

SAFETY DATA SHEET

PERKADOX 16

Version 1

Revision Date 04/26/2015

Print Date 08/03/2015

US / Z8

1. PRODUCT AND COMPANY IDENTIFICATION

Product name : PERKADOX 16

Product Use Description : Polymerization initiator

Company : Akzo Nobel Functional Chemicals LLC
525 West Van Buren
Chicago IL 60607-3823
USA

Telephone : +18008287929

Fax : +13125447188

E-mail address : RegulatoryAffairs@akzonobel.com

Emergency telephone : AkzoNobel: +31 57 06 79211 CHEMTREC - USA: 1-800-424-9300
CANUTEC - CANADA: 1-613-996-6666

2. HAZARDS IDENTIFICATION

Emergency Overview

Appearance	powder
Color	white
Odor	faint
Hazard Summary	Risk of dust explosion.

GHS Classification

Organic peroxides, Type C
Skin sensitization, Category 1
Acute aquatic toxicity, Category 3
Chronic aquatic toxicity, Category 4

GHS Label element

Hazard pictograms :



Signal Word :

Danger

Hazard Statements :

H242 Heating may cause a fire.
H317 May cause an allergic skin reaction.
H402 Harmful to aquatic life.
H413 May cause long lasting harmful effects to aquatic life.

PERKADOX 16

Version 1

Revision Date 04/26/2015

Print Date 08/03/2015

US / Z8

Precautionary Statements

Prevention:

- P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
- P220 Keep away from dirt, rust, chemicals in particular.
- P234 Keep only in original container.
- P261 Avoid breathing dust or fume.
- P272 Contaminated work clothing must not be allowed out of the workplace.
- P273 Avoid release to the environment.
- P280 Wear protective gloves/ eye protection/ face protection.

Response:

- P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
- P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.
- P363 Wash contaminated clothing before reuse.
- P370 + P378 In case of fire: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide to extinguish.

Storage:

- P403 + P235 Store in a well-ventilated place. Keep cool.
- P410 Protect from sunlight.
- P411 Store at temperatures not exceeding 30°C/ 86°F.
- P420 Store away from other materials.

Disposal:

- P501 Dispose of contents/container in accordance with local regulation.

Potential Health Effects

- Inhalation : Product dust may be irritating to respiratory system.
- Skin : Product dust may be irritating to skin. May cause an allergic skin reaction.
- Eyes : Product dust may be irritating to eyes.
- Ingestion : May be harmful if swallowed.
- Aggravated Medical Condition : None known.
- Symptoms of Overexposure : The symptoms and effects are as expected from the hazards as shown in section 2. No specific product related symptoms are known.

Carcinogenicity:

- IARC : No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
- OSHA : No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.
- NTP : No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
- ACGIH : No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

PERKADOX 16

Version 1

Revision Date 04/26/2015

Print Date 08/03/2015

US / Z8

3. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous ingredients

Chemical Name	CAS-No.	Classification	Concentration [%]
Di(4-tert-butylcyclohexyl) peroxydicarbonate	15520-11-3	Org. Perox. C; H242 Skin Sens. 1; H317 Aquatic Acute 3; H402 Aquatic Chronic 3; H412	90 - 100

Di(4-tert-butylcyclohexyl) peroxydicarbonate, neat

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

4. FIRST AID MEASURES

- General advice** : Move out of dangerous area.
Consult a physician.
Show this material safety data sheet to the doctor in attendance.
- Inhalation** : Remove to fresh air.
Keep patient warm and at rest.
Rinse nose and mouth with water.
- Skin contact** : Take off contaminated clothing and shoes immediately.
Wash the skin immediately with soap and water.
If skin irritation persists, call a physician.
- Eye contact** : Rinse with plenty of water.
Remove contact lenses.
Protect unharmed eye.
Keep eye wide open while rinsing.
If eye irritation persists, consult a specialist.
- Ingestion** : Clean mouth with water and drink afterwards plenty of water.
Never give anything by mouth to an unconscious person.
Obtain medical attention.
- Notes to physician**
- Symptoms** : The symptoms and effects are as expected from the hazards as shown in section 2. No specific product related symptoms are known.
- Treatment** : Treat symptomatically.

5. FIRE-FIGHTING MEASURES

- Suitable extinguishing media** : Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
- Unsuitable extinguishing media** : High volume water jet
- Specific hazards during fire** : CAUTION: reignition may occur.

PERKADOX 16

Version 1

Revision Date 04/26/2015

Print Date 08/03/2015

US / Z8

fighting / Specific hazards arising from the chemical	<ul style="list-style-type: none">Supports combustion.Do not use a solid water stream as it may scatter and spread fire.Water spray may be ineffective unless used by experienced firefighters.Heating may cause decomposition with release of toxic fumes. Do not allow run-off from fire fighting to enter drains or water courses.Risks of ignition followed by flame propagation or secondary explosions shall be prevented by avoiding accumulation of dust, e.g. on floors and ledges.
Combustion products	<ul style="list-style-type: none">Fire will produce smoke containing hazardous combustion products (see section 10).
Special protective equipment for fire-fighters	<ul style="list-style-type: none">In the event of fire, wear self-contained breathing apparatus.
Further information	<ul style="list-style-type: none">Use water spray to cool unopened containers.Collect contaminated fire extinguishing water separately. This must not be discharged into drains.Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

See also Section 9. Physical and chemical properties: Safety data

6. ACCIDENTAL RELEASE MEASURES

Personal precautions	<ul style="list-style-type: none">Use personal protective equipment.Avoid dust formation.Avoid breathing dust.Ensure adequate ventilation.Remove all sources of ignition.
Environmental precautions	<ul style="list-style-type: none">Prevent product from entering drains.If the product contaminates rivers and lakes or drains inform respective authorities.
Methods for cleaning up / Methods for containment	<ul style="list-style-type: none">Keep wetted with water.Soak up with inert absorbent material and dispose of as hazardous waste.Confinement must be avoided.Pick up and arrange disposal without creating dust.Keep in suitable, closed containers for disposal.Never return spills in original containers for re-use.
Additional advice	<ul style="list-style-type: none">For personal protection see section 8.

