

# SAFETY DATA SHEET

**Date Printed:**

**Version:** 1

**Revision date:** October 2, 2024

**Regulation:** In accordance with Commission Regulation (EU) 2020/878

## 1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

### 1.1 Product identifier

**Product name:** CLNS 8141S, CLNS 8141SC, CLNS 8141EHV, CLNS 8141SEHV, CLNS 8141L

**EC No.:** Not applicable

**REACH Registration No.:** Refer to chapter 3

**CAS No.:** Not applicable

### 1.2 Relevant identified uses of the substance or mixture and uses advised against

#### 1.2.1 Identified Uses

- It is used as insulating materials

#### 1.2.2 Recommended use

- It is used as insulating materials

#### 1.2.3 Restrictions on use

- Do not use for purposes other than those recommended.

### 1.3 Details of the supplier of the safety data sheet

#### 1.3.1 Manufacturer

Company name: Hanwha Solutions Corporation

Address: Yeosu plant, Hanwha Solutions Co, Ltd., 117, Yeosusandan 3-ro, Yeosu-si, Jeollanam-do, Korea

Prepared by: W&C Production team

Contact Telephone: +82-61-688-1550, Fax: +82-61-688-1585

#### 1.3.2 Supplier & Distributor

Company name: Hanwha Solutions Corporation

Address: 21F, Hanwha Bldg., Janggyo-dong, Jung-gu, Seoul, Korea

Prepared by: PO Tech Center, W&C Sales Team

Contact Telephone: +82-2-729-5315, Fax : +82-2-729-3000

### 1.4 Emergency telephone number

**Emergency Telephone:** +82-2-729-1172

## 2. HAZARDS IDENTIFICATION

### 2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 (CLP)

**Physical / Chemical Hazards:** Not classified

**Health Hazards:** Skin sensitization: Category 1, Reproductive toxicity: Category 1B

**Environmental Hazards:** Chronic toxicity: Category 2

### 2.2 Label elements

o Hazard pictograms:



**o Signal word:** Danger

**o Hazard statement:**

H317 May cause an allergic skin reaction

H360 May damage fertility or the unborn child

H411 Toxic to aquatic life with long lasting effects

**o Precautionary statements:**

**- Prevention:**

P201 Obtain special instructions before use.

P202 Do not handle until all safety precautions have been read and understood.

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

P272 Contaminated work clothing should not be allowed out of the workplace.

P273 Avoid release to the environment.

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

**- 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.

P321 Specific treatment (see Section 8 on this label).

P363 Wash contaminated clothing before reuse.

P391 Collect spillage.

**- Storage:**

P405 Store locked up.

**- Disposal:**

P501 Dispose the contents/container in accordance with local/regional/national/international regulations.

### 2.3 Other hazards

**- Additional precautionary statements:** EUH208-‘Contains CAS No. 96-69-5, CAS No. 6362-80-7. May produce an allergic reaction’, EUH210-‘Safety data sheet available on request’

**- National Fire Protection Association (NFPA):**

**Health:** 2

**Flammability:** -

**Reactivity:** -

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

**3.1 Substances:** Not applicable

**3.2 Mixtures:**

Component	CAS No.	EC No.	Conc. / %	Classification according to 1272/2008/EC	SCL/ M-factor/ ATE	Registration No.
Polyethylene	9002-88-4	933-091-9	>98	Not classified	ATE(oral) > 2,000 mg/kg bw	01-2119462827-27-0000
Dicumyl Peroxide	80-43-3	201-279-3	<2	Org. Perox. F Skin Irrit. 2 Eye Irrit. 2 Aquatic Chronic 2 Repr. 1B	ATE(oral) > 2,000 mg/kg bw ATE(dermal) > 2,000 mg/kg bw	01-2119541688-27-0010
4,4'-Thiobis(2-tert-butyl-5-methylphenol)	96-69-5	202-525-2	<1	Skin Sens. 1 Aquatic Acute 1 Aquatic Chronic 1	ATE(oral) = 2,315 mg/kg bw ATE(dermal) > 5,010 mg/kg bw	
2,4-Diphenyl-4-methyl-1-pentene	6362-80-7	228-846-8	<1	Acute Tox. 4 Skin Sens. 1 STOT Rep. Exp. 2 Aquatic Acute 1 Aquatic Chronic 1	ATE(oral) = 300~2,000 mg/kg bw	

\*Under EU REACH regulation, monomers in Polyethylene copolymer are registered.

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## 4. FIRST AID MEASURES

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### 4.1 Description of first aid measures

#### 4.1.1 General

**information:** Remove soiled or soaked clothing immediately, do not allow to dry.  
Adhere to personal protective measures when giving first aid.  
Clean body thoroughly (Bad, shower).

#### 4.1.2 Following

**inhalation:** If exposed or concerned: Get medical advice/ attention.  
Move victim to fresh air.  
Keep victim warm and quiet.

#### 4.1.3 Following

**skin contact:** If skin irritation or rash occurs: Get medical advice/attention.  
Wash contaminated clothing before reuse.  
For hot product, immediately immerse in or flush the affected area with large amounts of cold water to dissipate heat.  
Call emergency medical service.  
Remove and isolate contaminated clothing and shoes.  
In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.  
For minor skin contact, avoid spreading material on unaffected skin.

#### 4.1.4 Following

**eye contact:** Call emergency medical service.  
In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.

#### 4.1.5 Following

**ingestion:** If exposed or concerned: Get medical advice/ attention.  
Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.

#### 4.1.6 Self-protection

**of the first aider:** First aider: Pay attention to self-protection!

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

- Symptoms and effects: None known.

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

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

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## 5. FIRE-FIGHTING MEASURES

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### 5.1 Extinguishing media

- Suitable extinguishing media: Alcohol foam, carbon dioxide, water spray, dry sand or earth
- Unsuitable extinguishing media: Not available

### 5.2 Special hazards arising from the substance or mixture

- May decompose at high temperatures into forming toxic gases.
- Containers may explode when heated.
- Some of these materials may burn, but none ignite readily.
- Non-combustible, substance itself does not burn but may decompose upon heating, then produce corrosive and/or toxic fumes.

### 5.3 Advice for firefighters

- Rescuers should put on appropriate protective gear.
- Evacuate area and fight fire from a safe distance.
- Substance may be transported in a molten form.

- Some may be transported hot.
- Dike fire-control water for later disposal; do not scatter the material.
- Move containers from fire area if you can do it without risk.
- Fire involving Tanks; Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Fire involving Tanks; Cool containers with flooding quantities of water until well after fire is out.
- Fire involving Tanks; Always stay away from tanks engulfed in fire.
- Fire involving Tanks; For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

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## **6. ACCIDENTAL RELEASE MEASURES**

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### **6.1 Personal precautions, protective equipment and emergency procedures**

#### **6.1.1 For non-emergency personnel**

- Clean up spills immediately, observing precautions in Protective Equipment section.
- Keep unnecessary and unprotected personnel from entering.
- Stop leak if you can do it without risk.
- Do not touch damaged containers or spilled materials unless wearing appropriate protective clothing.

#### **6.1.2 For emergency responders**

- Isolate hazard area.
- Eliminate all ignition sources.
- Cover with plastic sheet to prevent spreading.
- Please note that there are materials and conditions to avoid.
- For further information refer to section 8.2.

