1. Identification of the substance/mixture and of the company/undertaking

Product identifier

SERENADE ASO

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

Relevant identified uses: crop protection product, fungicide

Details of the supplier of the safety data sheet

<table>
<thead>
<tr>
<th>Company:</th>
<th>Contact address:</th>
</tr>
</thead>
<tbody>
<tr>
<td>BASF SE</td>
<td>BASF plc</td>
</tr>
<tr>
<td>67056 Ludwigshafen</td>
<td>PO Box 4, Earl Road, Cheadle Hulme,</td>
</tr>
<tr>
<td>GERMANY</td>
<td>Cheadle, Cheshire</td>
</tr>
<tr>
<td></td>
<td>SK8 6QG, UNITED KINGDOM</td>
</tr>
</tbody>
</table>

Telephone: +44 161 485-6222
E-mail address: product-safety-north@basf.com

Emergency telephone number

International emergency number:
Telephone: +49 180 2273-112

2. Hazards Identification

Label elements

Globally Harmonized System, EU (GHS)

Hazard Statement:
EUH401 To avoid risks to human health and the environment, comply with the instructions for use.
According to Directive 67/548/EEC or 1999/45/EC

Classification/labelling in accordance with Irish regulations.

Hazard symbol(s)

Xi Irritant.

R-phrase(s)
R43 May cause sensitization by skin contact.

S-phrase(s)
S2 Keep out of the reach of children.
S13 Keep away from food, drink and animal feeding stuffs.
S20/21 When using do not eat, drink or smoke.
S24 Avoid contact with skin.
S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S37 Wear suitable gloves.

Classification of the substance or mixture

According to Regulation (EC) No 1272/2008 [CLP]

No need for classification according to GHS criteria for this product.

According to Directive 67/548/EEC or 1999/45/EC

Possible Hazards:
No specific dangers known, if the regulations/notes for storage and handling are considered.

Other hazards

According to Regulation (EC) No 1272/2008 [CLP]

See section 12 - Results of PBT and vPvB assessment.

If applicable information is provided in this section on other hazards which do not result in classification but which may contribute to the overall hazards of the substance or mixture.

3. Composition/Information on Ingredients

Mixtures

Chemical nature

crop protection product, fungicide, suspension concentrate (SC)

Contains: Bacillus subtilis (Content (W/W): 1.3 %)

Hazardous ingredients (GHS)
4. First-Aid Measures

Description of first aid measures

Remove contaminated clothing.

If inhaled:
Keep patient calm, remove to fresh air.

On skin contact:
Wash thoroughly with soap and water.

On contact with eyes:
Wash affected eyes for at least 15 minutes under running water with eyelids held open.

On ingestion:
Rinse mouth and then drink plenty of water.

Most important symptoms and effects, both acute and delayed
Symptoms: No significant reaction of the human body to the product known.

Indication of any immediate medical attention and special treatment needed
Treatment: Symptomatic treatment (decontamination, vital functions).

5. Fire-Fighting Measures

Extinguishing media
Suitable extinguishing media:
water spray, carbon dioxide, foam, dry powder

Special hazards arising from the substance or mixture
carbon monoxide, Carbon dioxide, nitrogen oxides
The substances/groups of substances mentioned can be released in case of fire.

Advice for fire-fighters
Special protective equipment:
Wear self-contained breathing apparatus and chemical-protective clothing.

Further information:
In case of fire and/or explosion do not breathe fumes. Keep containers cool by spraying with water if exposed to fire. Collect contaminated extinguishing water separately, do not allow to reach sewage or effluent systems. Dispose of fire debris and contaminated extinguishing water in accordance with official regulations.
6. Accidental Release Measures

**Personal precautions, protective equipment and emergency procedures**
Do not breathe vapour/spray. Use personal protective clothing. Avoid contact with the skin, eyes and clothing.

**Environmental precautions**
Do not discharge into the subsoil/soil. Do not discharge into drains/surface waters/groundwater.

Do not allow contamination of public drains or surface or ground waters. Inform local water plc if spillage enters drains and the Environmental Protection Agency if it enters surface or ground waters. Keep people and animals away.

**Methods and material for containment and cleaning up**
For small amounts: Pick up with suitable absorbent material (e.g. sand, sawdust, general-purpose binder, kieselguhr).
For large amounts: Dike spillage. Pump off product.
Dispose of absorbed material in accordance with regulations. Collect waste in suitable containers, which can be labeled and sealed. Clean contaminated floors and objects thoroughly with water and detergents, observing environmental regulations.

**Reference to other sections**
Information regarding exposure controls/personal protection and disposal considerations can be found in section 8 and 13.

7. Handling and Storage

**Precautions for safe handling**
No special measures necessary if stored and handled correctly. Ensure thorough ventilation of stores and work areas. When using do not eat, drink or smoke. Hands and/or face should be washed before breaks and at the end of the shift.