7. HANDLING AND STORAGE

Handling Advice on safe handling	<ul style="list-style-type: none">For personal protection see section 8.Avoid formation of respirable particles.Keep away from heat/sparks/open flames/hot surfaces. - No smoking.Persons with a history of skin sensitization problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is
--	--

PERKADOX 16

Version 1

Revision Date 04/26/2015

Print Date 08/03/2015

US / Z8

- being used.
Smoking, eating and drinking should be prohibited in the application area.
Open drum carefully as content may be under pressure.
Dispose of rinse water in accordance with local and national regulations.
- Advice on protection against fire and explosion : Use explosion protected equipment.
Provide appropriate exhaust ventilation at places where dust is formed.
Keep away from sources of ignition - No smoking.
No sparking tools should be used.
Keep away from reducing agents (e.g. amines), acids, alkalies and heavy metal compounds (e.g. accelerators, driers, metal soaps).
Do not cut or weld on or near this container even when empty.
Keep away from combustible material.
- Temperature class : It is recommended to use electrical equipment of temperature group T3. However, autoignition can never be excluded.
- Storage**
Requirements for storage areas and containers : No smoking.
Keep in a dry place.
Observe label precautions.
Electrical installations / working materials must comply with the technological safety standards.
Store at room temperature in the original container.
Keep only in original container.
Store away from other materials.
- Maximum storage temperature: : 20 °C (68 °F)
- Other data : No decomposition if stored and applied as directed.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

Contains no substances with occupational exposure limit values.

Engineering measures

Explosion proof ventilation recommended.
Provide appropriate exhaust ventilation at places where dust is formed.

Personal protective equipment

- Eye/face protection : Tightly fitting safety goggles
- Hand protection : Glove material: butyl-rubber
: Glove material: Neoprene
- Skin and body protection : Protective suit

PERKADOX 16

Version 1

Revision Date 04/26/2015

Print Date 08/03/2015

US / Z8

Respiratory protection	: Half mask with a particle filter P2 (EN 143)
Hygiene measures	: Handle in accordance with good industrial hygiene and safety practice. When using do not eat or drink. When using do not smoke. Wash hands before breaks and at the end of workday. Wash contaminated clothing before re-use.

Environmental exposure controls

General advice	: Prevent product from entering drains. If the product contaminates rivers and lakes or drains inform respective authorities.
----------------	--

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form	: powder
Color	: white
Odor	: faint
Odor Threshold	: No data available

Safety data

pH	: Weakly acidic
Melting point	: Decomposes before melting.
Boiling point/boiling range	: Decomposes below the boiling point.
Flash point	: Not applicable
Evaporation rate	: Not applicable
Flammability (solid, gas)	: Decomposition products may be flammable.
Lower explosion limit	: No data available
Upper explosion limit	: No data available
Vapor pressure	: < 0.8 hPa at 60 °C
Relative vapor density	: Not applicable
Relative density	: 1.13 at 20 °C
Bulk density	: 450 - 480 kg/m ³ at 20 °C
Water solubility	: at 20 °C insoluble
Solubility in other solvents	: Soluble in most organic solvents.
Partition coefficient: n-	: log Pow: 8.34

PERKADOX 16

Version 1

Revision Date 04/26/2015

Print Date 08/03/2015

US / Z8

octanol/water	estimated
Autoignition temperature	: Test method not applicable
Decomposition temperature	: SADT - (Self accelerating decomposition temperature) is the lowest temperature at which self accelerating decomposition may occur with a substance in the packaging as used in transport. A dangerous self-accelerating decomposition reaction and, under certain circumstances, explosion or fire can be caused by thermal decomposition at and above the SADT. Contact with incompatible substances can cause decomposition below the SADT.
Self-Accelerating decomposition temperature (SADT)	: 40 °C
Viscosity, dynamic	: Not applicable
Viscosity, kinematic	: Not applicable
Explosive properties	: Not explosive
Oxidizing properties	: Not classified as oxidizing.
Active Oxygen Content	: 3.8 %
Organic peroxides	: 95 %

This material safety datasheet only contains information relating to safety and does not replace any product information or product specification.

