SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

- **Product name:** Endosulfan (alpha + beta)
- **Part number:** DRE-C13120000
- **CAS Number:** 115-29-7
- **EC number:** 204-079-4
- **Index number:** 602-052-00-5

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

No further relevant information available.

1.3 Details of the supplier of the safety data sheet

- **Manufacturer/Supplier:**
  - LGC Limited
  - Queens Road
  - Teddington
  - Middlesex TW11 0LY
  - UNITED KINGDOM
- **Further information obtainable from:**
  - Product safety department
eMail : sds-request@lgcgroup.com
- **1.4 Emergency telephone number:** +44 (0) 20 8943 7000 (Monday - Friday : 8am - 5pm)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

- **GHS06 skull and crossbones**
  - Acute Tox. 2 H300 Fatal if swallowed.
  - Acute Tox. 2 H330 Fatal if inhaled.

- **GHS09 environment**
  - Aquatic Acute 1 H400 Very toxic to aquatic life.
  - Aquatic Chronic 1 H410 Very toxic to aquatic life with long lasting effects.

- **GHS07**
  - Acute Tox. 4 H312 Harmful in contact with skin.

2.2 Label elements

- **Labelling according to Regulation (EC) No 1272/2008**
  - The substance is classified and labelled according to the CLP regulation.
Product name: Endosulfan (alpha + beta)

- Hazard pictograms

GHS06  GHS09

- Signal word Danger
- Hazard statements
  H300+H330 Fatal if swallowed or if inhaled.
  H312 Harmful in contact with skin.
  H410 Very toxic to aquatic life with long lasting effects.
- Precautionary statements
  P260 Do not breathe dust/fume/gas/mist/vapours/spray.
  P284 [In case of inadequate ventilation] wear respiratory protection.
  P301+P310 IF SWALLOWED: Immediately call a POISON CENTER/ doctor.
  P320 Specific treatment is urgent (see on this label).
  P405 Store locked up.
  P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

- 2.3 Other hazards
- Results of PBT and vPvB assessment
  PBT: Not applicable.
  115-29-7 endosulfan (ISO)
  vPvB: Not applicable.

SECTION 3: Composition/information on ingredients

- 3.1 Chemical characterisation: Substances
- CAS No. Description
  115-29-7 endosulfan (ISO)
- Identification number(s) None
- EC number: 204-079-4
- Index number: 602-052-00-5
- RTECS: RB 9275000
- Additional information: For the wording of the listed hazard phrases refer to section 16.

SECTION 4: First aid measures

- 4.1 Description of first aid measures
- General information:
  Immediately remove any clothing soiled by the product.
  Symptoms of poisoning may occur even after several hours; therefore medical observation for at least 48 hours after the accident is recommended.
  Remove breathing equipment only after contaminated clothing has been completely removed.
  In case of irregular breathing or respiratory arrest provide artificial respiration.
- After inhalation:
  Supply fresh air or oxygen; call for doctor.
  In case of unconsciousness place patient in recovery position for transport.
  Seek immediate medical advice.
- After skin contact:
  Immediately wash with water and soap and rinse thoroughly.
  Seek medical treatment.
Product name: Endosulfan (alpha + beta)

- After eye contact: Rinse opened eye for several minutes under running water. Then consult a doctor.
- After swallowing:
  Rinse mouth. Do not induce vomiting.
  Call a doctor immediately.
  Call for a doctor immediately.
- 4.2 Most important symptoms and effects, both acute and delayed: No further relevant information available.
- 4.3 Indication of any immediate medical attention and special treatment needed: No further relevant information available.

SECTION 5: Firefighting measures

- 5.1 Extinguishing media
- Suitable extinguishing agents:
  CO₂, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
- 5.2 Special hazards arising from the substance or mixture
  Formation of toxic gases is possible during heating or in case of fire.
- 5.3 Advice for firefighters
- Protective equipment:
  Mouth respiratory protective device.
  Wear self-contained respiratory protective device.

