

SAFETY DATA SHEET

Date Printed:

Version: 5

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: CLBA-8923BK

EC No.: -

REACH Registration No.: Refer to chapter 3

CAS No.: -

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

1.2.1 Identified Uses

- It is used for coating of power cable.

1.2.2 Recommended use

- It is used for coating of power cable.

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 Co, Ltd.

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 Co, Ltd.

Address: Hanwha Bldg., Cheonggyecheon-ro 86(Janggyo-dong), Jung-gu, Seoul, Korea

Prepared by: 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: Reproductive toxicity: Category 1B

Environmental Hazards: Chronic toxicity: Category 3

2.2 Label elements

o Hazard pictograms:



o Signal word: Danger

o Hazard statement:

H360 May damage fertility or the unborn child.

H412 Harmful 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.

P273 Avoid release to the environment.

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

- Response

P308+P313 If exposed or concerned: Get medical advice/attention.

- 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:** EUH210- 'Safety data sheet available on request'.

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

Health: 1

Flammability: 0

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 | 618-339-3 | > 92 | Not classified | ATE(oral) >2,000 mg/kg bw ATE(oral) > 5,000 mg/kg | 01-2119462827-27-0000 |
| Dicumyl Peroxide | 80-43-4 | 201-279-3 | < 3 | 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 |
| Carbon black | 1333-86-4 | 215-609-9 | < 2 | Not classified | ATE(oral) >8,000 mg/kg bw ATE(dermal) > 2,000 mg/kg bw ATE(inhalation) > 4.6 mg/m ³ | 01-2119384822-32-0000 |
| Trade secret | Trade secret | Trade secret | < 2 | Trade secret | ATE(oral) >2,000 mg/kg bw ATE(dermal) > 2,000 mg/kg bw ATE(inhalation) > 3 mg/L | Trade secret |
| Zinc stearate | 557-05-1 | 209-151-9 | < 1 | Not classified | ATE(oral) = 5,000 mg/kg bw ATE(dermal) > 2,000 mg/kg bw ATE(inhalation) > 50 mg/L | 01-2119513214-54-0058 |

4. FIRST AID MEASURES

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:

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 eyes with running water 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.

5. FIRE-FIGHTING MEASURES

5.1 Extinguishing media

- Suitable extinguishing media: Dry chemical, Alcohol foam, carbon dioxide, water, regular foam
- Unsuitable extinguishing media: Not available

5.2 Specific 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; Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- 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.

6. ACCIDENTAL RELEASE MEASURES

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.
- Prevent dust cloud.
- 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

- 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.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

- Since the risk of ignition is high when storing plastic dust that has undergone a polymerization process or abnormal work, temperature monitoring inside the dust is required during the process. In case of abnormal work, management of ignition source or the dust removal is needed.
- Even though the average particle size is large, plastic dust has a high ratio of fine dust with micrometer size. It is necessary to be careful with the risk of ignition or explosion since airborne dust has low minimum ignition energy.
- Management of the dust concentration is required when handling and using dust. Because the lower limit of the explosion of plastic dust is 50g/m³ or less, the frequency of fire explosions is high.
- Do not handle until all safety precautions have been read and understood.
- Follow all SDS/Label precautions even after container is emptied because they may retain product residues.
- Use carefully in handling/storage.
- Loosen closure cautiously before opening.
- Avoid breathing vapors from heated material.
- Do not enter storage area unless adequately ventilated.

- Please note that materials and conditions to avoid.
- Be careful to high temperature.

7.2 Conditions for safe storage, including any incompatibilities

- Stored 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:** Not available
- o **ACGIH:** Not available
- o **Biological exposure index:** Not available
- o **Others:**
 - Slovak Republic: TWA=5mg/m³ (total solid aerosol)
 - Latvia: TWA= 5mg/m³ (dust, listed under Polymers dust)
 - China: TWA= 5mg/m³ (total dust), STEL= 10mg/m³ (total dust)

o **DNELs, PNECs:** Not available

<Dicumyl peroxide>

- o **EU regulation:** Not available
- o **U.S regulation:** 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 ³) | - | 5.6 | - | - | - | - | - | - | - | 1.4 | - | - |
| Human: dermal (mg/kg bw/day) | Low hazard | 0.8 | Low hazard | - | - | - | - | - | Low hazard | 0.4 | Low hazard | - |
| 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 | | | | | | | | | | | |