### **6.2 Environmental precautions**

- Avoid release to the environment.
- Prevent entry into waterways, sewers, basements or confined areas.

### **6.3 Methods and material for containment and cleaning up**

- Collect spillage.
- Absorb spills with inert material (e.g., dry sand or earth), then place in a chemical waste container.
- Absorb the liquid and scrub the area with detergent and water.
- Large Spill; Dike far ahead of liquid spill for later disposal.
- With clean shovel place material into clean, dry container and cover loosely; move containers from spill area.
- Powder Spill; Cover powder spill with plastic sheet or tarp to minimize spreading and keep powder dry.
- Small Spill; Take up with sand or other non-combustible absorbent material and place into containers for later disposal.

### **6.4 Reference to other sections**

- If appropriate, Section 8 and 13 shall be referred to.

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## **7. HANDLING AND STORAGE**

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### **7.1 Precautions for safe handling**

- Storing plastic dust that has undergone polymerization process or during abnormal operation, there is a high risk of ignition, so it is necessary to monitor the temperature inside the dust during the process. In case of abnormal operation, completely remove dust or manage ignition sources.
- Although plastic dust has a large average particle size, the proportion of fine dust with a particle size of several  $\mu\text{m}$  is very high and the specific gravity is small, so it is easy to generate suspended dust in the air. Also, be careful about the risk of ignition or explosion because the ignition energy is small.
- The lower explosive limit concentration of plastic dust is  $50\text{g}/\text{m}^3$  or less, so the possibility of fire and explosion is high, so manage the dust concentration when handling or using dust.
- Do not handle until all safety precautions have been read and understood.
- Avoid breathing dust/fume/gas/mist/vapours/spray.

- Contaminated work clothing should not be allowed out of the workplace.
- Follow all MSDS/label precautions even after container is emptied because they may retain product residues.
- Use carefully in handling/storage.
- Loosen closure cautiously before opening.
- Avoid prolonged or repeated contact with skin.
- Do not enter storage area unless adequately ventilated.
- Please note that there are materials and conditions to avoid.
- Be careful to high temperature.

### 7.2 Conditions for safe storage, including any incompatibilities

- Store locked up.
- Empty drums should be completely drained, properly bunged, and promptly returned to a drum reconditioner, or properly disposed of.

### 7.3 Specific end use(s)

- Recommendations shall relate to the identified use(s) referred to in subsection 1.2 and be detailed and operational.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1 Control parameters

#### Occupational Exposure limits

<Polyethylene>

**o EU regulation:** Not available

**o U.S regulation:**

- NIOSH: Not available
- OSHA: Not available

**o ACGIH:** Not available

**o Biological exposure index:** Not available

**o Others:**

- Bulgaria: TWA=5mg/m<sup>3</sup> (dust, listed under Dust from Polyethylene)
- China: TWA= 5mg/m<sup>3</sup> (total dust)
- Czech Republic: TWA= 5mg/m<sup>3</sup> (dust)

**o DNELs, PNECs:** Not available

<Dicumyl peroxide>

**o EU regulation:** Not available

**o U.S regulation:**

- NIOSH: Not available
- OSHA: Not available

**o ACGIH:** Not available

**o Biological exposure index:** Not available

**o Others:** Not available

**o DNELs, PNECs:**

Exposure route of relevance	DNELs, DMELs, PNECs												
	Industrial				Professional				Consumer				
	Long term, Local effects	Long term, systemic effects	Short term, local effects	Short term, systemic effect	Long term, Local effects	Long term, systemic effects	Short term, local effects	Short term, systemic effect	Long term, Local effects	Long term, systemic effects	Short term, local effects	Short term, systemic effect	
Human: oral (mg/kg bw/day)	-	-	-	-	-	-	-	-	-	-	0.4	-	-
Human: inhalation (mg/m <sup>3</sup> )	-	5.6	-	-	-	-	-	-	-	-	1.4	-	-
Human: dermal	Low hazard	0.8	Low hazard	-	-	-	-	-	-	Low hazard	0.4	Low hazard	-

(mg/kg bw/day)												
Environment: water	2.34 µg/L(freshwater),											
Environment: air	-											
Environment: soil	447 µg/kg soil dw											
Environment: sediment	2.24 mg/kg sediment dw(freshwater)											
Environment: STP	100 mg/L											
Environment: Predators	No potential for bioaccumulation											

<4,4'-Thiobis(2-tert-butyl-5-methylphenol)>

o **EU regulation:** Not available

o **U.S regulation:**

- NIOSH: 10 mg/m<sup>3</sup> TWA (total dust), 5 mg/m<sup>3</sup> TWA (respirable dust)

- OSHA: 15 mg/m<sup>3</sup> TWA (total dust) (Final PELs), 5 mg/m<sup>3</sup> TWA (respirable fraction) (Final PELs),

10 mg/m<sup>3</sup> TWA (total dust) (Vacated PELs), 5 mg/m<sup>3</sup> TWA (respirable fraction) (Vacated PELs)

o **ACGIH:** 1 mg/m<sup>3</sup> TWA (inhalable particulate matter)

o **Biological exposure index:** Not available

o **Others:**

- Argentina: 10 mg/m<sup>3</sup> TWA [CMP]

- Australia: 10 mg/m<sup>3</sup> TWA

- Belgium: 1 mg/m<sup>3</sup> TWA

o **DNELs, PNECs:**

Exposure route of relevance	DNELs, DMELs, PNECs											
	Industrial				Professional				Consumer			
	Long term, Local effects	Long term, systemic effects	Short term, local effects	Short term, systemic effect	Long term, Local effects	Long term, systemic effects	Short term, local effects	Short term, systemic effect	Long term, Local effects	Long term, systemic effects	Short term, local effects	Short term, systemic effect
Human: oral (mg/kg bw/day)	-	-	-	-	-	-	-	-	-	0.2	-	-
Human: inhalation (mg/m <sup>3</sup> )	-	2.8	-	-	-	-	-	-	-	0.7	-	-
Human: dermal (mg/kg bw/day)	High hazard	1	High hazard	-	-	-	-	-	High hazard	0.5	High hazard	-
Environment: water	142 ng/L (freshwater),											
Environment: air	-											
Environment: soil	1.15 mg/kg soil dw											
Environment: sediment	5.77 mg/kg sediment dw(freshwater)											
Environment: STP	No available											
Environment: Predators	2 mg/kg food(Secondary poisoning)											

<2,4-Diphenyl-4-methyl-1-pentene>

o **EU regulation:** Not available

o **U.S regulation:**

- NIOSH: Not available

- OSHA: Not available

o **ACGIH:** Not available

o **Biological exposure index:** Not available

o Others: Not available

o DNELs, PNECs:

Exposure route of relevance	DNELs, DMELs, PNECs											
	Industrial				Professional				Consumer			
	Long term, Local effects	Long term, systemic effects	Short term, local effects	Short term, systemic effect	Long term, Local effects	Long term, systemic effects	Short term, local effects	Short term, systemic effect	Long term, Local effects	Long term, systemic effects	Short term, local effects	Short term, systemic effect
Human: oral (mg/kg bw/day)	-	-	-	-	-	-	-	-	-	0.08	-	-
Human: inhalation (mg/m <sup>3</sup> )	-	0.53	-	-	-	-	-	-	-	0.13	-	-
Human: dermal (mg/kg bw/day)	High hazard	0.15	High hazard	-	-	-	-	-	High hazard	0.08	High hazard	-
Environment: water	57 ng/L (freshwater),											
Environment: air	-											
Environment: soil	75 µg/kg soil dw											
Environment: sediment	375 µg/kg sediment dw(freshwater)											
Environment: STP	100 mg/L											
Environment: Predators	177.8 mg/kg food(Secondary poisoning)											

## 8.2 Exposure controls

### Appropriate engineering controls:

- Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits.