SECTION 6: Accidental release measures

- 6.1 Personal precautions, protective equipment and emergency procedures: Avoid formation of dust.
- 6.2 Environmental precautions:
  Inform respective authorities in case of seepage into water course or sewage system.
  Do not allow to enter sewers/ surface or ground water.
- 6.3 Methods and material for containment and cleaning up:
  Dispose of contaminated material as waste according to item 13.
  Ensure adequate ventilation.
- 6.4 Reference to other sections
  See Section 7 for information on safe handling.
  See Section 8 for information on personal protection equipment.
  See Section 13 for disposal information.

SECTION 7: Handling and storage

- 7.1 Precautions for safe handling
  Ensure good ventilation/extraction at the workplace.
  Remove dust thoroughly.
  Store in cool, dry place in tightly closed receptacles.
  Open and handle receptacle with care.
- Information about fire - and explosion protection: Keep respiratory protective device available.
- 7.2 Conditions for safe storage, including any incompatibilities
- Storage:
  Requirements to be met by storerooms and receptacles:
  Store in a cool location.
  Please refer to the manufacturer's certificate for specific storage and transport temperature conditions.
  Store only in the original receptacle.
  Keep container in a well-ventilated place. Keep away from sources of ignition and heat.
- Information about storage in one common storage facility: Store away from foodstuffs.
- Further information about storage conditions: Keep container tightly sealed.

(Contd. on page 4)
SECTION 8: Exposure controls/personal protection

- Additional information about design of technical facilities: No further data; see item 7.

8.1 Control parameters

Ingredients with limit values that require monitoring at the workplace:

<table>
<thead>
<tr>
<th>CAS Number</th>
<th>ISO Name</th>
<th>Short-term value</th>
<th>Long-term value</th>
</tr>
</thead>
<tbody>
<tr>
<td>115-29-7</td>
<td>Endosulfan (ISO)</td>
<td>0.3 mg/m³</td>
<td>0.1 mg/m³</td>
</tr>
</tbody>
</table>

Additional information: Lists used were valid at the time of SDS preparation.

8.2 Exposure controls

- Personal protective equipment:
  - General protective and hygienic measures:
    - Keep away from foodstuffs, beverages and feed.
    - Immediately remove all soiled and contaminated clothing.
    - Wash hands before breaks and at the end of work.
    - Store protective clothing separately.
    - Avoid contact with the eyes and skin.
  - Respiratory protection:
    - In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.
    - Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.
  - Protection of hands:
    - The glove material has to be impermeable and resistant to the product, the substance, the preparation.
    - Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation.
    - The protective gloves to be used must comply with the specifications of EC Directive 89/686/EEC and the related standard EN374.
  - Material of gloves:
    - The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.
    - Fluorocarbon rubber (Viton)
  - Penetration time of glove material:
    - The exact breakthrough time has to be found out by the manufacturer of the protective gloves and has to be observed.
  - Eye protection: Safety glasses

SECTION 9: Physical and chemical properties

- 9.1 Information on basic physical and chemical properties
  - General Information
    - Appearance:
      - Form: Crystalline
Product name: Endosulfan (alpha + beta)

- Colour: Off white
- Odour: Pungent
- Odour threshold: Not determined.
- pH-value: Not applicable.
- Change in condition
  - Melting point/freezing point: 106 °C
  - Initial boiling point and boiling range: 106/0.9 mbar °C
- Flash point: Not applicable.
- Flammability (solid, gas): Not determined.
- Ignition temperature:
- Decomposition temperature: Not determined.
- Auto-ignition temperature: Not determined.
- Explosive properties: Not determined.
- Explosion limits:
  - Lower: Not determined.
  - Upper: Not determined.
- Vapour pressure at 20 °C: 0.000008 hPa
- Density at 20 °C: 1.745 g/cm³
- Relative density: Not determined.
- Vapour density: Not applicable.
- Evaporation rate: Not applicable.
- Solubility in / Miscibility with
  - Ethyl acetate, DCM, Toluene, Ethanol
  - water at 22 °C: 0.0003 g/l
- Partition coefficient: n-octanol/water: 4.76 logP
- Viscosity:
  - Dynamic: Not applicable.
  - Kinematic: Not applicable.
- 9.2 Other information
  No further relevant information available.