10. STABILITY AND REACTIVITY

Conditions to avoid	: Confinement must be avoided. Heat, flames and sparks. For safety, store below: 20 °C (68 °F)
Materials to avoid	: Contact with incompatible materials will result in hazardous decomposition. For queries regarding the suitability of other materials please contact the supplier. Do not mix with peroxide accelerators, unless under controlled processing. Use only stainless steel 316, PP, polyethylene or glass-lined equipment. Acids and bases Iron Copper Reducing agents Heavy metals Rust
Hazardous decomposition products	: 4-tert-butylcyclohexanol Carbon oxides 4-tert-Butylcyclohexanone

PERKADOX 16

Version 1

Revision Date 04/26/2015

Print Date 08/03/2015

US / Z8

Thermal decomposition	: SADT - (Self accelerating decomposition temperature) is the lowest temperature at which self accelerating decomposition may occur with a substance in the packaging as used in transport. A dangerous self-accelerating decomposition reaction and, under certain circumstances, explosion or fire can be caused by thermal decomposition at and above the SADT. Contact with incompatible substances can cause decomposition below the SADT.
Reactivity	: Stable under normal conditions.
Chemical stability	: Stable under recommended storage conditions.
Hazardous reactions	: Dust may form explosive mixture in air.
Self-Accelerating decomposition temperature (SADT)	: 40 °C (104 °F)

11. TOXICOLOGICAL INFORMATION

PRODUCT INFORMATION:

Toxicology Assessment

Further information : No further data available.

Carcinogenicity:

IARC	: No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
OSHA	: No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.
NTP	: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
ACGIH	: No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

TOXICOLOGY DATA FOR THE INGREDIENTS:

Test result

Component: Di(4-tert-butylcyclohexyl) peroxydicarbonate

Acute oral toxicity	: LD50: > 5,000 mg/kg Species: Rat Method: OECD Test Guideline 401 Evident toxicity
Skin irritation	: Result: No skin irritation Method: OECD Test Guideline 404 Exposure time: 24 h

PERKADOX 16

Version 1

Revision Date 04/26/2015

Print Date 08/03/2015

US / Z8

Eye irritation	: Species: Rabbit Result: No eye irritation Method: OECD Test Guideline 405 Exposure time: 24 h
Germ cell mutagenicity Genotoxicity in vitro	: Result: negative Method: OECD Test Guideline 471 Result: negative Method: Other guidelines
Genotoxicity in vivo	: Result: Not mutagenic.
Target Organ Systemic Toxicant - Repeated exposure	: Routes of exposure: Ingestion The substance or mixture is not classified as specific target organ toxicant, repeated exposure.
Aspiration toxicity	: No aspiration toxicity classification

12. ECOLOGICAL INFORMATION

PRODUCT INFORMATION:

Ecotoxicology Assessment

Additional ecological information : An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Harmful to aquatic life with long lasting effects.

Test result

Elimination information (persistence and degradability)

Bioaccumulation : Because of the partition coefficient for n-octanol/water (Cf. Section 9), accumulation in living organisms is possible.

Biodegradability : Result: Not readily biodegradable.

Further information on ecology

Hazardous to the ozone layer

Regulation : 40 CFR Protection of Environment, Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances

Remarks : This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

INGREDIENTS:

Ecotoxicology Assessment

Component: Di(4-tert-butylcyclohexyl) peroxydicarbonate

PERKADOX 16

Version 1

Revision Date 04/26/2015

Print Date 08/03/2015

US / Z8

- Acute aquatic toxicity : Harmful to aquatic life.
Chronic aquatic toxicity : Harmful to aquatic life with long lasting effects.

Test result

Component: Di(4-tert-butylcyclohexyl) peroxydicarbonate

Ecotoxicity effects

- Toxicity to fish : LC50: 704 mg/l
Exposure time: 96 h
Species: Oncorhynchus mykiss (rainbow trout)
Method: OECD Test Guideline 203
- Toxicity to daphnia and other aquatic invertebrates : EC50: 42 mg/l
Exposure time: 48 h
Species: Daphnia magna (Water flea)
- Toxicity to algae : ErC50: ca. 39 mg/l
Exposure time: 72 h
Species: Desmodesmus subspicatus (green algae)
Test Type: Growth inhibition
Method: OECD Test Guideline 201
- NOEC: 17 mg/l
Exposure time: 72 h
Species: Desmodesmus subspicatus (green algae)
Test Type: Growth inhibition
Method: OECD Test Guideline 201
- Toxicity to bacteria : NOEC: 20 mg/l
Exposure time: 5 d
Species: activated sludge
Method: closed serum bottle
5-days

Elimination information (persistence and degradability)

- Bioaccumulation : Bioconcentration factor (BCF): 2,926
- Biodegradability : Result: Not readily biodegradable.
Method: OECD Test Guideline 301B

13. DISPOSAL CONSIDERATIONS

- Product : The product should not be allowed to enter drains, water courses or the soil.
Do not contaminate ponds, waterways or ditches with chemical or used container.
Hazardous waste
Dispose of contents/container in accordance with local regulation.
- Contaminated packaging : Empty remaining contents.
Dispose of as unused product.

PERKADOX 16

Version 1

Revision Date 04/26/2015

Print Date 08/03/2015

US / Z8

Do not burn, or use a cutting torch on, the empty drum.
Due to the high risk of contamination recycling/recovery is not recommended.
Follow all warnings even after the container is emptied.

14. TRANSPORT INFORMATION

International Regulation

IATA-DGR

UN/ID No. : UN 3114
Class : 5.2
Not permitted for transport

IMDG-Code

UN number : UN 3114
Proper shipping name : ORGANIC PEROXIDE TYPE C, SOLID, TEMPERATURE CONTROLLED (Di(4-tert-butylcyclohexyl) peroxydicarbonate)
Class : 5.2
Packing group : Not Assigned
Labels : 5.2
EmS Code : F-F, S-R
Marine pollutant : no
Remarks : The control temperature is the maximum temperature at which the formulation can be transported safely during a prolonged period of time.