Protection against fire and explosion:
No special precautions necessary. The substance/product is non-combustible. Product is not explosive.

**Conditions for safe storage, including any incompatibilities**
Segregate from foods and animal feeds.
Further information on storage conditions: Keep away from heat. Protect from direct sunlight.

**Specific end use(s)**
For the relevant identified use(s) listed in Section 1 the advice mentioned in this section 7 is to be observed.

8. Exposure Controls/Personal Protection

**Control parameters**

Components with workplace control parameters
No occupational exposure limits known.

none

Refer to the current schedule of occupational exposure standards published by the Irish HSA. For normal use and handling refer to the product label/leaflet. In all other cases the following apply.

**Exposure controls**

**Personal protective equipment**

Respiratory protection:
Respiratory protection not required.

Hand protection:
Suitable chemical resistant safety gloves (EN 374) also with prolonged, direct contact (Recommended: Protective index 6, corresponding > 480 minutes of permeation time according to EN 374): E.g. nitrile rubber (0.4 mm), chloroprene rubber (0.5 mm), butyl rubber (0.7 mm) and other

Eye protection:
Safety glasses with side-shields (frame goggles) (e.g. EN 166)

Body protection:
Body protection must be chosen depending on activity and possible exposure, e.g. apron, protecting boots, chemical-protection suit (according to EN 14605 in case of splashes or EN ISO 13982 in case of dust).

**General safety and hygiene measures**

The statements on personal protective equipment in the instructions for use apply when handling crop-protection agents in final-consumer packing. Wearing of closed work clothing is recommended. Store work clothing separately. Keep away from food, drink and animal feeding stuffs.

---

### 9. Physical and Chemical Properties

**Information on basic physical and chemical properties**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form</td>
<td>liquid</td>
</tr>
<tr>
<td>Colour</td>
<td>light brown</td>
</tr>
<tr>
<td>Odour</td>
<td>acidic</td>
</tr>
<tr>
<td>Odour threshold:</td>
<td>not determined</td>
</tr>
<tr>
<td>pH value:</td>
<td>approx. 4 - 6</td>
</tr>
<tr>
<td>(water, 1 %(m), 20 °C)</td>
<td></td>
</tr>
<tr>
<td>Melting point:</td>
<td>approx. 0 °C</td>
</tr>
<tr>
<td>Boiling point:</td>
<td>&gt; 100 °C</td>
</tr>
<tr>
<td>Flash point:</td>
<td>A flash point determination is</td>
</tr>
<tr>
<td></td>
<td>unnecessary due to the high</td>
</tr>
<tr>
<td></td>
<td>water content</td>
</tr>
<tr>
<td>Evaporation rate:</td>
<td>not applicable</td>
</tr>
<tr>
<td>Flammability:</td>
<td>not determined</td>
</tr>
<tr>
<td>Lower explosion limit:</td>
<td>not determined</td>
</tr>
</tbody>
</table>
Upper explosion limit: not determined
Ignition temperature: Based on the water content the product does not ignite.
Vapour pressure: Information based on the main components.
Density: approx. 1.04 g/cm³ (20 °C) (Directive 92/69/EEC, A.3)
Relative vapour density (air): not determined
Solubility in water: dispersible
Partitioning coefficient n-octanol/water (log Kow): not applicable
Thermal decomposition: not determined
Viscosity, dynamic: not determined
Explosion hazard: Based on the water content the product has no explosive properties.
Fire promoting properties: not fire-propagating

Other information
Other Information:
If necessary, information on other physical and chemical parameters is indicated in this section.

10. Stability and Reactivity

Reactivity
No hazardous reactions if stored and handled as prescribed/indicated.

Chemical stability
The product is stable if stored and handled as prescribed/indicated.

Possibility of hazardous reactions
No hazardous reactions if stored and handled as prescribed/indicated.

Conditions to avoid
See MSDS section 7 - Handling and storage.

Incompatible materials
Substances to avoid:
strong oxidizing agents, strong bases, strong acids

Hazardous decomposition products
Hazardous decomposition products:
No hazardous decomposition products if stored and handled as prescribed/indicated.
11. Toxicological Information

Information on toxicological effects

Acute toxicity

Assessment of acute toxicity:
Virtually nontoxic after a single ingestion. Virtually nontoxic by inhalation. Virtually nontoxic after a single skin contact.

Experimental/calculated data:
LD50 rat (oral): > 5,000 mg/kg (OECD Guideline 401)
The product has not been tested. The statement has been derived from products of a similar structure or composition.

LC50 rat (by inhalation): > 1.45 mg/l 4 h (other)
The product has not been tested. The statement has been derived from products of a similar structure or composition. No mortality was observed. Highest concentration available for testing.