### Individual protection measures, such as personal protective equipment:

#### Respiratory protection:

- Wear appropriate protective clothing by considering physical and chemical properties of chemicals.

#### Eye protection:

- Wear breathable safety goggles to protect from particulate material causing eye irritation or other disorder.
- An eye wash unit and safety shower station should be available nearby work place.

#### Hand protection:

- Wear appropriate protective gloves by considering physical and chemical properties of chemicals.

#### Body protection:

- Wear appropriate protective clothing by considering physical and chemical properties of chemicals.

#### Thermal hazards:

- If appropriate, Section 5.3 shall be referred to.

**Environmental exposure controls:** Not available

## 9. PHYSICAL AND CHEMICAL PROPERTIES

### 9.1 Information on basic physical and chemical properties

#### Appearance

<b>Physical state:</b>	Solid
<b>Color:</b>	White
<b>Odor:</b>	Not available
<b>Odor threshold:</b>	Not available
<b>pH:</b>	Not available
<b>Melting point/freezing point:</b>	100~130°C
<b>Boiling point or initial boiling point and boiling range:</b>	Not available
<b>Flash point:</b>	Not applicable
<b>Evaporation rate:</b>	Not available
<b>Flammability (solid, gas):</b>	Not available
<b>Upper/lower flammability or explosive limits:</b>	Not available
<b>Vapour pressure:</b>	Not available
<b>Vapour density:</b>	Not available
<b>Density and/or relative density:</b>	Not available
<b>Solubility(ies):</b>	Not available
<b>Partition coefficient: n-octanol/water:</b>	Not available
<b>Auto-ignition temperature:</b>	Not available
<b>Decomposition temperature:</b>	Not available
<b>Viscosity:</b>	Not applicable
<b>Kinematic viscosity:</b>	Not applicable
<b>Explosive properties:</b>	Not available
<b>Oxidizing properties:</b>	Not available
<b>Molecular weight:</b>	Not available
<b>Specific gravity:</b>	Not available
<b>Particle characteristics (solid):</b>	Not available
<b>Particle Size (Polymer compound):</b>	Not available
<b>Self-accelerated decomposition temperature (Polymer compound):</b>	Not available

**9.2 Other information:** Not available

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## 10. STABILITY AND REACTIVITY

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### 10.1 Reactivity

- Containers may explode when heated.

### 10.2 Chemical stability

- Some of these materials may burn, but none ignite readily

### 10.3 Possibility of hazardous reactions

- May decompose at high temperatures into forming toxic gases.
- Non-combustible, substance itself does not burn but may decompose upon heating, then produce corrosive and/or toxic fumes.

### 10.4 Conditions to avoid

- Heat, sparks or flames

### 10.5 Incompatible materials

- Combustibles, reducing agents

### 10.6 Hazardous decomposition products

- Corrosive and/or toxic fume
- Irritating and/or toxic gases
- Irritating, corrosive and/or toxic gases

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## 11. TOXICOLOGICAL INFORMATION

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11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008	
(a) Acute toxicity	
Oral	Not classified (ATE <sub>mix</sub> = 50,000 mg/kg bw)
	<ul style="list-style-type: none"> <li>- Polyethylene:               <ul style="list-style-type: none"> <li>· Rat, LD<sub>50</sub> &gt; 2,000 mg/kg bw (Average molecular weight: 450) (PE)</li> <li>· Rat, LD<sub>50</sub> &gt; 5,000 mg/kg bw (Average molecular weight: 650) (PE)</li> </ul> </li> <li>- Dicumyl Peroxide:               <ul style="list-style-type: none"> <li>· Rat(female/male), LD<sub>50</sub> ≥ 2,000 mg/kg bw, no deaths (OECD TG 401, GLP) (K-REACH registration Dossier)</li> </ul> </li> <li>- 4,4'-Thiobis(2-tert-butyl-5-methylphenol)               <ul style="list-style-type: none"> <li>· Rat(female/male), LD<sub>50</sub> = 2,315 mg/kg bw (experiment 19)</li> <li>· Rat(female/male), LD<sub>50</sub> = 2,420 mg/kg bw (experiment 20) (ECHA 1)</li> </ul> </li> <li>- 2,4-Diphenyl-4-methyl-1-pentene               <ul style="list-style-type: none"> <li>· Rat(female), LD<sub>50</sub> = 300~2,000 mg/kg bw, 3 deaths (OECD TG 423, GLP) (ECHA 2)</li> </ul> </li> </ul>
Dermal	Not classified (ATE <sub>mix</sub> = 2,857.14 mg/kg bw)
	<ul style="list-style-type: none"> <li>- Dicumyl Peroxide:               <ul style="list-style-type: none"> <li>· Rat(female/male), LD<sub>50</sub> &gt; 2,000 mg/kg bw, no deaths (OECD TG 401, GLP) (K-REACH registration Dossier)</li> </ul> </li> <li>- 4,4'-Thiobis(2-tert-butyl-5-methylphenol)               <ul style="list-style-type: none"> <li>· Rabbit(female/male), LD<sub>50</sub> &gt; 5,010 mg/kg bw (ECHA 1)</li> </ul> </li> </ul>
Inhalation	Not available
(b) Skin Corrosion/ Irritation	Not classified
	<ul style="list-style-type: none"> <li>- Polyethylene:               <ul style="list-style-type: none"> <li>· It caused a primary irritation index of 0.0 when tested on rabbit skin, according to the Draize index. (Average molecular weight: 450) (PE)</li> <li>· It caused a primary irritation index of 0.2 when tested on rabbit skin. No irritation was observed at the other two treated. (Average molecular weight: 655) (PE)</li> </ul> </li> <li>- Dicumyl Peroxide:               <ul style="list-style-type: none"> <li>· The substance occurred mild erythema and edema when tested on rabbit skin, resulting in mean score of 0.3~0.67 for skin irritation and fully reversible within 72 hours. (OECD TG 404) (K-REACH registration Dossier)</li> <li>· In addition RAC noted that according to ECHA Guidance on the Application of the CLP Criteria (which cross refers to ECHA Guidance on Information Requirements &amp; Chemical Safety Assessment, Chapter R7, section R.7.2.6.2 "Testing and assessment strategy for skin corrosion/irritation"), if a substance is a peroxide it can be considered as a skin irritant Cat. 2. Given the uncertainty of the available test data, the mentioned 'evidence to the contrary' is lacking. RAC recommended not to remove the current classification based on lack of proper data and in conclusion, agreed in line with the guidance to retain the current classification of Skin Irrit. 2; H315. (Committee for Risk Assessment RAC Opinion)</li> </ul> </li> <li>- 4,4'-Thiobis(2-tert-butyl-5-methylphenol)               <ul style="list-style-type: none"> <li>· The substance was not irritating when tested on rabbit skin. (OECD TG 404) (ECHA 1)</li> </ul> </li> <li>- 2,4-Diphenyl-4-methyl-1-pentene               <ul style="list-style-type: none"> <li>· The substance was not irritating when tested on rabbit skin. (Erythema score= 2/4(Time point: 24, 48, 72hr, fully reversible within 14 days),</li> </ul> </li> </ul>

