SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier
Trade name: SERENADE PRIME
Product code (UVP): 80924771

1.2 Relevant identified uses of the substance or mixture and uses advised against
Use: other
EPA-Nr.: HSR000656

Restrictions on use: See product label for restrictions.

1.3 Details of the supplier of the safety data sheet
Supplier: Bayer New Zealand Limited
3 Argus Place, Hillcrest
Auckland 0627
New Zealand
Telephone: 0800 428 246
Telefax: (09) 441 8645

1.4 Emergency telephone no.
Emergency Number: 0800 734 607 (24hr)
Global Incident Response Hotline (24h): +1 (760) 476-3964 (Company 3E for Bayer AG, Crop Science Division)

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture
Classified as hazardous according to the criteria in the Hazardous Substances (Minimum Degrees of Hazard) Notice 2017 as amended

6.4A H320: Causes eye irritation.
6.5B H317: May cause an allergic skin reaction.
9.4C H443: Harmful to terrestrial invertebrates.

2.2 Label elements
Labelling in accordance with the Hazardous Substances (Safety Data Sheets) Notice 2017 as amended
Hazard label for supply/use required.
Signal word: Warning

Hazard statements
H320 Causes eye irritation.
H317 May cause an allergic skin reaction.
H443 Harmful to terrestrial invertebrates.

Precautionary statements
P308 + P311 IF exposed or concerned: Call a POISON CENTER/ doctor/ physician.
P321 Specific treatment (see supplemental first aid instructions on this label).

2.3 Other hazards
Micro-organisms may have the potential to provoke sensitising reactions.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.2 Mixtures
Chemical nature
Suspension concentrate (=flowable concentrate)(SC)
Bacillus subtilis strain QST 713: \(>= 1.0E+09\) CFU/g

Hazardous components

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS-No.</th>
<th>Conc. [%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bacillus subtilis strain QST 713</td>
<td></td>
<td>1.34</td>
</tr>
</tbody>
</table>

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

General advice
Move out of dangerous area. Victim to lie down in the recovery position, cover and keep him warm.

Inhalation
Move to fresh air. Keep patient warm and at rest. If symptoms persist, call a physician.

Skin contact
Wash off thoroughly with plenty of soap and water, if available with polyethyleneglycol 400, subsequently rinse with water. If symptoms persist, call a physician.

Eye contact
Wash off immediately with plenty of water for at least 15 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Get medical attention if irritation develops and persists.

Ingestion
Do NOT induce vomiting. Call a physician or poison control center immediately. Rinse mouth.
4.2 Most important symptoms and effects, both acute and delayed

**Symptoms**
No symptoms known or expected.

4.3 Indication of any immediate medical attention and special treatment needed

**Treatment**
Treat symptomatically. There is no specific antidote.

Contact the National Poisons and Hazardous Chemicals Information center in Dunedin, PO Box 913, Dunedin. Phone 0800 POISON (0800 764 766).

SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing media

**Suitable**
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

**Unsuitable**
High volume water jet

5.2 Special hazards arising from the substance or mixture

Dangerous gases are evolved in the event of a fire.

5.3 Advice for firefighters

**Special protective equipment for firefighters**
In the event of fire and/or explosion do not breathe fumes. In the event of fire, wear self-contained breathing apparatus.

**Further information**
Contain the spread of the fire-fighting media. Do not allow run-off from fire fighting to enter drains or water courses.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

**Precautions**
Avoid contact with spilled product or contaminated surfaces. Ensure adequate ventilation. Use personal protective equipment.

6.2 Environmental precautions

Do not allow to get into surface water, drains and ground water. Do not contaminate surface or ground water by cleaning equipment or disposal of wastes, including equipment wash water. Apply this product as specified on the label.

6.3 Methods and materials for containment and cleaning up

**Methods for cleaning up**
Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Collect and transfer the product into a properly labelled and tightly closed container. Clean contaminated floors and objects thoroughly, observing environmental regulations. Clean with disinfectants.

**Additional advice**
Use personal protective equipment. If the product is accidentally spilled, do not allow to enter soil, waterways or waste water canal.
SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling
Advice on safe handling
No specific precautions required when handling unopened packs/containers; follow relevant manual handling advice.

Advice on protection against fire and explosion
No special precautions required.

Hygiene measures
Avoid contact with skin, eyes and clothing. Keep working clothes separately. Wash hands before breaks and immediately after handling the product. Wash thoroughly with soap and water after handling. Remove soiled clothing immediately and clean thoroughly before using again. Garments that cannot be cleaned must be destroyed (burnt).

7.2 Conditions for safe storage, including any incompatibilities
Requirements for storage areas and containers
Store in a place accessible by authorized persons only. Store in original container. Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from direct sunlight. Protect from frost.

Advice on common storage
Keep away from food, drink and animal feedingstuffs.