LD50 rabbit (dermal): > 2,000 mg/kg (OECD Guideline 402)
No mortality was observed.

Irritation

Assessment of irritating effects:
Not irritating to the skin. Not irritating to the eyes.

Experimental/calculated data:
Skin corrosion/irritation rabbit: non-irritant (OECD Guideline 404)

Serious eye damage/irritation rabbit: non-irritant (OECD Guideline 405)

Respiratory/Skin sensitization

Assessment of sensitization:
There is no evidence of a skin-sensitizing potential.

Experimental/calculated data:
Buehler test guinea pig: Skin sensitizing effects were not observed in animal studies. (OECD Guideline 406)
The product has not been tested. The statement has been derived from products of a similar structure or composition.

Germ cell mutagenicity

Assessment of mutagenicity:
The product has not been tested. The statement has been derived from the properties of the individual components. Mutagenicity tests revealed no genotoxic potential.

Carcinogenicity

Assessment of carcinogenicity:
The product has not been tested. The statement has been derived from the properties of the individual components. The results of various animal studies gave no indication of a carcinogenic effect.
Reproductive toxicity

Assessment of reproduction toxicity:
The product has not been tested. The statement has been derived from the properties of the individual components. The results of animal studies gave no indication of a fertility impairing effect.

Developmental toxicity

Assessment of teratogenicity:
The product has not been tested. The statement has been derived from the properties of the individual components. Animal studies gave no indication of a developmental toxic effect at doses that were not toxic to the parental animals.

Repeated dose toxicity and Specific target organ toxicity (repeated exposure)

Assessment of repeated dose toxicity:
The product has not been tested. The statement has been derived from the properties of the individual components. No substance-specific organotoxicity was observed after repeated administration of high doses to animals.

Other relevant toxicity information

Misuse can be harmful to health.

12. Ecological Information

Toxicity

Assessment of aquatic toxicity:
There is a high probability that the product is not acutely harmful to aquatic organisms.

The product has not been tested. The statement has been derived from the properties of the individual components.

Toxicity to fish:
LC50 (30 d) 162 mg/l, Oncorhynchus mykiss (other)

Aquatic invertebrates:
LC50 (48 h) 108 mg/l, Daphnia magna (other)

Aquatic plants:
Lowest observed effect concentration > 100 mg/l, Scenedesmus subspicatus (OECD Guideline 201)
The ecological data given are those of the active ingredient.

Persistence and degradability

Assessment biodegradation and elimination (H2O):
The product has not been tested. The statement has been derived from the properties of the individual components.

Biodegradable.

Bioaccumulative potential
Assessment bioaccumulation potential:
The product has not been tested. The statement has been derived from the properties of the individual components.

Bioaccumulation potential:
At the present state of knowledge, no negative ecological effects are expected.

**Mobility in soil (and other compartments if available)**

Assessment transport between environmental compartments:
No data available.

**Results of PBT and vPvB assessment**

The product does not contain a substance fulfilling the PBT (persistent/bioaccumulative/toxic) criteria or the vPvB (very persistent/very bioaccumulative) criteria.

**Other adverse effects**

The product does not contain substances that are listed in Annex I of Regulation (EC) 2037/2000 on substances that deplete the ozone layer.

**Additional information**

Other ecotoxicological advice:
Do not discharge product into the environment without control.

## 13. Disposal Considerations

**Waste treatment methods**

Must be sent to a suitable incineration plant, observing local regulations.

Contaminated packaging:
Contaminated packaging should be emptied as far as possible and disposed of in the same manner as the substance/product.

## 14. Transport Information

**Land transport**

ADR

Not classified as a dangerous good under transport regulations

RID

Not classified as a dangerous good under transport regulations

**Inland waterway transport**
15. Regulatory Information

Safety, health and environmental regulations/legislation specific for the substance or mixture

For the user of this plant-protective product applies: 'To avoid risks to man and the environment, comply with the instructions for use.' (Directive 1999/45/EC, Article 10, No. 1.2)

This product may be subject to the Seveso II Directive and amendments if specific threshold tonnages are exceeded.
For further medical advice Doctors should contact the National Poison Information Centre at Beaumont Hospital, Dublin.

Chemical Safety Assessment

Advice on product handling can be found in sections 7 and 8 of this safety data sheet.

16. Other Information

For proper and safe use of this product, please refer to the approval conditions laid down on the product label.

The data contained in this safety data sheet are based on our current knowledge and experience and describe the product only with regard to safety requirements. The data do not describe the product's properties (product specification). Neither should any agreed property nor the suitability of the product for any specific purpose be deduced from the data contained in the safety data sheet. It is the responsibility of the recipient of the product to ensure any proprietary rights and existing laws and legislation are observed.

Vertical lines in the left hand margin indicate an amendment from the previous version.