<Carbon black>

o **EU regulation:** Not available

o **U.S regulation:**

- NIOSH: TWA=3.5 mg/m³; 0.1 mg/m³ (Carbon black in presence of Polycyclic aromatic hydrocarbons, as PAH)

- OSHA: TWA=3.5 mg/m³

o **ACGIH:** : TWA = 3 mg/m³ (inhalable fraction)

o **Biological exposure index:** Not available

o **Others:**

- Malaysia: TWA=3.5mg/m³

- Bahrain: TWA=3.5mg/m³

- China: TWA=4mg/m³ (total dust), STEL= 8mg/m³ (total dust)

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) | - | - | - | - | - | - | - | - | - | - | - | - |
| Human: inhalation (mg/m ³) | - | 1 | - | - | - | - | - | - | - | 0.06 | - | - |
| Human: dermal (mg/kg bw/day) | - | - | - | - | - | - | - | - | - | - | - | - |
| Environment: water | 50 mg/L(Freshwater) | | | | | | | | | | | |
| Environment: air | - | | | | | | | | | | | |
| Environment: soil | - | | | | | | | | | | | |
| Environment: sediment | - | | | | | | | | | | | |
| Environment: STP | - | | | | | | | | | | | |
| Environment: Predators | No potential for bioaccumulation | | | | | | | | | | | |

< Trade secret >

o **EU regulation:** Not available

o **U.S regulation:** Not available

o **ACGIH:** Not available

o **Biological exposure index:** Not available

o **Others:**

- Australia: TWA=10mg/m³ (containing no asbestos and <1% crystalline silica, inhalable dust)

- Latvia: TWA= 10mg/m³ [VME]

- New Zealand: TWA= 10mg/m³

o **DNELs, PNECs:** Not available

< Zinc stearate >

o **EU regulation:** Not available

o **U.S regulation:** TWA=10 mg/m³ (total dust); 5 mg/m³ (respirable dust)

o **ACGIH:** Not available

o **Biological exposure index:** Not available

o **Others:**

- Vietnam: TWA=10mg/m³ (inhalable dust), 5mg/m³(respirable dust); STEL=20mg/m³ (inhalable dust)

- South Africa: TWA=10mg/m³ (total inhalable dust), 5mg/m³(respirable dust);

STEL=20mg/m³ (total inhalable dust, respirable dust)

- Kenya: TWA=10mg/m³ (total inhalable dust), 5mg/m³ (respirable dust); STEL= 20mg/m³ (total, inhalable dust)

o DNELs, PNECs: Not available

8.2 Exposure controls

Appropriate engineering controls:

- Provide local exhaust ventilation system or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value.

Individual protection measures, such as personal protective equipment:

Respiratory protection:

- Follow the European Standard EN149. Use a European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

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 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

| | |
|---|---------------|
| Physical state: | Solid |
| Color: | Black |
| Odor: | Odorless |
| Odor threshold: | Not available |
| pH: | Not available |
| Melting point/freezing point: | 100°C~130°C |
| Boiling point or initial boiling point and boiling range: | Not available |
| Flash point: | Not available |
| Evaporation rate: | Not available |
| Flammability (solid, gas): | Not available |
| Upper/lower flammability or explosive limits: | Not available |
| Vapour pressure: | Not available |
| Vapour density: | Not available |
| Density and/or relative density: | 0.920~0.935 |
| Solubility(ies): | Not available |
| Partition coefficient: n-octanol/water: | Not available |
| Auto-ignition temperature: | Not available |
| Decomposition temperature: | Not available |
| Viscosity: | Not available |
| Kinematic viscosity: | Not available |

| | |
|--|---------------|
| Explosive properties: | Not available |
| Oxidizing properties: | Not available |
| Molecular weight: | Not available |
| Specific gravity: | Not available |
| Particle characteristics (solid): | Not available |
| Particle Size (Polymer compound) | Not available |
| Self-accelerated decomposition temperature (Polymer compound) | Not available |

9.2 Other information: Not available

10. STABILITY AND REACTIVITY

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

- Oxidizing agent, Reducing agent

10.6 Hazardous decomposition products

- Corrosive and/or toxic fume
- irritating, Corrosive and /or toxic gases
- Halogenated compounds, carbon oxides, hydrogen chloride, carbon monoxide, carbon dioxide

