

# SAFETY DATA SHEET



## SERENADE® ASO

Version 3.0 / USA  
102000027846

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Revision Date: 11/03/2023  
Print Date: 11/04/2023

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

#### Product identifier

Trade name	SERENADE® ASO
Product code (UVP)	80924771
SDS Number	102000027846
EPA Registration No.	264-1152

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

Use	Fungicide
Restrictions on use	See product label for restrictions.
Information on supplier	
Supplier	Bayer CropScience LP 800 North Lindbergh Blvd. St. Louis, MO 63167 USA
Responsible Department	Email: SDSINFO.BCS-NA@bayer.com

#### Emergency telephone no.

Emergency Telephone Number (24hr/ 7 days)	1-800-334-7577
Product Information Telephone Number	1-866-99BAYER (1-866-992-2937)

### SECTION 2: HAZARDS IDENTIFICATION

#### Classification in accordance with regulation HCS 29CFR §1910.1200

This material is not hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29CFR 1910.1200.

#### Hazards Not Otherwise Classified (HNOC)

Micro-organisms may have the potential to provoke sensitising reactions.  
No physical hazards not otherwise classified.

### SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

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Hazardous Component Name	CAS-No.	Concentration % by weight
Bacillus subtilis strain QST 713		1.34
Bacillus subtilis strain QST 713: $\geq 1.0E+09$ CFU/g		

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### SECTION 4: FIRST AID MEASURES

#### Description of first aid measures

<b>General advice</b>	When possible, have the product container or label with you when calling a poison control center or doctor or going for treatment.
<b>Inhalation</b>	Move to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a physician or poison control center immediately.
<b>Skin contact</b>	Take off contaminated clothing and shoes immediately. Wash off immediately with plenty of water for at least 15 minutes. Call a physician or poison control center immediately.
<b>Eye contact</b>	Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a physician or poison control center immediately.
<b>Ingestion</b>	Call a physician or poison control center immediately. Rinse out mouth and give water in small sips to drink. DO NOT induce vomiting unless directed to do so by a physician or poison control center. Never give anything by mouth to an unconscious person. Do not leave victim unattended.

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

<b>Symptoms</b>	To date no symptoms are known.
<b>Indication of any immediate medical attention and special treatment needed</b>	
<b>Treatment</b>	Appropriate supportive and symptomatic treatment as indicated by the patient's condition is recommended.

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### SECTION 5: FIREFIGHTING MEASURES

#### Extinguishing media

<b>Suitable</b>	Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
<b>Unsuitable</b>	High volume water jet

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<b>Special hazards arising from the substance or mixture</b>	Dangerous gases are evolved in the event of a fire.
<b>Advice for firefighters</b>	
<b>Special protective equipment for firefighters</b>	Firefighters should wear NIOSH approved self-contained breathing apparatus and full protective clothing. In the event of fire and/or explosion do not breathe fumes.
<b>Further information</b>	Use appropriate extinguishing media for material that is supplying fuel. Keep out of smoke. Fight fire from upwind position. Cool closed containers exposed to fire with water spray. Do not allow run-off from fire fighting to enter drains or water courses.

### Specific hazards from the substance or mixture which can increase the fire

<b>Flash point</b>	> 91 °C / > 195.8 °F No flash point - Determination conducted up to the boiling point.
<b>Auto-ignition temperature</b>	475 °C / 887 °F
<b>Lower explosion limit</b>	No data available
<b>Upper explosion limit</b>	No data available
<b>Explosivity</b>	Not explosive 92/69/EEC, A.14 / OECD 113

## SECTION 6: ACCIDENTAL RELEASE MEASURES

### Personal precautions, protective equipment and emergency procedures

<b>Precautions</b>	Keep unauthorized people away. Isolate hazard area. Avoid contact with spilled product or contaminated surfaces.
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### Methods and materials for containment and cleaning up

<b>Methods for cleaning up</b>	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.
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<b>Additional advice</b>	Use personal protective equipment. If the product is accidentally spilled, do not allow to enter soil, waterways or waste water canal.
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<b>Reference to other sections</b>	Information regarding safe handling, see section 7. Information regarding personal protective equipment, see section 8. Information regarding waste disposal, see section 13.
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### SECTION 7: HANDLING AND STORAGE

#### Precautions for safe handling

**Advice on safe handling** Use only in area provided with appropriate exhaust ventilation. Handle and open container in a manner as to prevent spillage.

**Hygiene measures** Wash hands thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, using the toilet or applying cosmetics.  
Remove Personal Protective Equipment (PPE) immediately after handling this product. Remove soiled clothing immediately and clean thoroughly before using again. Wash thoroughly and put on clean clothing.

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

**Requirements for storage areas and containers** Store in a cool, dry place and in such a manner as to prevent cross contamination with other crop protection products, fertilizers, food, and feed. Store in original container and out of the reach of children, preferably in a locked storage area. Protect from freezing. Keep away from direct sunlight.

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

### SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

#### Control parameters

Components	CAS-No.	Control parameters	Update	Basis
Bacillus subtilis strain QST 713		20,000,000 CFU/m <sup>3</sup>		OES BCS*

\*OES BCS: Internal Bayer AG, Crop Science Division "Occupational Exposure Standard"

#### 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 is not required under anticipated circumstances of exposure.  
When respirators are required, select NIOSH approved equipment based on actual or potential airborne concentrations and in accordance with the appropriate regulatory standards and/or industry recommendations.