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

Not applicable for product as supplied.

Further information for transport

Control temperature : 30 °C (86 °F)
Emergency temperature : 35 °C (95 °F)

Domestic regulation

49 CFR

UN/ID/NA number : UN 3114
Proper shipping name : Organic peroxide type C, solid, temperature controlled (Di(4-tert-butylcyclohexyl) peroxydicarbonate, 95%)
Class : 5.2
Packing group : II
Labels : 5.2
ERG Code : 148
Marine pollutant : no
Reportable Quantity : This product does not contain an environmentally hazardous substance per 49 CFR 172.101, Appendix A.
Remarks : The control temperature is the maximum temperature at which the formulation can be transported safely during a prolonged period of time.

15. REGULATORY INFORMATION

Notification status

PERKADOX 16

Version 1

Revision Date 04/26/2015

Print Date 08/03/2015

US / Z8

CH INV	: YES. On the inventory, or in compliance with the inventory
TSCA	: YES. All chemical substances in this product are either listed on the TSCA inventory or in compliance with a TSCA inventory exemption.
DSL	: YES. All components of this product are on the Canadian DSL.
AICS	: YES. On the inventory, or in compliance with the inventory
NZIoC	: YES. On the inventory, or in compliance with the inventory
ENCS	: YES. On the inventory, or in compliance with the inventory
ISHL	: YES. On the inventory, or in compliance with the inventory
KECI	: YES. On the inventory, or in compliance with the inventory
PICCS	: YES. On the inventory, or in compliance with the inventory
IECSC	: YES. On the inventory, or in compliance with the inventory

For explanation of abbreviations, see section 16.

TSCA list	: Not relevant
OSHA Hazards	: Combustible dust, Organic Peroxide, Skin sensitizer

EPCRA - Emergency Planning and Community Right-to-Know

CERCLA Reportable Quantity

This material does not contain any components with a CERCLA RQ.

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 311/312 Hazards	: Reactivity Hazard Acute Health Hazard
-----------------------------	--

SARA 302	: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.
-----------------	---

SARA 313	: 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.
-----------------	---

Clean Air Act

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 12 (40 CFR 61).

This product does not contain any chemicals subject to disclosure and listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 111 SOCM I Intermediate or Final VOC's (40 CFR 60.489).

Clean Water Act

This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.

This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.

This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

US State Regulations

Massachusetts Right To Know

No components are subject to the Massachusetts Right to Know Act.

PERKADOX 16

Version 1

Revision Date 04/26/2015

Print Date 08/03/2015

US / Z8

Pennsylvania Right To Know

Di(4-tert-butylcyclohexyl)
peroxydicarbonate

15520-11-3 90 - 100 %

California Prop. 65

This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

16. OTHER INFORMATION

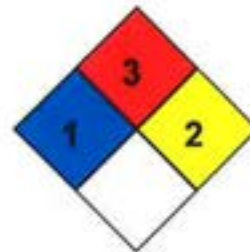
Full text of H-Statements

- H242 : Heating may cause a fire.
- H317 : May cause an allergic skin reaction.
- H402 : Harmful to aquatic life.
- H412 : Harmful to aquatic life with long lasting effects.

Further information

HMIS Classification : Health Hazard: 1
Flammability: 3
Physical hazards: 2

NFPA Classification : Health Hazard: 1
Fire Hazard: 3
Reactivity Hazard: 2



Notification status explanation

REACH	1907/2006 (EU)
CH INV	Switzerland. New notified substances and declared preparations
TSCA	United States TSCA Inventory
DSL	Canadian Domestic Substances List (DSL)
AICS	Australia Inventory of Chemical Substances (AICS)
NZIoC	New Zealand. Inventory of Chemical Substances
ENCS	Japan. ENCS - Existing and New Chemical Substances Inventory
ISHL	Japan. ISHL - Inventory of Chemical Substances
KECI	Korea. Korean Existing Chemicals Inventory (KECI)
PICCS	Philippines Inventory of Chemicals and Chemical Substances (PICCS)
IECSC	China. Inventory of Existing Chemical Substances in China (IECSC)

Further information

Revision Date 04/26/2015

PERKADOX 16

Version 1

Revision Date 04/26/2015

Print Date 08/03/2015

US / Z8

The information in this material safety data sheet should be provided to all who will use, handle, store, transport or otherwise be exposed to this product. The user must determine the appropriate measures that need to be implemented for the use and handling of this product in the context of the user's operations and use of this product. The information contained herein supersedes all previously issued bulletins on the subject matter covered. If the date on this document is more than three years old, call to make certain that this sheet is current. No warranty is made as to the product's merchantability or fitness for any particular purpose, or that any suggested use will not infringe any patent. User must determine for himself, by preliminary tests or otherwise, the suitability of this product for his purposes, including mixing with other products. Nothing contained herein shall be construed as granting or extending any license under any patent.