11. TOXICOLOGICAL INFORMATION

| 11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008 | |
|---|---|
| (a) Acute toxicity | |
| Oral | Not classified ($ATE_{mix} > 2,000$ mg/kg bw) |
| | <ul style="list-style-type: none"> - Polyethylene : <ul style="list-style-type: none"> · LD_{50} (rat) $> 2,000$ mg/kg (Polyethylene, an average molecular weight: 450) · LD_{50} (rat) $> 5,000$ mg/kg (Polyethylene, an average molecular weight: 655) - Dicumyl Peroxide : <ul style="list-style-type: none"> · LD_{50} (rat, male/female) $\geq 2,000$ mg/kg bw, no deaths (OECD TG 401, GLP)(ECHA 1) - Carbon black: <ul style="list-style-type: none"> · Rat, $LD_{50} > 8,000$ mg/kg (OECD TG 401) - Trade secret: <ul style="list-style-type: none"> · Rat, $LD_{50} > 2,000$ mg/kg bw, no deaths (OECD TG 420, GLP) - Zinc Stearate: <ul style="list-style-type: none"> · Rat(female), $LD_{50} = 5,000$ mg/kg, no death (OECD TG 423, GLP) |
| Dermal | Not classified ($ATE_{mix} > 2,000$ mg/kg bw) |

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| | <ul style="list-style-type: none"> - Dicumyl Peroxide : <ul style="list-style-type: none"> · LD₅₀ (rat, male/female) > 2,000 mg/kg bw, no deaths (OECD TG 402, GLP)(ECHA 1) - Carbon black: <ul style="list-style-type: none"> · Rabbit, LD₅₀ > 2,000 mg/kg bw(OECD Guideline) - Trade secret: <ul style="list-style-type: none"> · Rat, LD50 > 2,000 mg/kg bw (OECD TG 402, GLP) - Zinc Stearate: <ul style="list-style-type: none"> · Rabbit, LD50 > 2,000mg/kg bw |
| Inhalation | Not classified (ATE _{mix} > 7.136 mg/L) |
| | <ul style="list-style-type: none"> - Trade secret: <ul style="list-style-type: none"> · LD50 > 3mg/L air 4h (OECD TG 403, GLP) - Zinc Stearate: <ul style="list-style-type: none"> · Rat, LC50(4h) > 50 mg/L - Carbon black: <ul style="list-style-type: none"> · Rat, LC₀ > 4.6 mg/m³ (OECD TG 403) |
| (b) Skin Corrosion/ Irritation | Not classified |
| | <ul style="list-style-type: none"> - Polyethylene : <ul style="list-style-type: none"> · It caused a primary irritation index of 0.0 when tested on rabbit skin, according to the Draize index. (Polyethylene, an average molecular weight: 450) · It caused a primary irritation index of 0.2 when tested on rabbit skin. No irritation was observed at the other two treated (Polyethylene, an average molecular weight: 655) - Dicumyl Peroxide : <ul style="list-style-type: none"> · The substance was not irritating when tested on rabbit skin. (OECD TG 404, GLP) - Carbon Black: <ul style="list-style-type: none"> · In test on skin irritation with rabbits, skin irritation was not observed. (OECD TG 404) - Trade secret: <ul style="list-style-type: none"> · In test on skin irritation with rabbits, skin irritation was not observed (OECD TG 404, GLP) - Zinc Stearate: <ul style="list-style-type: none"> · In test on skin irritation with rabbits, the substance zinc distearate was found to be not irritating |
| (c) Serious Eye Damage/ Irritation | Not classified |
| | <ul style="list-style-type: none"> - Polyethylene : <ul style="list-style-type: none"> · 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. (Polyethylene, an average molecular weight: no data) · 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. (Polyethylene, an average molecular weight: 450) · 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. (Polyethylene, an average molecular weight: 655) ※ 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) - Dicumyl Peroxide : |