SECTION 10: Stability and reactivity

- 10.1 Reactivity
  Stable under normal conditions.
- 10.2 Chemical stability
  Stable under normal conditions.
- Thermal decomposition / conditions to be avoided:
  Formation of toxic gases is possible during heating or in case of fire.
- 10.3 Possibility of hazardous reactions
  No dangerous reactions known.
- 10.4 Conditions to avoid
  Heat.
- 10.5 Incompatible materials:
  Strong oxidizing agents.
- 10.6 Hazardous decomposition products:
  Formation of toxic gases is possible during heating or in case of fire.

SECTION 11: Toxicological information

- 11.1 Information on toxicological effects
- Acute toxicity
  Fatal if swallowed or if inhaled.
### Product name: Endosulfan (alpha + beta)

Harmful in contact with skin.

<table>
<thead>
<tr>
<th>LD/LC50 values relevant for classification:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral</td>
</tr>
<tr>
<td>Dermal</td>
</tr>
<tr>
<td>Inhalative</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

- **Primary irritant effect:**
  - Skin corrosion/irritation: Based on available data, the classification criteria are not met.
  - Serious eye damage/irritation: Based on available data, the classification criteria are not met.
  - Respiratory or skin sensitisation: Based on available data, the classification criteria are not met.
  - CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction):
    - Germ cell mutagenicity: Based on available data, the classification criteria are not met.
    - Carcinogenicity: Based on available data, the classification criteria are not met.
    - Reproductive toxicity: Based on available data, the classification criteria are not met.
    - STOT-single exposure: Based on available data, the classification criteria are not met.
    - STOT-repeated exposure: Based on available data, the classification criteria are not met.
  - Aspiration hazard: Based on available data, the classification criteria are not met.

### SECTION 12: Ecological information

- **12.1 Toxicity**
  - Aquatic toxicity:
    | EC50/72h | >0.56 mg/l (algae) |
    | LC50/48  | 0.7 mg/l (daphnia) |
    | LC50/96 h| 0.002 mg/l (fish) |

- **12.2 Persistence and degradability**: No further relevant information available.
- **12.3 Bioaccumulative potential**: No further relevant information available.
- **12.4 Mobility in soil**: No further relevant information available.
- **Ecotoxicological effects:**
  - Remark: Very toxic for fish
  - Additional ecological information:
    - General notes:
      - Water hazard class 3 (German Regulation) (Assessment by list): extremely hazardous for water
      - Do not allow product to reach ground water, water course or sewage system, even in small quantities.
      - Danger to drinking water if even extremely small quantities leak into the ground.
      - Also poisonous for fish and plankton in water bodies.
      - Very toxic for aquatic organisms
    - **12.5 Results of PBT and vPvB assessment**
      - **PBT**:
        - Not applicable.
      - vPvB: Not applicable.
    - **12.6 Other adverse effects**: No further relevant information available.

### SECTION 13: Disposal considerations

- **13.1 Waste treatment methods**
  - Recommendation:
    - Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
### SECTION 14: Transport information

<table>
<thead>
<tr>
<th>14.1 UN-Number</th>
<th>ADR, IMDG, IATA</th>
<th>UN2811</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.1 UN-Number</td>
<td>ADR</td>
<td>2811 TOXIC SOLID, ORGANIC, N.O.S. (endosulfan (ISO)), ENVIRONMENTALLY HAZARDOUS</td>
</tr>
<tr>
<td>14.1 UN-Number</td>
<td>IMDG</td>
<td>TOXIC SOLID, ORGANIC, N.O.S. (endosulfan (ISO)), MARINE POLLUTANT</td>
</tr>
<tr>
<td>14.1 UN-Number</td>
<td>IATA</td>
<td>Toxic solids, organic, n.o.s. (endosulfan (ISO))</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>14.3 Transport hazard class(es)</th>
<th>ADR, IMDG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
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<tr>
<td>Label</td>
<td>6.1</td>
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</table>