The information provided in this Material Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

SAFETY DATA SHEET

PERKADOX 16-40XPS

Version 1

Revision Date 04/26/2015

Print Date 05/26/2015

US / Z8

1. PRODUCT AND COMPANY IDENTIFICATION

Product name : PERKADOX 16-40XPS

Product Use Description : Curing agent

Company : Akzo Nobel Functional Chemicals LLC
525 West Van Buren
Chicago IL 60607-3823
USA

Telephone : +118008287929

Fax : +113125447188

E-mail address : RegulatoryAffairs@akzonobel.com

Emergency telephone : AkzoNobel: +31 57 06 79 211 CHEMTREC - USA: 1-800-424-9300 CANUTEC - CANADA: 1-613-996-6666

2. HAZARDS IDENTIFICATION

Emergency Overview

Appearance	paste
Color	white
Odor	faint

GHS Classification

Organic peroxides, Type C
Skin sensitization, Category 1
Acute aquatic toxicity, Category 3
Chronic aquatic toxicity, Category 3

GHS Label element

Hazard pictograms :



Signal Word :

Danger

Hazard Statements :

H242 Heating may cause a fire.
H317 May cause an allergic skin reaction.
H412 Harmful to aquatic life with long lasting effects.

Precautionary Statements :

Prevention:
P210 Keep away from heat/sparks/open flames/hot surfaces. -
No smoking.

PERKADOX 16-40XPS

Version 1

Revision Date 04/26/2015

Print Date 05/26/2015

US / Z8

P220 Keep away from dirt, rust, chemicals in particular.
P234 Keep only in original container.
P261 Avoid breathing dust or fume.
P272 Contaminated work clothing must not be allowed out of the workplace.
P273 Avoid release to the environment.
P280 Wear protective gloves/ eye protection/ face protection.

Response:

P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.
P363 Wash contaminated clothing before reuse.
P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.

Storage:

P403 + P235 Store in a well-ventilated place. Keep cool.
P410 Protect from sunlight.
P411 Store at temperatures not exceeding 30°C/ 86°F.
P420 Store away from other materials.

Disposal:

P501 Dispose of contents/container in accordance with local regulation.

Potential Health Effects

Inhalation : Not expected to be irritating.

Skin : May cause an allergic skin reaction.

Eyes : Not expected to be irritating.

Ingestion : Not expected to be irritating.

Aggravated Medical Condition : None known.

Symptoms of Overexposure : The symptoms and effects are as expected from the hazards as shown in section 2. No specific product related symptoms are known.

Carcinogenicity:

IARC : No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

OSHA : No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

NTP : No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

ACGIH : No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

PERKADOX 16-40XPS

Version 1

Revision Date 04/26/2015

Print Date 05/26/2015

US / Z8

3. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous ingredients

Chemical Name	CAS-No.	Classification	Concentration [%]
Propane- 1,2-diol E490	57-55-6		50 - 70
Di(4-tert-butylcyclohexyl) peroxydicarbonate	15520-11-3	Org. Perox. C; H242 Skin Sens. 1; H317 Aquatic Acute 3; H402 Aquatic Chronic 3; H412	30 - 50
Silicon dioxide	7631-86-9		1 - 5

Di(4-tert-butylcyclohexyl) peroxydicarbonate , 40% paste in solvent

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

4. FIRST AID MEASURES

- General advice** : Move out of dangerous area.
Consult a physician.
Show this material safety data sheet to the doctor in attendance.
- Inhalation** : Consult a physician after significant exposure.
- Skin contact** : Take off contaminated clothing and shoes immediately.
Wash the skin immediately with soap and water.
If skin irritation persists, call a physician.
- Eye contact** : Rinse with plenty of water.
Remove contact lenses.
Protect unharmed eye.
Keep eye wide open while rinsing.
If eye irritation persists, consult a specialist.
- Ingestion** : Clean mouth with water and drink afterwards plenty of water.
Never give anything by mouth to an unconscious person.
Obtain medical attention.
- Notes to physician**
- Symptoms** : The symptoms and effects are as expected from the hazards as shown in section 2. No specific product related symptoms are known.
- Treatment** : Treat symptomatically.

5. FIRE-FIGHTING MEASURES

- Suitable extinguishing media** : Use water spray, alcohol-resistant foam, dry chemical or

PERKADOX 16-40XPS

Version 1

Revision Date 04/26/2015

Print Date 05/26/2015

US / Z8

- carbon dioxide.
- Unsuitable extinguishing media : High volume water jet
- Specific hazards during fire fighting / Specific hazards arising from the chemical : CAUTION: reignition may occur.
Supports combustion.
Do not use a solid water stream as it may scatter and spread fire.
Water spray may be ineffective unless used by experienced firefighters.
Heating may cause decomposition with release of toxic fumes.
Do not allow run-off from fire fighting to enter drains or water courses.
- Combustion products : Carbon oxides
Fire will produce smoke containing hazardous combustion products (see section 10).
- Special protective equipment for fire-fighters : In the event of fire, wear self-contained breathing apparatus.
- Further information : Use water spray to cool unopened containers.
Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

See also Section 9. Physical and chemical properties: Safety data

6. ACCIDENTAL RELEASE MEASURES

- Personal precautions : Use personal protective equipment.
Ensure adequate ventilation.
Remove all sources of ignition.
- Environmental precautions : Prevent product from entering drains.
If the product contaminates rivers and lakes or drains inform respective authorities.
- Methods for cleaning up / Methods for containment : Keep wetted with water.
Soak up with inert absorbent material and dispose of as hazardous waste.
Confinement must be avoided.
Pick up and arrange disposal without creating dust.
Keep in suitable, closed containers for disposal.
Never return spills in original containers for re-use.
- Additional advice : For personal protection see section 8.