	Edema score: 1/4(Time point: 24, 48, 72hr, fully reversible within 11 days) (OECD TG 404, GLP) (ECHA 2)
(c) Serious Eye Damage/ Irritation	<p>Not classified</p> <ul style="list-style-type: none"> <li>- Polyethylene: <ul style="list-style-type: none"> <li>· When white rabbits were tested with 13% Polyethylene beads, the maximum ocular score was 8/110 with resolution after 48 h and no corneal abrasions were observed. (Average molecular weight: no data)</li> <li>· All treated eyes appeared normal at 48h and 7 days after application on the eyes of rabbits. Polyethylene caused a maximum group mean score of 11.0. (Average molecular weight: 450) (PE)</li> <li>· All treated eyes appeared normal at 72h and 7 days after application on the eyes of rabbits. Polyethylene caused a maximum group mean score of 11.7. (Average molecular weight: 655) (PE)</li> <li>※ The CIR Expert Panel concluded that Polyethylene is safe for use in cosmetic products in the practices of use and concentration as described in this safety assessment(Final report on the safety Assessment of Polyethylene)</li> </ul> </li> <li>- Dicumyl Peroxide: <ul style="list-style-type: none"> <li>· The eye irritation test conducted on rabbits resulted in a total eye irritation score of 0/13. The most prominent symptom observed was conjunctival redness. Overall irritation was fully reversible within 72 hours. (OECD TG 405) (K-REACH registration Dossier)</li> <li>· RAC agrees with the DS that the test substance had only a slight eye irritant effect in rabbits and the effects were reversible at 72 hours after administration. However, considering the lipophilicity and the very low water solubility, the effects seen could be related to a physical/mechanical irritation of the particles in the eye. To adequately observe the irritation effects of this lipophilic substance, an appropriate vehicle should have been used. In conclusion RAC agreed to retain the current classification as Eye Irrit. 2; H319. (Committee for Risk Assessment RAC Opinion)</li> </ul> </li> <li>- 4,4'-Thiobis(2-tert-butyl-5-methylphenol): <ul style="list-style-type: none"> <li>· The eye irritation test conducted on rabbits shows moderate irritation in the unwashed group after administration of the test substance. However, in the group where eyes were rinsed 30 seconds after administration, extremely slightly irritation was observed. (OECD TG 405) (ECHA 1)</li> </ul> </li> <li>- 2,4-Diphenyl-4-methyl-1-pentene: <ul style="list-style-type: none"> <li>· The substance was not irritating when tested on rabbit eye. (OECD TG 405, GLP) (ECHA 2)</li> </ul> </li> </ul>
(d) Respiratory sensitization	Not available
(e) Skin Sensitization	<p>Category 1</p> <ul style="list-style-type: none"> <li>- Polyethylene: <ul style="list-style-type: none"> <li>· Polyethylene did not cause dermal sensitization in guinea pigs tested with 50% Polyethylene (w/w) in arachis oil BP. (Average molecular weight: 450) (PE)</li> </ul> </li> <li>- Dicumyl Peroxide: <ul style="list-style-type: none"> <li>· The result of the LLNA test indicated, that dicumyl peroxide is not sensitizing to skin of mice, resulting in irritation index(SI) of less than 3(0.762~2.217). (OECD TG 429) (K-REACH registration Dossier)</li> </ul> </li> <li>- 4,4'-Thiobis(2-tert-butyl-5-methylphenol): <ul style="list-style-type: none"> <li>· The result of the guinea pig maximization test indicated, that 4,4'-Thiobis(2-tert-butyl-5-methylphenol) is sensitizing to skin of guinea pig, resulting in test material group No. with positive reactions of</li> </ul> </li> </ul>

	<p>7/10(1<sup>st</sup> reading, 2<sup>nd</sup> reading). (ECHA 1)</p> <p>- 2,4-Diphenyl-4-methyl-1-pentene:</p> <ul style="list-style-type: none"> <li>· The result of the LLNA test indicated, that 2,4-Diphenyl-4-methyl-1-pentene is sensitizing to skin of mice, resulting in irritation index(SI) of 4.37(10% v/v), 11.71(25% v/v), 20.57(50% v/v). (OECD TG 429, GLP) (ECHA 2)</li> </ul>
(f) Carcinogenicity	Not classified
	<p>- Polyethylene:</p> <ul style="list-style-type: none"> <li>· IARC: Group 3</li> <li>· NTP, OSHA, ACGIH, EU CLP 1272/2008 : not listed</li> </ul> <p>- Dicumyl Peroxide :</p> <ul style="list-style-type: none"> <li>· NTP, OSHA, ACGIH, EU CLP 1272/2008 : not listed</li> </ul> <p>- 4,4'-Thiobis(2-tert-butyl-5-methylphenol):</p> <ul style="list-style-type: none"> <li>· The result of feed studies in rats and mouse containing 0, 500, 1,000, 2,500ppm of 4,4'-Thiobis(2-tert-butyl-5-methylphenol) for 2 years, there was no evidence of carcinogenic activity. (NTP)</li> <li>· The result of feed studies in rats and mouse containing 0, 250, 500, 1,000ppm of 4,4'-Thiobis(2-tert-butyl-5-methylphenol) for 2 years, there was no evidence of carcinogenic activity. (NTP)</li> </ul> <p>- 2,4-Diphenyl-4-methyl-1-pentene:</p> <ul style="list-style-type: none"> <li>· NTP, OSHA, ACGIH, EU CLP 1272/2008 : not listed</li> </ul>
(g) Germ cell mutagenicity	Not available(Not sufficient for classification)
	<p>- Polyethylene:</p> <ul style="list-style-type: none"> <li>· <i>In vitro</i>: Gene mutation study in bacteria; negative (Average molecular weight: 450) (PE)</li> </ul> <p>- Dicumyl Peroxide:</p> <ul style="list-style-type: none"> <li>· <i>In vitro</i>: Gene mutation study in bacteria: Metabolic activation: with and without; negative (OECD TG 471) (K-REACH registration Dossier)</li> <li>· <i>In vitro</i>: Mammalian Chromosome Aberration Test: Metabolic activation: with and without; negative (OECD TG 473) (K-REACH registration Dossier)</li> <li>· <i>In vivo</i>: Mammalian Erythrocyte Micronucleus Test: negative (Test material: <math>\alpha,\alpha</math>-dimethylbenzyl hydroperoxide) (K-REACH registration Dossier)</li> </ul> <p>- 4,4'-Thiobis(2-tert-butyl-5-methylphenol):</p> <ul style="list-style-type: none"> <li>· <i>In vitro</i>: Gene mutation study in bacteria: Metabolic activation: with and without; negative (OECD TG 471, GLP) (ECHA 1)</li> <li>· <i>In vitro</i>: Mammalian Chromosome Aberration Test: Metabolic activation: with and without; negative (OECD TG 473, GLP) (ECHA 1)</li> <li>· <i>In vivo</i>: Mammalian Bone Marrow Chromosomal Aberration Test: negative (OECD TG 475, GLP) (ECHA 1)</li> </ul> <p>- 2,4-Diphenyl-4-methyl-1-pentene:</p> <ul style="list-style-type: none"> <li>· <i>In vitro</i>: Gene mutation study in bacteria: Metabolic activation: with and without; negative (OECD TG 471, GLP) (ECHA 2)</li> <li>· <i>In vitro</i>: Mammalian Chromosome Aberration Test: Metabolic activation: with and without; negative (OECD TG 473, GLP) (ECHA 2)</li> <li>· <i>In vitro</i>: In Vitro Mammalian Cell Gene Mutation Tests using the Hprt and xprt genes: with and without; negative (OECD TG 476, GLP) (ECHA 2)</li> </ul>
(h) Reproductive toxicity	Category 1B
	<p>- Dicumyl Peroxide:</p> <ul style="list-style-type: none"> <li>· In a developmental toxicity study according to OECD 414, dicumyl</li> </ul>