Suitable materials
HDPE (high density polyethylene)

7.3 Specific end use(s)
Refer to the label and/or leaflet.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Control parameters</th>
<th>Update</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bacillus subtilis strain QST 713</td>
<td></td>
<td>20,000,000 CFU/m³</td>
<td></td>
<td>OES BCS*</td>
</tr>
</tbody>
</table>

*OES BCS: Internal Bayer AG, Crop Science Division “Occupational Exposure Standard”

8.2 Exposure controls

Personal protective equipment
In normal use and handling conditions please refer to the label and/or leaflet. In all other cases the following recommendations would apply.

Respiratory protection
Respiratory protection should only be used to control residual risk of short duration activities, when all reasonably practicable steps have been taken to reduce exposure at source e.g. containment and/or local extract ventilation. Always follow respirator manufacturer's instructions regarding wearing and maintenance.
Wear respirator with a particle filter mask (protection factor 20) conforming to European Norm EN149FFP3 or EN140P3 or equivalent.
SAFETY DATA SHEET

SERENADE PRIME
Version 1 / NZ
102000027846

Revision Date: 16.02.2019
Print Date: 24.02.2019

Eye protection Wear goggles (conforming to EN166, Field of Use = 5 or equivalent).
Skin and body protection Wear standard coveralls and Category 3 Type 5 suit.
Wear two layers of clothing wherever possible. Polyester/cotton or cotton overalls should be worn under chemical protection suit and should be professionally laundered frequently.
If there is a risk of significant exposure, consider a higher protective type suit.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties
Form suspension
Colour light brown
Odour sweet, earthy
Odour Threshold No data available
pH 5.2 - 5.4 (100 %) (23 °C)
Boiling point/boiling range >= 100 °C
Minimum ignition energy Not applicable
Upper explosion limit No data available
Lower explosion limit No data available
Vapour pressure No data available
Evaporation rate No data available
Relative vapour density No data available
Density ca. 1.05 g/cm³ (20 °C)
Water solubility dispersible
Partition coefficient: n-octanol/water Not applicable
Viscosity, dynamic 10 - 100 mPa.s (21 °C) Please, note QC information!
10 - 100 mPa.s (21 °C)
Impact sensitivity Not impact sensitive.
Explosivity Not explosive
92/69/EEC, A.14 / OECD 113
9.2 Other information Further safety related physical-chemical data are not known.

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity
Thermal decomposition No data available
10.2 Chemical stability Stable under recommended storage conditions.
10.3 Possibility of hazardous reactions

No hazardous reactions when stored and handled according to prescribed instructions.

10.4 Conditions to avoid

freezing
Extremes of temperature and direct sunlight.

10.5 Incompatible materials

Store only in the original container.

10.6 Hazardous decomposition products

No decomposition products expected under normal conditions of use.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute oral toxicity
LD50 (Rat) > 5,000 mg/kg

Acute inhalation toxicity
LC50 (Rat) > 5.19 mg/l
Exposure time: 4 h
Determined in the form of liquid aerosol.

Acute dermal toxicity
LD50 (Rabbit) > 2,000 mg/kg

Skin corrosion/irritation
No skin irritation (Rabbit)

Serious eye damage/eye irritation
No eye irritation (Rabbit)

Respiratory or skin sensitisation
Skin: Non-sensitizing, (Guinea pig)
Test conducted with a similar formulation.

Assessment STOT Specific target organ toxicity – single exposure
Bacillus subtilis: Based on available data, the classification criteria are not met.

Assessment STOT Specific target organ toxicity – repeated exposure
Bacillus subtilis did not cause specific target organ toxicity in experimental animal studies.

Assessment mutagenicity
Bacillus subtilis: Test not required for microorganisms.

Assessment carcinogenicity
Bacillus subtilis: Test not required for microorganisms.

Assessment toxicity to reproduction
Bacillus subtilis: Test not required for microorganisms.

Assessment developmental toxicity
Bacillus subtilis: Test not required for microorganisms.

Asspiration hazard
Based on available data, the classification criteria are not met.
SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

**Toxicity to fish**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC50</td>
<td>162 mg/l 3.24 x 10^9 CFU/L</td>
</tr>
<tr>
<td>Exposure time</td>
<td>30 d</td>
</tr>
<tr>
<td><strong>NOEC</strong></td>
<td>86 mg/l 1.72 x 10^9 CFU/L</td>
</tr>
<tr>
<td>Exposure time</td>
<td>30 d</td>
</tr>
</tbody>
</table>

The value mentioned relates to the active ingredient.

**Toxicity to aquatic invertebrates**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC50</td>
<td>108 mg/l 2.16 x 10^9 CFU/L</td>
</tr>
<tr>
<td>Exposure time</td>
<td>48 h</td>
</tr>
<tr>
<td><strong>NOEC</strong></td>
<td>13 mg/l 2.6 x 10^8 CFU/L</td>
</tr>
<tr>
<td>Exposure time</td>
<td>48 h</td>
</tr>
<tr>
<td>EC50</td>
<td>1.6 x 10^6 CFU/mL</td>
</tr>
<tr>
<td>Exposure time</td>
<td>21 d</td>
</tr>
<tr>
<td><strong>NOEC</strong></td>
<td>7.9 x 10^5 CFU/mL</td>
</tr>
<tr>
<td>Exposure time</td>
<td>21 d</td>
</tr>
</tbody>
</table>

The value mentioned relates to the active ingredient.