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| | <ul style="list-style-type: none"> · The substance was not irritating when tested on rabbit eye. (OECD TG 405, GLP) - Carbon black : <ul style="list-style-type: none"> · In test on eye irritation with rabbits, eye irritations were not observed. (OECD TG 405) - Trade secret : <ul style="list-style-type: none"> · In test on eye irritation with rabbits, eye irritations were not observed. (OECD TG 405, GLP) - Zinc stearate : <ul style="list-style-type: none"> · In test on eye irritation with rabbits, eye irritations were not observed |
| (d) Respiratory sensitization | Not available |
| (e) Skin Sensitization | Not classified |
| | <ul style="list-style-type: none"> - Polyethylene: <ul style="list-style-type: none"> · Polyethylene did not cause dermal sensitization in guinea pigs tested with 50% Polyethylene (w/w) in arachis oil BP. (Average molecular weight: 450) - Dicumyl Peroxide: <ul style="list-style-type: none"> · The result of the LLNA test indicated, that dicumyl peroxide is not sensitizing to skin of mice when tested at concentration up to 50%. (OECD TG 429, GLP) - Carbon black: <ul style="list-style-type: none"> · Under experimental conditions, carbon black is not considered a contact sensitizer in the LLNA (OECD TG 429, GLP) - Trade secret : <ul style="list-style-type: none"> · In skin sensitization test with mouse, skin sensitizations were not observed (OECD TG 429, GLP) - Zinc stearate : <ul style="list-style-type: none"> · The Substance Zinc Stearate was found to be not sensitizing when two eyeshadow formulation containing 10 % zinc stearate was applied twice a day for 28 days to 52 female panelists. |
| (f) Carcinogenicity | <p>Not classified</p> <p>* Although there is no data on carcinogenicity of the product, the possibility of direct exposure of workers to the powder during storage and handling is low because carbon black in the product is a chip-type masterbatch that has been mixed in a substrate and subjected to a compression process. Therefore, the classification of carcinogenicity is not applied.</p> |
| | <ul style="list-style-type: none"> - Polyethylene : <ul style="list-style-type: none"> · IARC: Group 3 · NTP, OSHA, ACGIH, EU CLP 1272/2008 : not listed - Dicumyl Peroxide : <ul style="list-style-type: none"> · IARC, NTP, OSHA, ACGIH, EU CLP 1272/2008: not listed · As dicumyl peroxide was found to be negative in genotoxicity tests in vitro and showed only weak activity as a tumor promotor the overall conclusion can be drawn that the substance has no carcinogenic potential. - Carbon black : <ul style="list-style-type: none"> · IARC: Group 2B(Possibly carcinogenic to humans) · OSHA: Applicable · ACGIH: A3(Confirmed animal carcinogen with unknown relevance to humans) · The lung cancers in rats are considered by some to be the result of a non-genotoxic mechanism secondary to cellular toxicity brought about by lung overloading, inflammation, and oxidative stress. The relevance of Carbon Black induced lung tumours in rats to human health is uncertain, and it appears that the rat is the most sensitive species to the effects of |

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|----------------------------|---|
| | <p>lung overload. At present the potential of the chemical to induce lung tumours in humans cannot be ruled out on theoretical grounds, although the epidemiological evidence* does not suggest such a causal link.</p> <p>* Regarding lung cancer, various cohort and case-controlled studies in the United States did not show an increased risk of lung cancer among carbon black-producing workers.</p> <p>In a cohort study of workers exposed to carbon black in the UK, lung cancer was excessive in some factories, but not all factories were included in the study, there was no association between exposure duration and lung cancer mortality, and no possible confusion due to smoking or past occupation.</p> |
| (g) Germ cell mutagenicity | <p>Not available (Not sufficient for classification)</p> <ul style="list-style-type: none"> - Polyethylene : <ul style="list-style-type: none"> · <i>In vitro</i>: Gene mutation study in bacteria; negative (Polyethylene, an average molecular weight: 450) - Dicumyl Peroxide : <ul style="list-style-type: none"> · <i>In vitro</i>: Gene mutation study in bacteria: Metabolic activation: with and without; negative (OECD TG 471, GLP) · <i>In vitro</i>: Mammalian Chromosome Aberration Test: Metabolic activation: with and without; negative (OECD TG 473, GLP) · <i>In vitro</i>: Mammalian Cell Gene Mutation Test: Metabolic activation: with and without; negative (OECD TG 476, GLP) - Carbon black : <ul style="list-style-type: none"> · <i>In vitro</i>: Bacterial Reverse Mutation Assay : negative · <i>In vitro</i>: mouse lymphoma assay : negative · <i>In vitro</i>: sister chromatid exchanges assay : negative · It may be concluded that the available evidence strongly suggests that it is not directly mutagenic. - Trade secret: <ul style="list-style-type: none"> · <i>In vitro</i>: Mammalian Chromosome Aberration Test with/ without metabolic activation: Negative (OECD TG 473, GLP) · <i>In vitro</i>: Mammalian Cell Gene Mutation Test with/ without metabolic activation: Negative (OECD TG 476, GLP) · <i>In vitro</i>: Bacterial Reverse Mutation Assay with/ without metabolic activation: Negative (OECD TG 471, GLP) |
| (h) Reproductive toxicity | <p>Category 1B</p> <ul style="list-style-type: none"> - Dicumyl Peroxide : <ul style="list-style-type: none"> · In a developmental toxicity study according to OECD 414, dicumyl 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) · 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 |