7. HANDLING AND STORAGE

Handling

- Advice on safe handling : For personal protection see section 8.
Avoid formation of respirable particles.
Persons with a history of skin sensitization problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is

PERKADOX 16-40XPS

Version 1

Revision Date 04/26/2015

Print Date 05/26/2015

US / Z8

being used.

Smoking, eating and drinking should be prohibited in the application area.

Open drum carefully as content may be under pressure.

Dispose of rinse water in accordance with local and national regulations.

Advice on protection against fire and explosion

- : Use explosion protected equipment.
- Provide appropriate exhaust ventilation at places where dust is formed.
- Keep away from sources of ignition - No smoking.
- No sparking tools should be used.
- Keep away from reducing agents (e.g. amines), acids, alkalies and heavy metal compounds (e.g. accelerators, driers, metal soaps).
- Do not cut or weld on or near this container even when empty.
- Keep away from combustible material.

Temperature class

- : It is recommended to use electrical equipment of temperature group T3. However, autoignition can never be excluded.

Storage

Requirements for storage areas and containers

- : No smoking.
- Observe label precautions.
- Electrical installations / working materials must comply with the technological safety standards.
- Keep only in original container.
- Store away from other materials.

Maximum storage temperature:

- : 20 °C (68 °F)

Other data

- : No decomposition if stored and applied as directed.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

Ingredients with workplace control parameters

Ingredients	CAS-No.	Value	Control parameters	Update	Basis	Form of exposure
Propane- 1,2-diol E490	57-55-6	TWA	10 mg/m3	2008-01-01	US WEL	
Silicon dioxide	7631-86-9	TWA	20 Million particles per cubic foot	2012-07-01	OSHA Z-3	Dust
	Further information	:	a: Millions of particles per cubic foot of air, based on impinger samples counted by light-field techniques. mppcf X 35.3 = million particles per cubic meter = particles per c.c Silica			
		TWA	80 mg/m3 / %SiO2	2012-07-01	OSHA Z-3	Dust
	Further information	:	Silica			
		TWA	6 mg/m3	2013-10-08	NIOSH REL	
	Further information	:	Silica			

PERKADOX 16-40XPS

Version 1

Revision Date 04/26/2015

Print Date 05/26/2015

US / Z8

STEL: Short term exposure limit
TWA: Time Weighted Average

Engineering measures

Explosion proof ventilation recommended.

Personal protective equipment

Eye/face protection : Tightly fitting safety goggles

Hand protection : Glove material: butyl-rubber
: Glove material: Neoprene

Skin and body protection : Protective suit

Respiratory protection : Handle in accordance with good industrial hygiene and safety practice.

Hygiene measures : Handle in accordance with good industrial hygiene and safety practice.
When using do not eat or drink.
When using do not smoke.
Wash hands before breaks and at the end of workday.
Wash contaminated clothing before re-use.

Environmental exposure controls

General advice : Prevent product from entering drains.
If the product contaminates rivers and lakes or drains inform respective authorities.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form : paste

Color : white

Odor : faint

Odor Threshold : No data available

Safety data

pH : not determined

Melting point : No data available

Boiling point/boiling range : Decomposes below the boiling point.

Flash point : Not applicable

Evaporation rate : Not applicable

Flammability (solid, gas) : Decomposition products may be flammable.

PERKADOX 16-40XPS

Version 1

Revision Date 04/26/2015

Print Date 05/26/2015

US / Z8

Lower explosion limit	: No data available
Upper explosion limit	: No data available
Vapor pressure	: Not applicable
Relative vapor density	: Not applicable
Relative density	: No data available
Water solubility	: at 20 °C insoluble
Solubility in other solvents	: No data available
Partition coefficient: n-octanol/water	: No data available
Autoignition temperature	: Test method not applicable
Decomposition temperature	: SADT - (Self accelerating decomposition temperature) is the lowest temperature at which self accelerating decomposition may occur with a substance in the packaging as used in transport. A dangerous self-accelerating decomposition reaction and, under certain circumstances, explosion or fire can be caused by thermal decomposition at and above the SADT. Contact with incompatible substances can cause decomposition below the SADT.
Self-Accelerating decomposition temperature (SADT)	: 45 °C
	: 40 °C
Viscosity, dynamic	: at 20 °C thixotropic
Viscosity, kinematic	: thixotropic
Explosive properties	: Not explosive
Oxidizing properties	: Not classified as oxidizing.
Active Oxygen Content	: 1.6 %
Organic peroxides	: 35 - 40 %

This material safety datasheet only contains information relating to safety and does not replace any product information or product specification.

10. STABILITY AND REACTIVITY

Conditions to avoid	: Confinement must be avoided. Heat, flames and sparks.
	For safety, store below: 20 °C (68 °F)