	<p>peroxide was administered to 24 pregnant female rats per dose by oral gavage at dose levels of 0, 50, 150 and 450 mg/kg bw/day. Effects of the highest dose on embryos included increased post implantation loss (and lower number of viable foetuses), a decreased foetal weight, an increased percentage of foetuses with body weight retardation, malrotated fore- and hindlimbs as well as skeletal malformations of the pectoral girdle and extremities, increase of skeletal variations and placentas with dark brownish discoloration or fibrinoid degeneration possibly due to the marked maternal toxicity. The maternal LOAEL is 450 mg/kg bw/day. The maternal NOAEL is 150 mg/kg bw/day. The developmental LOAEL is 450 mg/kg bw/day. The developmental NOAEL is 150 mg/kg bw/day. (OECD TG 414, GLP)</p> <ul style="list-style-type: none"> <li>• Placing greater weight, both on the increased intrauterine mortality and on the specific effects observed from the skeletal malformations, and with the comparisons of the individual dam/litter data between maternal toxicity and foetal toxicity showing no correlation, then the observed teratogenicity/developmental toxicity was not secondary to the maternal toxicity. Overall RAC considered that the criteria for classification for developmental toxicity were met for a presumed human reproductive toxicant, thus bis(<math>\alpha,\alpha</math>-dimethylbenzyl) peroxide warrants classification as Repr. 1B; H360D. (Committee for Risk Assessment RAC Opinion)</li> </ul> <p>- 4,4'-Thiobis(2-tert-butyl-5-methylphenol):</p> <ul style="list-style-type: none"> <li>• In a screening study with female pregnant CD1 mice, the predicted median lethal dose for 4,4' -thiobis(6-t-butyl-m-cresol) was 485mg/kg/day. In addition, 485 mg/kg bw/ day of 4,4'-thiobis (6-t-butyl-m-cresol) caused increases in maternal mortality and a decreased percent of pup survival while not affecting the number of viable litters, the litter size, birth weight or weight gain of the pups. (ECHA 1)</li> <li>• In a development toxicity study with New Zealand White rabbits, no significant increase in fetal abnormalities was noted. The only effect is retarded maternal weight gain due to maternal toxicity, leading to increased incidence of abortion in high-dose animals. (ECHA 1)</li> </ul> <p>- 2,4-Diphenyl-4-methyl-1-pentene:</p> <ul style="list-style-type: none"> <li>• The no-effect level for reproductive-developmental toxicity was 180mg/kg/day for males because effects on testis weight were observed at 720 mg/kg, and was 180 mg/kg/day for females because effects on estrous cycle, number of corpora lutea, number of implantations and implantation index were observed at 720 mg/kg. The no-effect level for pups was 180 mg/kg/day because effects on the total number of offspring, newborn on day 0 of lactation, delivery index, birth index, and number of live pups on day 4 of lactation were observed at 720 mg/kg. NOEL(reproductive-developmental toxicity) = 180 mg/kg bw/day(OECD TG 422, GLP) (ECHA 2)</li> <li>• In a developmental toxicity study according to OECD 414, One animal receiving 600 mg/kg/day was found dead on the morning of Day 7. The cause of death was undetermined, but was considered un-related to treatment. Two animals receiving 600 mg/kg/day showed evidence of blood loss from the vagina, at the end of gestation; the litter of one of these females contained a high number of resorbed implantations. At 600 mg/kg/day, initial body weight gain (Days 6-9) was markedly low and overall body weight gain was low, and correlated with low food and low water intake at this dose. Adjusted body weight gain (adjusted for gravid uterine weight) at 600 mg/kg/day was 5 g, compared to 31 g of Control. Initial body weight gain (Days 6-9) was markedly low at 200 mg/kg/day and was low at 60 mg/kg/day. Overall gains were unaffected at both doses; however, adjusted weight gain was low at 200</li> </ul>
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	<p>mg/kg/day. There was no effect of treatment on gravid uterine weight and adults and fetuses were macroscopically normal. The number of corpora lutea, implantations, sex ratio of males to females and placental and fetal weights were unaffected by treatment. Mean post-implantation loss was high at 600 mg/kg/day and resulted in less fetuses at this dose. The higher incidences of delayed ossification of some fetal bones at 600 mg/kg/day were considered to represent a transient stage in development and not to be detrimental to the growth, development and survival of the fetuses. NOAEL(pre and post implantation loss, skeletal malformations) = 200 mg/kg bw/day(OECD TG 414, GLP) (ECHA 2)</p>
(i) Specific target organ toxicity (single exposure)	<p>Not classified</p> <ul style="list-style-type: none"> <li>- Dicumyl Peroxide: <ul style="list-style-type: none"> <li>• The acute oral toxicity test conducted on rats (male/female) showed no abnormalities in general condition, and no mortality occurred. Furthermore, there were no abnormalities observed upon pathological examination at the end of the observation period. Rat(female/male), LD<sub>50</sub> &gt; 2,000 mg/kg bw (OECD TG 401) (K-REACH registration Dossier)</li> <li>• The acute dermal toxicity test conducted on rats (male/female) showed no mortality or clinical signs observed due to the administration of the test substance. Additionally, upon autopsy, no findings related to the administration of the test substance were observed. (K-REACH registration Dossier)</li> </ul> </li> <li>- 4,4'-Thiobis(2-tert-butyl-5-methylphenol): <ul style="list-style-type: none"> <li>• The acute oral toxicity test conducted on rats (male/female) showed severe diarrhea, loss of appetite, tremors, and collapse. At autopsy there was severe renal and liver congestion along with inflammation of the gastrointestinal mucosa. Rat(female/male), LD<sub>50</sub> = 2,345 mg/kg bw (ECHA 1)</li> </ul> </li> <li>- 2,4-Diphenyl-4-methyl-1-pentene: <ul style="list-style-type: none"> <li>• The acute oral toxicity test conducted on rats (male/female) showed no mortality. Pilo-erection was observed in all rats within five minutes of dosing and throughout the of day 1. There were no other clinical signs and recovery, as judged by external appearance and behaviour, was complete by day 2. Rat(female/male), LD<sub>50</sub> &gt; 5,000 mg/kg bw (OECD TG 401, GLP) (ECHA 2)</li> </ul> </li> </ul>
(j) Specific target organ toxicity (repeat exposure)	<p>Not classified</p> <ul style="list-style-type: none"> <li>- Polyethylene: <ul style="list-style-type: none"> <li>• Toxicity testing in rats showed no adverse effects at doses of 7.95 g/kg or at 1.25%, 2.50%, or 5.00% in feed for 90 days. (Average molecular weight: 450) (PE)</li> </ul> </li> <li>- Dicumyl Peroxide: <ul style="list-style-type: none"> <li>• The result of the subchronic oral repeated test for 90 days on rats(female/male) with concentrations of 0, 20, and 320 mg/kg bw/day confirmed that it induces changes in salivary secretion, body weight, and clinical chemistry parameters. Overall, it is determined that the LOAEL (Lowest Observed Adverse Effect Level) is 320 mg/kg/day, and the NOAEL (No Observed Adverse Effect Level) is 80 mg/kg/day. (OECD TG 408) (K-REACH registration Dossier)</li> </ul> </li> <li>- 4,4'-Thiobis(2-tert-butyl-5-methylphenol): <ul style="list-style-type: none"> <li>• Feed consumption by male and female rats exposed to 5,000 ppm TBBC was markedly lower than that by the controls throughout the study. The absolute and relative liver weights of 5,000 ppm females were significantly greater than those of the controls. Serum alkaline</li> </ul> </li> </ul>