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|--|---|
| | <p>the maternal toxicity. Overall RAC considered that the criteria for classification for developmental toxicity were met for a presumed human reproductive toxicant, thus bis(α,α-dimethylbenzyl) peroxide warrants classification as Repr. 1B; H360D.(Committee for Risk Assessment RAC Opinion)</p> <ul style="list-style-type: none"> - Carbon black : <ul style="list-style-type: none"> · Carbon black has not been tested in guideline studies for its effects on fertility, reproduction and the developing organism. Based on the available toxicokinetic principles, it is very unlikely that carbon black particles will reach the reproductive organs, the embryo or the fetus under in vivo conditions. No adverse effects on reproduction and development would therefore be expected. - Trade secret : <ul style="list-style-type: none"> · Combined Repeated Dose Toxicity Study with the Reproduction / Developmental Toxicity Screening Test, there were no significant adverse effect. (OECD TG 422, GLP)(NOEL=1,000 mg/kg bw/day) - Zinc stearate : <ul style="list-style-type: none"> · In one-generation study with rabbit, under the conditions of the test, administration of up to 60 mg/kg bw of unspecified zinc sulphate had no adverse effects on adult rabbits and their foetuses. (NOAEL=60 mg/kg bw/day)(read-across CAS No. 7733-02-0) |
| (i) Specific target organ toxicity (single exposure) | <p>Not classified</p> <ul style="list-style-type: none"> - Carbon black : <ul style="list-style-type: none"> · The acute oral toxicity of carbon black in animals is very low; no clinical signs of toxicity were noted in rats gavaged with the maximum technically achievable dose (8,000-10,000 mg/kg bw). · Small inflammatory changes in lung and bronchoalveolar fluid were found in rats after a 7-hour inhalation exposure to a high surface area carbon black (20 nm primary particle size; 1 mg/m³), whilst low surface area carbon black (200 nm primary particle size; 1 mg/m³) had no effect. - Trade secret <ul style="list-style-type: none"> · In acute oral toxicity test with mouse, there were no significant adverse effect. NOAEL=1 300 mg/kg bw) - Zinc Stearate: <ul style="list-style-type: none"> · Zinc stearate was acutely irritating when injected into the lungs of rats and the peritoneum of guinea pigs. Examination of the lungs revealed severe edema, congestion, and small hemorrhages. Animals that survived demonstrated no abnormality of the lungs after 14 or 259 days. |
| (j) Specific target organ toxicity (repeat exposure) | <p>Not classified</p> <p>* Although there is no data on carcinogenicity of the product, the possibility of direct exposure of workers to the powder during storage and handling is low because carbon black in the product is a chip-type masterbatch that has been mixed in a substrate and subjected to a compression process. Therefore, the classification of carcinogenicity is not applied.</p> <ul style="list-style-type: none"> - Polyethylene: <ul style="list-style-type: none"> · 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) - Dicumyl Peroxide: <ul style="list-style-type: none"> · Dicumyl Peroxide (CAS number 80-43-3) caused salivation, changes in body weight and body weight gain, in feed efficiency, clinical chemistry parameters (ALT, GGT, total bilirubin, blood urea nitrogen, bile acid or inorganic phosphorous) and organ weights (liver and kidneys) after repeated dose oral administration to male and female Hsd.Brl.Han: |