PERKADOX 16-40XPS

Version 1

Revision Date 04/26/2015

Print Date 05/26/2015

US / Z8

Materials to avoid	<ul style="list-style-type: none">Contact with incompatible materials will result in hazardous decomposition.For queries regarding the suitability of other materials please contact the supplier.Do not mix with peroxide accelerators, unless under controlled processing.Use only stainless steel 316, PP, polyethylene or glass-lined equipment.Acids and basesIronCopperReducing agentsHeavy metalsRust
Hazardous decomposition products	<ul style="list-style-type: none">4-tert-butylcyclohexanolCarbon oxides4-tert-Butylcyclohexanone
Thermal decomposition	<ul style="list-style-type: none">SADT - (Self accelerating decomposition temperature) is the lowest temperature at which self accelerating decomposition may occur with a substance in the packaging as used in transport. A dangerous self-accelerating decomposition reaction and, under certain circumstances, explosion or fire can be caused by thermal decomposition at and above the SADT. Contact with incompatible substances can cause decomposition below the SADT.
Reactivity	<ul style="list-style-type: none">Stable under normal conditions.
Chemical stability	<ul style="list-style-type: none">Stable under recommended storage conditions.
Hazardous reactions	<ul style="list-style-type: none">No dangerous reaction known under conditions of normal use.
Self-Accelerating decomposition temperature (SADT)	<ul style="list-style-type: none">45 °C (113 °F)40 °C (104 °F)

11. TOXICOLOGICAL INFORMATION

PRODUCT INFORMATION:

Toxicology Assessment

Further information : No further data available.

Carcinogenicity:

IARC : No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

OSHA : No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

NTP : No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated

PERKADOX 16-40XPS

Version 1

Revision Date 04/26/2015

Print Date 05/26/2015

US / Z8

ACGIH carcinogen by NTP.
: No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

TOXICOLOGY DATA FOR THE INGREDIENTS:

Test result

Component: Propane-1,2-diol E490

Acute oral toxicity : LD50: 22,000 mg/kg
Species: Rat

Component: Di(4-tert-butylcyclohexyl) peroxydicarbonate

Acute oral toxicity : LD50: > 5,000 mg/kg
Species: Rat
Method: OECD Test Guideline 401
Evident toxicity

Skin irritation : Result: No skin irritation
Method: OECD Test Guideline 404
Exposure time: 24 h

Eye irritation : Species: Rabbit
Result: No eye irritation
Method: OECD Test Guideline 405
Exposure time: 24 h

Germ cell mutagenicity
Genotoxicity in vitro : Result: negative
Method: OECD Test Guideline 471

Result: negative
Method: Other guidelines

Genotoxicity in vivo : Result: Not mutagenic.

Target Organ Systemic
Toxicant - Repeated
exposure : Routes of exposure: Ingestion
The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Aspiration toxicity : No aspiration toxicity classification

Component: Silicon dioxide

Acute oral toxicity : LD50: > 10,000 mg/kg
Species: Rat

PERKADOX 16-40XPS

Version 1

Revision Date 04/26/2015

Print Date 05/26/2015

US / Z8

12. ECOLOGICAL INFORMATION

PRODUCT INFORMATION:

Ecotoxicology Assessment

Additional ecological information

: An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Harmful to aquatic life with long lasting effects.

Further information on ecology

Hazardous to the ozone layer

Regulation

: 40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances

Remarks

: This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

INGREDIENTS:

Ecotoxicology Assessment

Component: Di(4-tert-butylcyclohexyl) peroxydicarbonate

Acute aquatic toxicity

: Harmful to aquatic life.

Chronic aquatic toxicity

: Harmful to aquatic life with long lasting effects.

Test result

Component: Propane-1,2-diol E490

Ecotoxicity effects

Toxicity to fish

: LC50: 40,613 mg/l
Exposure time: 96 h
Species: Oncorhynchus mykiss (rainbow trout)

Toxicity to daphnia and other aquatic invertebrates

: EC50: 43,500 mg/l
Exposure time: 48 h
Species: Daphnia

Toxicity to algae

: EC50: 19,000 mg/l
Exposure time: 96 h
Species: Selenastrum capricornutum (green algae)

Elimination information (persistence and degradability)

Bioaccumulation

: Bioconcentration factor (BCF): 0.09

Mobility

: Medium: Soil
Low volatility

Surface tension

: 71.6 mN/m

Biodegradability

: Result: Readily biodegradable.

PERKADOX 16-40XPS

Version 1

Revision Date 04/26/2015

Print Date 05/26/2015

US / Z8

Biodegradation: 81.7 %
Exposure time: 28 d
Method: OECD Test Guideline 301F

Further information on ecology

Biochemical Oxygen Demand (BOD) : No data available

Component: Di(4-tert-butylcyclohexyl) peroxydicarbonate

Ecotoxicity effects

Toxicity to fish : LC50: 704 mg/l
Exposure time: 96 h
Species: Oncorhynchus mykiss (rainbow trout)
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EC50: 42 mg/l
Exposure time: 48 h
Species: Daphnia magna (Water flea)

Toxicity to algae : ErC50: ca. 39 mg/l
Exposure time: 72 h
Species: Desmodesmus subspicatus (green algae)
Test Type: Growth inhibition
Method: OECD Test Guideline 201

NOEC: 17 mg/l
Exposure time: 72 h
Species: Desmodesmus subspicatus (green algae)
Test Type: Growth inhibition
Method: OECD Test Guideline 201

Toxicity to bacteria : NOEC: 20 mg/l
Exposure time: 5 d
Species: activated sludge
Method: closed serum bottle
5-days

Elimination Information (persistence and degradability)

Bioaccumulation : Bioconcentration factor (BCF): 2,926

Biodegradability : Result: Not readily biodegradable.
Method: OECD Test Guideline 301B

13. DISPOSAL CONSIDERATIONS

Product : The product should not be allowed to enter drains, water courses or the soil.
Do not contaminate ponds, waterways or ditches with chemical or used container.
Hazardous waste
Dispose of contents/container in accordance with local regulation.