	<p>phosphatase (ALP) levels were significantly higher in 2,500 and 5,000 ppm males and slightly higher in 5,000 ppm females. Serum alanine aminotransferase levels were significantly higher in 2,500 and 5,000 ppm males and females. Hematocrit and hemoglobin concentrations and mean erythrocyte volume (MCV) values were significantly lower in 1,000, 2,500, and 5,000 ppm males than in controls; MCV values were also significantly lower in 5,000 ppm females. A dose-related significant increase in forelimb and hindlimb grip strength was observed in exposed male and female rats. Histopathologic findings in the liver of 2,500 and 5,000 ppm males and females included hypertrophy of Kupffer cells, bile duct hyperplasia, and individual cell necrosis of hepatocytes; centrilobular hepatocyte hypertrophy also occurred in males and females exposed to 5,000 ppm TBBC. Macrophages were increased in size and number in the mesenteric lymph nodes of males and females exposed to 5,000 ppm, and to a lesser extent in 2,500 ppm male and female rats. Pigmentation and degeneration of the renal cortical tubule epithelial cells was also present in males and females in the 2,500 and 5,000 ppm groups; cortical tubule necrosis occurred in 5,000 ppm males and females. (ECHA 1)</p> <p>- 2,4-Diphenyl-4-methyl-1-pentene:</p> <ul style="list-style-type: none"> <li>· The result of the Combined Repeated Dose Toxicity Study with the Reproduction / Developmental Toxicity Screening Test on rat, NOAEL was less than 45 mg/kg/day in males because high values in the absolute and relative weight of the liver, swelling of centrilobular hepatocytes and basophilic change in hepatocytes were observed at 45 mg/kg, and was 45 mg/kg/day in females because high values in the absolute and relative weight of the liver, swelling of centrilobular hepatocytes and basophilic change in hepatocytes were observed at 180 mg/kg. NOEL(male) &lt; 45 mg/kg bw/day, NOEL(female) = 45 mg/kg bw/day (OECD TG 422, GLP) (ECHA 2)</li> <li>· The result of the subchronic oral repeated test for 90 days on rats, One male was found dead after a single administration at 800 mg/kg/day. The cause of this death was undetermined; however as other animals at this dose remained in good general condition throughout the study period, it was considered that it was un-related to treatment. One control animal was euthanized, this death was not related to treatment. The incidence of yellow ventral staining (urine) was high in animals treated at 800 mg/kg/day. Treatment-related centrilobular hepatocellular hypertrophy and high adjusted liver weights were evident in animals treated at 100 mg/kg/day or more and there was a treatment-related increase in diffuse follicular cell hypertrophy in the thyroid, with or without colloid alteration. Adjusted kidney weights were high in males treated at 100 mg/kg/day or more and females at 300 mg/kg/day or more and there was a treatment-related increase in lipofuscin at 100 mg/kg/day or more and tubular basophilia was evident in males at 300 mg/kg/day or more and in a few females at 800 mg/kg/day. NOAEL = 800 mg/kg bw/day (OECD TG 408, GLP) (ECHA 2)</li> </ul>
(k) Aspiration Hazard	Not applicable
11.2 Information on other hazards	
11.2.1 Endocrine disrupting properties	Not available
11.2.2 Other information	Not available