| | |
|--|--|
| | <p>Wistar rats. (NOAEL=80mg/kg bw/day, LOAEL=320mg/kg bw/day) (OECD TG 408, GLP)</p> <ul style="list-style-type: none"> · In 90 day subchronic oral study with rat, there were observed in both sexes and body weight gain, salivation. Histopathologically, hypertrophy, degeneration of hepatocytes was observed in both sexes. (NOAEL=60mg/kg bw/day(nominal), LOAEL=200mg/kg bw/day (nominal)) (OECD TG 407, GLP) <p>- Carbon black:</p> <ul style="list-style-type: none"> · After repeated inhalation of a high surface area carbon black for 13 weeks, no pathological or biochemical changes were found in the lungs of rats at 1.1 mg/m³ (NOAEL, respirable fraction) but there were clear dose related increases in both biochemical and cellular markers of inflammation and lung damage at the next higher concentration of 7.1 mg/m³ (respirable fraction). By 8 months post-exposure there was substantial clearance of the carbon black retained in the lungs of animals exposed to 1.1 mg/m³, moderate clearance in the mid-exposure group (7.1 mg/m³) and very little at 52.8 mg/m³. Severe lung damage (including lung tumours) was seen in rats of both sexes exposed for 2 years to 2.5 mg/m³ (16 hrs/day, 5 days/week). <p>- Trade secret</p> <ul style="list-style-type: none"> · Combined Repeated Dose Toxicity Study with the Reproduction / Developmental Toxicity Screening Test, there were no significant adverse effect. (OECD TG 422, GLP)(NOEL=1 000 mg/kg bw/day) <p>- Zinc stearate</p> <ul style="list-style-type: none"> · In a 28 days repeated dose toxicity study, significant changes were observed in absolute and relative weight of brain, adrenals, spleen, thymus, epididymides, heart, kidneys, ovaries, uterus and liver in 500 and 1000 mg/kg/day. In addition, minimal to mild gross pathological and histopathological changes were observed in liver, spleen and intestine. However, the biological significance of these findings are not related to test chemical. (NOAEL=1,000 mg/kg bw/day (nominal))(OECD TG 407, GLP) |
| (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 _{mix} =304 mg/L) |
| | <p>- Dicumyl Peroxide:</p> <ul style="list-style-type: none"> · Invertebrate: 48h-EC₅₀ (<i>Daphnia magna</i>) > 100 mg/L (OECD TG 202, GLP) · Algae: 72h-ErC₅₀ (<i>Pseudokirchneriella subcapitata</i>) > 1,000 mg/L (OECD TG 201, GLP) <p>- Carbon black :</p> <ul style="list-style-type: none"> · Fish: 96h-LC₅₀ (<i>Tribolodon hakonensis</i>) > 1,000 mg/L · Invertebrate: 24h-EC₅₀ (<i>Daphnia magna</i>) > 5,600 mg/L (OECD TG 202) · Algae: 72h-ErC₅₀ (<i>Scenedesmus</i>) > 10,000 mg/L <p>* Acute toxicities were not reported at levels up to the water solubility due to being insoluble in water.</p> |