PERKADOX 16-40XPS

Version 1

Revision Date 04/26/2015

Print Date 05/26/2015

US / Z8

Contaminated packaging : Empty remaining contents.
Dispose of as unused product.
Do not burn, or use a cutting torch on, the empty drum.
Due to the high risk of contamination recycling/recovery is not recommended.
Follow all warnings even after the container is emptied.

14. TRANSPORT INFORMATION

International Regulation

IATA-DGR

UN/ID No. : UN 3114
Class : 5.2
Not permitted for transport

IMDG-Code

UN number : UN 3114
Proper shipping name : ORGANIC PEROXIDE TYPE C, SOLID, TEMPERATURE CONTROLLED (Di(4-tert-butylcyclohexyl) peroxydicarbonate)
Class : 5.2
Packing group : Not Assigned
Labels : 5.2
EmS Code : F-F, S-R
Marine pollutant : no

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

Not applicable for product as supplied.

Further information for transport

Control temperature : 35 °C (95 °F)
Emergency temperature : 40 °C (104 °F)

Domestic regulation

49 CFR

UN/ID/NA number : UN 3114
Proper shipping name : Organic peroxide type C, solid, temperature controlled (Di(4-tert-butylcyclohexyl) peroxydicarbonate, 40%)
Class : 5.2
Packing group : II
Labels : 5.2
ERG Code : 148
Marine pollutant : no
Reportable Quantity : This product does not contain an environmentally hazardous substance per 49 CFR 172.101, Appendix A.

15. REGULATORY INFORMATION

Notification status

CH INV : YES. On the inventory, or in compliance with the inventory
TSCA : YES. All chemical substances in this product are either listed on the TSCA inventory or in compliance with a TSCA inventory exemption.
DSL : YES. All components of this product are on the Canadian DSL.
AICS : YES. On the inventory, or in compliance with the inventory

PERKADOX 16-40XPS

Version 1

Revision Date 04/26/2015

Print Date 05/26/2015

US / Z8

NZIoC : NO. On the inventory, or in compliance with the inventory
ENCS : YES. On the inventory, or in compliance with the inventory
ISHL : YES. On the inventory, or in compliance with the inventory
KECI : YES. On the inventory, or in compliance with the inventory
PICCS : YES. On the inventory, or in compliance with the inventory
IECSC : YES. On the inventory, or in compliance with the inventory

For explanation of abbreviations, see section 16.

TSCA list : Not relevant
OSHA Hazards : Organic Peroxide, Skin sensitizer

EPCRA - Emergency Planning and Community Right-to-Know

CERCLA Reportable Quantity

This material does not contain any components with a CERCLA RQ.

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 311/312 Hazards : Reactivity Hazard
Acute Health Hazard

SARA 302 : No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 : 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.

Clean Air Act

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 12 (40 CFR 61).

This product does not contain any chemicals subject to disclosure and listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

The following chemical(s) are listed under the U.S. Clean Air Act Section 111 SOCM1 Intermediate or Final VOC's (40 CFR 60.489):

Propane- 1,2-diol E490 57-55-6

Clean Water Act

This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.

This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.

This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

US State Regulations

Massachusetts Right To Know

Silicon dioxide 7631-86-9 1 - 5 %

California Prop. 65

This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

PERKADOX 16-40XPS

Version 1

Revision Date 04/26/2015

Print Date 05/26/2015

US / Z8

16. OTHER INFORMATION

Full text of H-Statements

- H242 : Heating may cause a fire.
- H317 : May cause an allergic skin reaction.
- H402 : Harmful to aquatic life.
- H412 : Harmful to aquatic life with long lasting effects.

Further information

- HMIS Classification** : Health Hazard: 1
Flammability: 2
Physical hazards: 3

- NFPA Classification** : Health Hazard: 1
Fire Hazard: 3
Reactivity Hazard: 2



Notification status explanation

REACH	1907/2006 (EU)
CH INV	Switzerland. New notified substances and declared preparations
TSCA	United States TSCA Inventory
DSL	Canadian Domestic Substances List (DSL)
AICS	Australia Inventory of Chemical Substances (AICS)
NZIoC	New Zealand. Inventory of Chemical Substances
ENCS	Japan. ENCS - Existing and New Chemical Substances Inventory
ISHL	Japan. ISHL - Inventory of Chemical Substances
KECI	Korea. Korean Existing Chemicals Inventory (KECI)
PICCS	Philippines Inventory of Chemicals and Chemical Substances (PICCS)
IECSC	China. Inventory of Existing Chemical Substances in China (IECSC)

Further information

Revision Date 04/26/2015

The information in this material safety data sheet should be provided to all who will use, handle, store, transport or otherwise be exposed to this product. The user must determine the appropriate measures that need to be implemented for the use and handling of this product in the context of the user's operations and use of this product. The information contained herein supersedes all previously issued bulletins on the subject matter covered. If the date on this document is more than three years old, call to make certain that this sheet is current. No warranty is made as to the product's merchantability or fitness for any particular purpose, or that any suggested use will not infringe any patent. User must determine for himself, by preliminary tests or otherwise, the suitability of this product for his purposes, including mixing with other products. Nothing contained herein shall be construed as granting or extending any license under any patent.

PERKADOX 16-40XPS

Version 1

Revision Date 04/26/2015

Print Date 05/26/2015

US / Z8

The information provided in this Material Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.