## 12. ECOLOGICAL INFORMATION

12.1 Toxicity	
Acute toxicity	Not classified (ATE <sub>mix</sub> = 25.127 mg/L)
	<ul style="list-style-type: none"> <li>- Dicumyl Peroxide: <ul style="list-style-type: none"> <li>• Fish: 96h-LC<sub>50</sub> (<i>Oryzias latipes</i>) = ca. 33.5 mg/L (fresh water) (OECD TG 203) (K-REACH registration Dossier)</li> <li>• Invertebrate: 48h-EC<sub>50</sub> (<i>Daphnia magna</i>) = ca. 1.5 mg/L (fresh water) (OECD TG 202) (K-REACH registration Dossier)</li> <li>• Algae: 72h-EC<sub>50</sub> (<i>Selenastrum carpicornutum</i>) &gt; 20.0 mg/L (OECD TG 201) (K-REACH registration Dossier)</li> </ul> </li> <li>- 4,4'-Thiobis(2-tert-butyl-5-methylphenol): <ul style="list-style-type: none"> <li>• Fish: 96h-LC<sub>50</sub> (<i>Pimephales promelas</i>) = 0.36 mg/L (static, mortality) (EPA, Ecol. Res. Series 660/3-75-009, GLP) (ECHA 1)</li> <li>• Invertebrate: 48h-EC<sub>50</sub> (<i>Daphnia magna</i>) = 0.16 mg/L (static, mobility) (OECD TG 202, GLP) (ECHA 1)</li> <li>• Algae: 72h-EC<sub>50</sub> (<i>Green algae</i>) = 0.455 mg/L (growth rate) (QSAR) (ECHA 1)</li> </ul> </li> <li>- 2,4-Diphenyl-4-methyl-1-pentene: <ul style="list-style-type: none"> <li>• Fish: 96h-LC<sub>50</sub> (<i>Oryzias latipes</i>) &gt; 0.092 mg/L (semi-static, mortality) (Yakushokuhatsu No. 1121002, GLP) (ECHA 2)</li> <li>• Invertebrate: 48h-EC<sub>50</sub> (<i>Daphnia magna</i>) = 0.057 mg/L (semi-static, mobility) (Yakushokuhatsu No. 1121002, GLP) (ECHA 2)</li> <li>• Algae: 72h-EC<sub>50</sub> (<i>Raphidocelis subcapitata</i>) &gt; 0.059 mg/L (semi-static, growth rate) (Yakushokuhatsu No. 1121002, GLP) (ECHA 2)</li> </ul> </li> </ul>
Chronic toxicity	Category 2
	<ul style="list-style-type: none"> <li>- 4,4'-Thiobis(2-tert-butyl-5-methylphenol): <ul style="list-style-type: none"> <li>• Fish: 14d-LC<sub>50</sub> (<i>Pimephales promelas</i>) = 0.054 mg/L (flow-through, mortality) (US-EPA Ecol. Res. Ser. 660/3-750) (ECHA 1)</li> <li>• Invertebrate: 21d-NOEC (<i>Daphnia magna</i>) = 7.1 µg/L (semi-static, reproduct) (OECD TG 211, GLP) (ECHA 1)</li> </ul> </li> </ul>
12.2 Persistence and degradability	<ul style="list-style-type: none"> <li>- Dicumyl Peroxide: <ul style="list-style-type: none"> <li>• Hydrolysis half-life: The substance shows moderate degradation, ranging from a minimum of approximately 12 days (pH 9, 50 °C) to a maximum of about 228 days (pH 7, 10 °C) (OECD TG 111) (K-REACH registration Dossier)</li> <li>• 0% degradation(O<sub>2</sub> consumption) after 28d; not readily biodegradable (K-REACH registration Dossier)</li> </ul> </li> <li>- 4,4'-Thiobis(2-tert-butyl-5-methylphenol): <ul style="list-style-type: none"> <li>• 1% degradation(CO<sub>2</sub> evolution) after 28d; not readily biodegradable (ECHA 1)</li> </ul> </li> <li>- 2,4-Diphenyl-4-methyl-1-pentene: <ul style="list-style-type: none"> <li>• Hydrolysis half-life: At the conditions of 50±0.1 °C, residue analysis of test solutions at pH 4, 7, and 9 confirmed a residual presence of 90% or more. The substance is considered to have a half-life of greater than one year at 25°C (OECD TG 111) (ECHA 2)</li> <li>• 0% degradation(DOC removal) after 28d; not readily biodegradable (ECHA 2)</li> </ul> </li> </ul>
12.3 Bioaccumulative potential	<ul style="list-style-type: none"> <li>- Polyethylene: <ul style="list-style-type: none"> <li>• log K<sub>ow</sub> = 17.04 (estimated) (EPISUITE); not valid data (modeling value that exceeds the range of “-4&lt;log K<sub>ow</sub>&lt;8”)</li> <li>• BCF = 3.162 (estimated) (EPISUITE); not valid data (value derived from a modeling value that exceeds the range of “-4&lt;log K<sub>ow</sub>&lt;8”)</li> </ul> </li> <li>- Dicumyl Peroxide: <ul style="list-style-type: none"> <li>• log K<sub>ow</sub> = 5.6 (25 °C) (K-REACH registration Dossier)</li> <li>• BCF = 578.2 (average) (K-REACH registration Dossier)</li> </ul> </li> <li>- 4,4'-Thiobis(2-tert-butyl-5-methylphenol): <ul style="list-style-type: none"> <li>• log P<sub>ow</sub> = 5.24 (25 °C) (OECD TG 117, GLP) (ECHA 1)</li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>· BCF = 0.12 ~ 11 (ECHA 1)</li> <li>- 2,4-Diphenyl-4-methyl-1-pentene:               <ul style="list-style-type: none"> <li>· log P<sub>ow</sub> = 6.2 (25 °C) (OECD TG 117, GLP) (ECHA 2)</li> <li>· BCF ≥ 427, ≤ 3,330 (concentration: 0.01 mg/L) (ECHA 2)</li> <li>· BCF ≥ 423, ≤ 4,410 (concentration: 0.001 mg/L) (ECHA 2)</li> </ul> </li> </ul>
12.4 Mobility in soil	<ul style="list-style-type: none"> <li>- Dicumyl Peroxide:               <ul style="list-style-type: none"> <li>· K<sub>oc</sub> = 9,549.93 L/kg (OECD TG 121) (K-REACH registration Dossier)</li> </ul> </li> <li>- 4,4'-Thiobis(2-tert-butyl-5-methylphenol):               <ul style="list-style-type: none"> <li>· log K<sub>oc</sub> = 5.61 (OECD TG 121, GLP) (ECHA 1)</li> <li>· K<sub>oc</sub> = 400,000 (OECD TG 121, GLP) (ECHA 1)</li> </ul> </li> <li>- 2,4-Diphenyl-4-methyl-1-pentene:               <ul style="list-style-type: none"> <li>· log K<sub>oc</sub> = 4.82 (OECD TG 121, GLP) (ECHA 2)</li> <li>· K<sub>oc</sub> = 65,700 (OECD TG 121, GLP) (ECHA 2)</li> </ul> </li> </ul>
12.5 Results of PBT and vPvB assessment	<ul style="list-style-type: none"> <li>- Polyethylene: The substance is not PBT / vPvB</li> <li>- Dicumyl Peroxide: The substance is not PBT / vPvB (K-REACH registration Dossier)</li> <li>- 4,4'-Thiobis(2-tert-butyl-5-methylphenol): The substance is not PBT / vPvB (ECHA 1)</li> <li>- 2,4-Diphenyl-4-methyl-1-pentene: The substance is PBT / vPvB (ECHA 2)</li> </ul>
12.6 Endocrine disrupting properties	Not available
12.7 Other adverse effects	Not available
12.8 Additional information	Not available

## 13. DISPOSAL CONSIDERATIONS

### 13.1 Waste treatment methods

- Waste disposal according to directive 2008/98/EC, covering waste and dangerous waste.

#### 13.1.1 Product/Packaging disposal

- No waste key number as per the European Waste Types List can be assigned to this product, since such classification is based on the (as yet undetermined) use to which the product is put by the consumer.
- The waste key number must be determined as per the European Waste Types List (decision on EU Waste Types List 2000/532/EC) in cooperation with the disposal firm/producing firm/official authority.

#### 13.1.2 Waste treatment-relevant information

- Waste must be disposed of in accordance with directive 2008/98/EC.

#### 13.1.3 Sewage disposal-relevant information:

- Release to the environment or sewage system is prohibited. Must be treated as hazardous waste.

#### 13.1.4 Other disposal recommendations: Not available

## 14. TRANSPORT INFORMATION

### 14.1 UN No.: 3077

### 14.2 UN Proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.

### 14.3 Transport Hazard class:

ADR: 9



IMDG: 9  
ICAO/IATA: 9  
RID: 9

**14.4 Packing group:** III

**14.5 Environmental hazards:** Yes

**14.6 Special precautions for user**  
**in case of fire:** F-A  
**in case of leakage:** S-F

**14.7 Maritime transport in bulk according to IMO instruments:** P002, LP02, IBC08

## 15. REGULATORY INFORMATION

**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**  
<Polyethylene>

### EU Regulatory Information

#### EU classification

#### EU 1272/2008(CLP)

**Classification:** No applicable

**Risk phrases:** No applicable

**Safety phrases:** No applicable

**EU SVHC list:** No regulated

**EU Authorization list:** No regulated

**EU Restriction list:** No regulated

<Dicumyl peroxide>

### EU Regulatory Information

#### EU classification

#### EU 1272/2008(CLP)

**Classification:** Org. Perox. F, Skin Irrit. 2, Eye Irrit. 2, Repr. 1B , Aquatic Chronic 2

**Risk phrases:** H242, H315, H319, H360D, H411

**Safety phrases:** P234, P210, P220, P280, P264, P201, P202, P273, P308+P313,  
P305+P351+P338, P337+P313, P302+P352, P362+P364, P332+P313, P321,  
P391, P405, P410, P411+P235, P420, P501