<table>
<thead>
<tr>
<th>14.4 Packing group</th>
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<tr>
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<table>
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<tr>
<th>14.5 Environmental hazards:</th>
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</thead>
<tbody>
<tr>
<td>Environmentally hazardous substance, solid; Marine Pollutant</td>
<td>Environmentally hazardous substance, solid; Marine Pollutant</td>
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<tr>
<td>Marine pollutant:</td>
<td>Yes (P)</td>
</tr>
<tr>
<td>Special marking (ADR):</td>
<td>Symbol (fish and tree)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>14.6 Special precautions for user</th>
<th>ADR, IMDG, IATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Danger code (Kemler):</td>
<td>66</td>
</tr>
<tr>
<td>EMS Number:</td>
<td>F-A,S-A</td>
</tr>
<tr>
<td>Stowage Category</td>
<td>B</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>14.7 Transport in bulk according to Annex II of Marpol and the IBC Code</th>
<th>ADR, IMDG, IATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not applicable.</td>
<td>Not applicable.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Transport/Additional information:</th>
<th>ADR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excepted quantities (EQ):</td>
<td>E5</td>
</tr>
<tr>
<td>Limited quantities (LQ):</td>
<td>0</td>
</tr>
<tr>
<td>Transport category</td>
<td>1</td>
</tr>
</tbody>
</table>
Product name: Endosulfan (alpha + beta)

- Tunnel restriction code: C/E
- UN "Model Regulation": UN 2811 TOXIC SOLID, ORGANIC, N.O.S. (ENDOSULFAN (ISO)), 6.1, I, ENVIRONMENTALLY HAZARDOUS

SECTION 15: Regulatory information

- 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
  - Philippines Inventory of Chemicals and Chemical Substances: Substance is listed.
  - Australian Inventory of Chemical Substances: Substance is listed.
  - Standard for the Uniform Scheduling of Medicines and Poisons: S6, S7
  - Directive 2012/18/EU
    - Qualifying quantity (tonnes) for the application of lower-tier requirements: 50 t
    - Qualifying quantity (tonnes) for the application of upper-tier requirements: 200 t
  - 15.2 Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

SECTION 16: Other information

The information in this safety data sheet (SDS) has been prepared with due care and is true and accurate to the best of our knowledge. The user must determine the suitability of the information for its particular purpose, ensure compliance with existing laws and regulations, and be aware that other or additional safety or performance considerations may arise when using, handling and/or storing the material. The information in this SDS does not purport to be all inclusive or a guarantee as to the properties of the material supplied, and should be used only as a guide. LGC makes no warranties or representations as to the accuracy and completeness of the information contained herein, shall not be held responsible for the suitability of this information for the user's intended purposes or the consequences of such use, and shall not be liable for any damage or loss, howsoever arising, direct or otherwise.

Abbreviations and acronyms:
- ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
- IMDG: International Maritime Code for Dangerous Goods
- IATA: International Air Transport Association
- P: Marine Pollutant
- GHS: Globally Harmonised System of Classification and Labelling of Chemicals
- EINECS: European Inventory of Existing Commercial Chemical Substances
- CAS: Chemical Abstracts Service (division of the American Chemical Society)
- LC50: Lethal concentration, 50 percent
- LD50: Lethal dose, 50 percent
- PBT: Persistent, Bioaccumulative and Toxic
- vPvB: very Persistent and very Bioaccumulative
- Acute Tox. 2: Acute toxicity – Category 2
- Acute Tox. 4: Acute toxicity – Category 4
- Aquatic Acute 1: Hazards to the aquatic environment - acute aquatic hazard – Category 1
- Aquatic Chronic 1: Hazards to the aquatic environment - long-term aquatic hazard – Category 1

Sources