| | |
|------------------------------------|---|
| | <ul style="list-style-type: none"> - Trade secret <ul style="list-style-type: none"> · Fish: 96hr LC50 (Oncorhynchus mykiss) > 100 mg/L (OECD TG 203, GLP) · Invertebrate: 48hr EC50 (Daphnia magna) > 100 mg/L (OECD TG 202, GLP) · Algae: 72hr EC50 (Desmodesmus subspicatus) > 14 mg/L (OECD TG 201, GLP) - Zinc Stearate: <ul style="list-style-type: none"> · Fish: 24hr LC50(Lepomis macrochirus)≥1.8mg/L · Invertebrate: 48hr EC50(Ceriodaphnia dubia)=0.413mg/L (read-across CAS No. 7440-66-6) |
| Chronic toxicity | Category 3 |
| | <ul style="list-style-type: none"> - Dicumyl Peroxide: <ul style="list-style-type: none"> · Invertebrate: 21d-NOEC_{reproduction}(<i>Daphnia magna</i>) = 0.177 mg/L (OECD TG 211, GLP) · Algae: 72h-NOErC (<i>Pseudokirchneriella subcapitata</i>) = 10 mg/L (OECD TG 201, GLP) - Zinc Stearate: <ul style="list-style-type: none"> · Fish: 30d NOEC(Cottus bairdi)=0.172mg/L(read-across CAS No. 7440-66-6) · Invertebrate: 21d NOEC(Daphnia magna)=0.31mg/L (read-across CAS No. 7646-85-7) · Algae: 10d NOEC(Fucus vesiculosus)=0.1mg/L(growth rate) (read-across CAS No. 7646-85-7) |
| 12.2 Persistence and degradability | <ul style="list-style-type: none"> - Dicumyl Peroxide: <ul style="list-style-type: none"> · Hydrolysis half-life : 23.8d (pH 4, 25 °C), 29.2d (pH 7, 25 °C), 29.9d (pH 9, 25 °C) (OECD TG 111, GLP) · 18% degradation after 28d; not readily biodegradable (OECD TG 301D, GLP) - Carbon black : <ul style="list-style-type: none"> · It is not biodegradable by micro-organisms. - Trade secret: <ul style="list-style-type: none"> · Persistence: Low persistency (log K_{ow} is less than 4 estimated) (Log Kow=-2.21)(estimated) - Zinc Stearate: <ul style="list-style-type: none"> · Persistence: Low persistency (log K_{ow} is less than 4 estimated) (Log Kow=0.2695)(37°C, pH=5.53) |
| 12.3 Bioaccumulative potential | <ul style="list-style-type: none"> - Polyethylene : <ul style="list-style-type: none"> · log K_{ow} = 17.04 (estimated) (EPISUITE); not valid data (modeling value that exceeds the range of “-4<log K_{ow}<8”) · BCF = 3.162 (estimated) (EPISUITE); not valid data (value derived from a modeling value that exceeds the range of “-4<log K_{ow}<8”) - Dicumyl Peroxide : <ul style="list-style-type: none"> · log K_{ow} = 5.6 (25 °C) (OECD TG 117) · BCF = 137-1,470 (Concentration in environment : 0.01 mg/L) · BCF = 181-667 (Concentration in environment : 0.001 mg/L) (OECD TG 305C) - Carbon black : <ul style="list-style-type: none"> · Based on its insolubility in organic solvents, and in water, a relevant bioaccumulation of carbon black is not expected. - Trade secret: <ul style="list-style-type: none"> · Bioaccumulation: Bioaccumulation is expected to be low according to the BCF < 500 (BCF = 3.162) (Estimated) - Zinc Stearate: <ul style="list-style-type: none"> · Bioaccumulation: Bioaccumulation is expected to be low according to the BCF < 500 (BCF = 3.162) (Estimated) |
| 12.4 Mobility in soil | <ul style="list-style-type: none"> - Dicumyl Peroxide : <ul style="list-style-type: none"> · K_{oc} = 9,549.93 (OECD TG 121, GLP) - Trade secret: <ul style="list-style-type: none"> · Low potency of mobility to soil. (K_{oc} = 0.3306) (Estimated) |

| | |
|---|---|
| 12.5 Results of PBT and vPvB assessment | <ul style="list-style-type: none"> - Polyethylene : The substance is not PBT / vPvB - Dicumyl Peroxide: The substance is not PBT / vPvB - Carbon black: The substance is not PBT / vPvB - Trade secret: The substance is not PBT / vPvB - Zinc stearate: The substance is not PBT / vPvB |
| 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.: Not applicable

14.2 UN Proper shipping name: Not applicable

14.3 Transport Hazard class:

ADR: Not applicable
 IMDG: Not applicable
 ICAO/IATA: Not applicable
 RID: Not applicable

14.4 Packing group: Not applicable

14.5 Environmental hazards: Not applicable

14.6 Special precautions for user

in case of fire: Not applicable
in case of leakage: Not applicable

14.7 Maritime transport in bulk according to IMO instruments: Not applicable

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: Not applicable

Risk phrases: Not applicable

Safety phrases: Not applicable

EU SVHC list: Not regulated

EU Authorization list: Not regulated

EU Restriction list: Not regulated

<Dicumyl peroxide>

EU Regulatory Information

EU classification

EU 1272/2008(CLP)

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

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

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: Not regulated

EU Restriction list: Regulated

<Carbon black>

EU Regulatory Information

EU classification

EU 1272/2008(CLP)

Classification: Not applicable

Risk phrases: Not applicable

Safety phrases: Not applicable

EU SVHC list: Not regulated

EU Authorization list: Regulated (Reason for inclusion : Possible human carcinogen according to IARC Criteria EC : 215-609-9)

