)-	98-83-9

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	CAS-No.
Benzene, (1-methylethenyl)-	98-83-9

16. OTHER INFORMATION

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

H226 Flammable liquid and vapour.
H227 Combustible liquid.
H242 Heating may cause a fire.
H302 Harmful if swallowed.
H304 May be fatal if swallowed and enters airways.
H311 Toxic in contact with skin.
H314 Causes severe skin burns and eye damage.
H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H318 Causes serious eye damage.
H330 Fatal if inhaled.
H335 May cause respiratory irritation.
H341 Suspected of causing genetic defects.
H351 Suspected of causing cancer.
H411 Toxic to aquatic life with long lasting effects.

Miscellaneous:

Other information:	Refer to National Fire Protection Association (NFPA) Codes 30, 70, 77, and 497 and OSHA 29 CFR 1910.106, for safe handling.

Latest Revision(s):

Reference number:	200008397
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It is the sole responsibility of the manufacturer of the medical device to determine the suitability (including biocompatibility) of all raw materials, products and components, including any medical grade Arkema products, in order to ensure that the final end-use product is safe for its end use; performs or functions as intended; and complies with all applicable legal and regulatory requirements (FDA or other national drug agencies) It is the sole responsibility of the manufacturer of the medical device to conduct all necessary tests and inspections and to evaluate the medical device under actual end-use requirements and to adequately advise and warn

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