**EU SVHC list:** EU SVHC list: Regulated (REACH - Candidate List of Substances of Very High Concern for Authorisation(Article 59), Reason for inclusion: Toxic for reproduction (Article 57c))

**EU Authorization list:** No regulated

**EU Restriction list:** Regulated(Use restricted. See item 75.)

<4,4'-Thiobis(2-tert-butyl-5-methylphenol)>

### EU Regulatory Information

#### EU classification

#### EU 1272/2008(CLP)

**Classification:** No applicable

**Risk phrases:** No applicable

**Safety phrases:** No applicable

**EU SVHC list:** No regulated

**EU Authorization list:** No regulated

**EU Restriction list:** No regulated

<2,4-Diphenyl-4-methyl-1-pentene>

### EU Regulatory Information

#### EU classification

#### EU 1272/2008(CLP)

**Classification:** No applicable

**Risk phrases:** No applicable

**Safety phrases:** No applicable  
**EU SVHC list:** No regulated  
**EU Authorization list:** No regulated  
**EU Restriction list:** No regulated

### Foreign Inventory Status

<Polyethylene>

- Korea management information: Existing Chemical Substance (KE-28877)
- U.S.A management information: Section 8(b) Inventory (TSCA): Present
- China management information: Inventory of Existing Chemical Substances (IECSC): Present (05721))
- Japan management information: Existing and New Chemical Substances (ENCS): Present ((6)-1)
- Canada management information: Domestic Substances List (DSL): Present
- Australia management information: Australian Inventory of Chemical Substances (AICS): Present
- New Zealand management information: New Zealand Inventory of Chemicals (NZIoC):  
May be used as a single component chemical under an appropriate group standard.
- Philippines management information: Philippine Inventory of Chemicals and Chemical Substances (PICCS): Present

<Dicumyl peroxide>

- Korea management information: Existing Chemical Substance (KE-03299)
- U.S.A management information: Section 8(b) Inventory (TSCA): Present (ACTIVE)
- Canada management information: Domestic Substances List (DSL): Present
- Australia management information: Inventory of Industrial Chemicals (AIIC): Present
- New Zealand management information: Inventory of Chemicals (NZIoC): Present [HSNO Approval: HSR001374]
- China management information: Inventory of Existing Chemical Substances (IECSC): Present (14132)
- Japan management information: Existing and New Chemical Substances (ENCS): Present ((3)-1086)
- Philippines management information: Inventory of Chemicals and Chemical Substances (PICCS): Present
- Taiwan management information: Taiwan Chemical Substance Inventory (TCSI): Present

<4,4'-Thiobis(2-tert-butyl-5-methylphenol)>

- Korea management information: Existing Chemical Substance (KE-33767)
- U.S.A management information: Section 8(b) Inventory (TSCA): Present (ACTIVE)
- Canada management information: Domestic Substances List (DSL): Present
- Australia management information: Inventory of Industrial Chemicals (AIIC): Present
- New Zealand management information: Inventory of Chemicals (NZIoC): Present (Does not have an individual approval but may be used under an appropriate group standard)
- China management information: Inventory of Existing Chemical Substances (IECSC): Present (22826)
- Japan management information: Existing and New Chemical Substances (ENCS): Present ((3)-1118)
- Philippines management information: Inventory of Chemicals and Chemical Substances (PICCS): Present

<2,4-Diphenyl-4-methyl-1-pentene>

- Korea management information: Existing Chemical Substance (KE-11531)
- U.S.A management information: Section 8(b) Inventory (TSCA): Present (ACTIVE)
- European Inventory of Existing Commercial Chemical Substances (EINECS): 228-846-8
- Canada management information: Domestic Substances List (DSL): Present
- Australia management information: Inventory of Industrial Chemicals (AIIC): Present
- China management information: Inventory of Existing Chemical Substances (IECSC): Present (09122)
- Japan management information: Existing and New Chemical Substances (ENCS): Present ((4)-852, (4)-854)

**15.2 Chemical safety assessment:** Not available

## 16. OTHER INFORMATION

**Product safety data sheet for prepared in accordance with Commission Regulation (EU) 2020/878**

### 16.1 Indication of changes:

Preparation date: February 14, 2024

Version: 1

Revision date: October 2, 2024

### 16.2 Key literature reference and sources for data:

TSCA; [http://iaspub.epa.gov/sor\\_internet/registry/substreg/searchandretrieve/searchbylist/search.do](http://iaspub.epa.gov/sor_internet/registry/substreg/searchandretrieve/searchbylist/search.do)

EU Regulation 1272/2008

RightAnswer-LOLI; <https://www.rightanswerknowledge.com/n0home.asp>

UN Recommendations on the transport of dangerous goods Twenty-second revised edition

IARC Monographs on the Identification of Carcinogenic hazard to Humans;

<http://monographs.iarc.who.int>

ECHA CHEM; <http://echa.europa.eu/web/guest/information-on-chemicals/registered-substances>

RAC Opinion, 2018; Committee for Risk Assessment RAC Opinion (Proposing harmonized classification and labelling at EU level of bis( $\alpha,\alpha$ -dimethylbenzyl) peroxide, 06, 2018)

K-REACH registration Dossier; Dicumyl Peroxide, K-REACH registration Dossier

Toxicology and Carcinogenesis studies of 4,4'-Thiobis(6-t-butyl-m-cresol)(CAS No. 96-69-5) in F344/N Rats and B6C3F1 MICE Feed studies (NTP, 1994)

ECHA 1: 4,4'-Thiobis(3-methyl-6-tert-butylphenol)/registration-dossier

ECHA 2: 1,1'-(1,1-Dimethyl-3-methylene-1,3-propanediyl)bisbenzene /registration-dossier

OECD SIDS; <https://www.oecd.org/>

HSDB; <https://pubchem.ncbi.nlm.nih.gov/>

EPA; <http://www.epa.gov/iris>

EPISUITE Program ver.4.1

NIOSH(The National Institute for Occupational Safety and Health)

ACGIH(American Conference of Governmental Industrial Hygienists)

### 16.3 Classification and procedure used to derive the classification for mixtures according to Regulation (EC) 1272/2008(CLP):

Classification according to Regulation (EC) 1272/2008 (CLP)	Classification procedure
Skin sensitization: Category 1	Generic concentration limit
Reproductive toxicity: Category 1B	Generic concentration limit
Aquatic Chronic toxicity: Category 2	Summation method

### 16.4 Abbreviations

EC<sub>50</sub>: median effective concentration

LC<sub>50</sub>: median lethal concentration

LD<sub>50</sub>: median lethal dose

OEL: Occupational exposure limit

PBT: Persistent, bioaccumulative, toxic chemical

STEL: short-term exposure limit

TWA: time weighted average

vPvB: very persistent, very bioaccumulative chemical

EWC: the European Waste Code

SCL: Specific concentration limit

M-factor: Multiplication factor

ATE: Acute toxicity estimate

### 16.5 Other

- Product should be handled, stored, and used in accordance with the generally accepted industrial hygiene practices and in conformity with all the applicable legal regulations.
- The information provided herein is based on the knowledge possessed at this present time from the view point of safety requirements.

- It should, therefore, not be construed as guaranteeing specific properties.