EU Restriction list: Not regulated

<Trade secret>

EU Regulatory Information

EU classification

EU 1272/2008(CLP)

Classification: Not classified

Risk phrases: Not classified

Safety phrases: Not classified

EU SVHC list: Not regulated

EU Authorization list: Not regulated

EU Restriction list: Not regulated

< Zinc stearate >

EU Regulatory Information

EU classification

EU 1272/2008(CLP)

Classification: Not classified

Risk phrases: Not classified

Safety phrases: Not classified

EU SVHC list: Not regulated

EU Authorization list: Not regulated

EU Restriction list: Not regulated

Foreign Inventory Status

< Polyethylene >

- Korea management information: Existing Chemical Substance (KE-28877)

- U.S.A management information: Section 8(b) Inventory (TSCA): Present[XU]
- China management information: Inventory of Existing Chemical Substances (IECSC): Present (05721)
- Japan management information: Existing and New Chemical Substances (ENCS): Present ((6)-1)
- Australia management information: Australian Inventory of Chemical Substances (AICS): Present
- Canada management information: Domestic Substances List (DSL): 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: Inventory of Chemicals and Chemical Substances (PICCS): Present

<Dicumyl peroxide>

- Korea management information: Existing Chemical Substance (KE-03299)
- European Inventory of Existing Commercial chemical Substances(EINECS) : Present(201-279-3)
- Japan management information: Existing and New Chemical Substances (ENCS): Present ((3)-1086)
- China management information: Inventory of Existing Chemical Substances (IECSC): Present (14132)
- Australia management information: Australia Inventory of Chemical Substances (AICS): Present
- Canada management information: Domestic Substances List (DSL): Present
- New Zealand management information: New Zealand Inventory of Chemicals (NZIoC): HSNO Approval: HSR001374
- Philippines management information: Philippines Inventory of Chemicals and Chemical Substances (PICCS): Present

<Carbon black>

- Korea management information: Existing Chemical Substance (KE-04682)
- U.S.A management information: Section 8(b) Inventory (TSCA): Present (ACTIVE)
- European Inventory of Existing Commercial Chemical Substances(EINECS): Present (215-609-9)
- 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 (34022)
- Japan management information: Existing and New Chemical Substances (ENCS): Present ((5)-5222, (5)-3328)
- New Zealand management information: Inventory of Chemicals (NZIoC): Present [HSNO Approval: HSR002801]
- Philippines management information: Inventory of Chemicals and Chemical Substances (PICCS): Present
- Taiwan management information: Taiwan Chemical Substance Inventory (TCSI): Present

<Trade secret>

- Korea management information: Existing Chemical Substance
- European Inventory of Existing Commercial chemical Substances(EINECS) : Present
- Japan management information: Existing and New Chemical Substances (ENCS): Present
- China management information: Inventory of Existing Chemical Substances (IECSC): Present
- Australia management information: Inventory of Chemical Substances (AICS): Present
- Canada management information: Domestic Substances List (DSL): Present
- New Zealand management information: Inventory of Chemicals (NZIoC): Present
- Philippines management information: Inventory of Chemicals and Chemical Substances (PICCS): Present

<Zinc stearate>

- Korea management information: Existing Chemical Substance(KE-26418)
- European Inventory of Existing Commercial chemical Substances(EINECS) : Present(209-151-9)
- Japan management information: Existing and New Chemical Substances (ENCS): Present ((2)-615)
- China management information: Inventory of Existing Chemical Substances (IECSC): Present(30048)
- Australia management information: Inventory of Chemical Substances (AICS): Present
- Canada management information: Domestic Substances List (DSL): Present
- New Zealand management information: Inventory of Chemicals (NZIoC): HSNO Approval: HSR003105

- Philippines management information: Inventory of Chemicals and Chemical Substances (PICCS): Present

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: March 10, 2017

Version: 5

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

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>

PE; Final Report on the Safety Assessment of Polyethylene (International Journal of Toxicology, 26, 2007)

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

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 |
|---|-----------------------------|
| Reproductive toxicity: Category 1B | Generic concentration limit |
| Aquatic Chronic toxicity: Category 3 | Summation method |

16.4 Abbreviations

EC₅₀: median effective concentration

LC₅₀: median lethal concentration

LD₅₀: 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.