**Toxicity to aquatic plants**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NOEC</strong></td>
<td>&gt;= 1000 mg/l</td>
</tr>
</tbody>
</table>

The value mentioned relates to the active ingredient.

**Persistence and degradability**

**Biodegradability**

Bacillus subtilis: Evaluation of biodegradability is not relevant for micro-organisms.

**Bioaccumulative potential**

Bacillus subtilis: Evaluation of bioaccumulation is not relevant for micro-organisms.

**Mobility in soil**

Bacillus subtilis: Evaluation of mobility in soil is not relevant for micro-organisms.

**Results of PBT and vPvB assessment**

Bacillus subtilis: Evaluation of PBT/vPvB properties is not relevant for micro-organisms.

**Other adverse effects**

No other effects to be mentioned.
SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product: Dispose of this product only by using according to the label, or at an approved landfill or other approved facility.

Contaminated packaging: Triple rinse containers. Recycle if possible. If allowed under local authority, burn if circumstances, especially wind direction permit, otherwise crush and bury in an approved local authority facility. Do not use container for any other purpose.

SECTION 14: TRANSPORT INFORMATION

This transportation information is not intended to convey all specific regulatory information relating to this product. It does not address regulatory variations due to package size or special transportation requirements.

According to ADN/ADR/RID/IMDG/IATA not classified as dangerous goods.

This classification is in principle not valid for carriage by tank vessel on inland waterways. Please refer to the manufacturer for further information.

14.1 – 14.5 Not applicable.

14.6 Special precautions for user

See sections 6 to 8 of this Safety Data Sheet.

14.7 Transport in bulk according to Annex II of MARPOL and the IBC Code

No transport in bulk according to the IBC Code.

SECTION 15: REGULATORY INFORMATION

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

Further information

| HSNO approval-Nr. | HSR000656
|------------------|------------------|
| HSNO Controls    | See www.epa.govt.nz
| ACVM Reg.        | Not required     |
| ACVM Condition   | See www.foodsafety.govt.nz

SECTION 16: OTHER INFORMATION

Abbreviations and acronyms

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADN</td>
<td>European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways</td>
</tr>
<tr>
<td>ADR</td>
<td>European Agreement concerning the International Carriage of Dangerous Goods by Road</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------</td>
</tr>
<tr>
<td>ATE</td>
<td>Acute toxicity estimate</td>
</tr>
<tr>
<td>CAS-Nr.</td>
<td>Chemical Abstracts Service number</td>
</tr>
<tr>
<td>Conc.</td>
<td>Concentration</td>
</tr>
<tr>
<td>ECx</td>
<td>Effective concentration to x %</td>
</tr>
<tr>
<td>EINECS</td>
<td>European inventory of existing commercial substances</td>
</tr>
<tr>
<td>ELINCS</td>
<td>European list of notified chemical substances</td>
</tr>
<tr>
<td>EN</td>
<td>European Standard</td>
</tr>
<tr>
<td>EU</td>
<td>European Union</td>
</tr>
<tr>
<td>IATA</td>
<td>International Air Transport Association</td>
</tr>
<tr>
<td>IBC</td>
<td>International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (IBC Code)</td>
</tr>
<tr>
<td>ICx</td>
<td>Inhibition concentration to x %</td>
</tr>
<tr>
<td>IMDG</td>
<td>International Maritime Dangerous Goods</td>
</tr>
<tr>
<td>LCx</td>
<td>Lethal concentration to x %</td>
</tr>
<tr>
<td>LDx</td>
<td>Lethal dose to x %</td>
</tr>
<tr>
<td>LOEC/LOEL</td>
<td>Lowest observed effect concentration/level</td>
</tr>
<tr>
<td>MARPOL</td>
<td>MARPOL: International Convention for the prevention of marine pollution from ships</td>
</tr>
<tr>
<td>N.O.S.</td>
<td>Not otherwise specified</td>
</tr>
<tr>
<td>NOEC/NOEL</td>
<td>No observed effect concentration/level</td>
</tr>
<tr>
<td>OECD</td>
<td>Organization for Economic Co-operation and Development</td>
</tr>
<tr>
<td>RID</td>
<td>Regulations concerning the International Carriage of Dangerous Goods by Rail</td>
</tr>
<tr>
<td>TWA</td>
<td>Time weighted average</td>
</tr>
<tr>
<td>UN</td>
<td>United Nations</td>
</tr>
<tr>
<td>WHO</td>
<td>World health organisation</td>
</tr>
</tbody>
</table>

The data given here is based on current knowledge and experience. The purpose of this Safety Data Sheet is to describe products in terms of their safety requirements. The above details do not imply any guarantee concerning composition, properties or performance of the product.

Changes since the last version are highlighted in the margin. This version replaces all previous versions.