**Hand protection** Waterproof gloves

**Eye protection** Safety glasses with side-shields

**Skin and body protection** Wear long-sleeved shirt and long pants and shoes plus socks.

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**General protective measures** Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and warm/tepid water.  
Keep and wash PPE separately from other laundry.

## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

### Information on basic physical and chemical properties

<b>Form</b>	suspension
<b>Colour</b>	light brown
<b>Odour</b>	sweet, earthy
<b>Odour Threshold</b>	No data available
<b>pH</b>	5.2 - 5.4 (100 %) (23 °C)
<b>Melting point/range</b>	No data available
<b>Boiling point/boiling range</b>	91 °C / 195.8 °F
<b>Flash point</b>	> 91 °C / > 195.8 °F No flash point - Determination conducted up to the boiling point.
<b>Flammability</b>	No data available
<b>Auto-ignition temperature</b>	475 °C / 887 °F
<b>Thermal decomposition</b>	No data available
<b>Minimum ignition energy</b>	Not applicable
<b>Self-accelerating decomposition temperature (SADT)</b>	No data available
<b>Upper explosion limit</b>	No data available
<b>Lower explosion limit</b>	No data available
<b>Vapour pressure</b>	No data available
<b>Evaporation rate</b>	No data available
<b>Relative vapour density</b>	No data available
<b>Relative density</b>	No data available
<b>Density</b>	ca. 1.05 g/cm <sup>3</sup> (20 °C)
<b>Water solubility</b>	dispersible
<b>Partition coefficient: n-octanol/water</b>	Not applicable
<b>Viscosity, dynamic</b>	10 - 100 mPa.s (21 °C)
<b>Viscosity, kinematic</b>	No data available

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<b>Surface tension</b>	34 mN/m (25 °C) Determined in the undiluted form.
<b>Impact sensitivity</b>	Not impact sensitive.
<b>Oxidizing properties</b>	No data available
<b>Explosivity</b>	Not explosive 92/69/EEC, A.14 / OECD 113
<b>Other information</b>	Further safety related physical-chemical data are not known.

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### SECTION 10: STABILITY AND REACTIVITY

<b>Reactivity</b>	Stable under normal conditions.
<b>Chemical stability</b>	Stable under recommended storage conditions.
<b>Possibility of hazardous reactions</b>	No hazardous reactions when stored and handled according to prescribed instructions.
<b>Conditions to avoid</b>	Protect from sunlight. Do not expose to temperatures exceeding 40 °C/ 104 °F. freezing
<b>Incompatible materials</b>	No incompatible materials known.
<b>Hazardous decomposition products</b>	No decomposition products expected under normal conditions of use.

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### SECTION 11: TOXICOLOGICAL INFORMATION

<b>Exposure routes</b>	Inhalation, Eye contact, Skin contact, Ingestion
<b>Immediate Effects</b>	
<b>Eye</b>	Not expected to produce significant adverse effects when recommended use instructions are followed.
<b>Skin</b>	May cause sensitisation by skin contact.
<b>Ingestion</b>	Not expected to produce significant adverse effects when recommended use instructions are followed.
<b>Inhalation</b>	May be harmful if inhaled.
<b>Information on toxicological effects</b>	
<b>Acute oral toxicity</b>	LD50 (female Rat) > 5,000 mg/kg
<b>Acute inhalation toxicity</b>	LC50 (Rat) > 5.19 mg/l Exposure time: 4 h

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	Determined in the form of liquid aerosol.
<b>Acute dermal toxicity</b>	LD50 (Rabbit) > 2,000 mg/kg
<b>Skin corrosion/irritation</b>	No skin irritation (Rabbit)
<b>Serious eye damage/eye irritation</b>	No eye irritation (Rabbit)
<b>Respiratory or skin sensitisation</b>	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.

### ACGIH

None.

### NTP

None.

### IARC

None.

### Assessment toxicity to reproduction

Bacillus subtilis: Test not required for microorganisms.

### Assessment developmental toxicity

Bacillus subtilis: Test not required for microorganisms.

### Aspiration hazard

Based on available data, the classification criteria are not met.

### Further information

No further toxicological information is available.

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## SECTION 12: ECOLOGICAL INFORMATION

<b>Toxicity to fish</b>	LC50 (Oncorhynchus mykiss (rainbow trout)) 162 mg/l 3.24 x 10 <sup>9</sup> CFU/L Exposure time: 30 d The value mentioned relates to the active ingredient.
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	<p>NOEC (Oncorhynchus mykiss (rainbow trout)) 86 mg/l 1.72 x 10<sup>9</sup> CFU/L Exposure time: 30 d The value mentioned relates to the active ingredient.</p>
<b>Toxicity to aquatic invertebrates</b>	<p>EC50 (Daphnia magna (Water flea)) 108 mg/l 2.16 x 10<sup>9</sup> CFU/L Exposure time: 48 h The value mentioned relates to the active ingredient.</p> <p>NOEC (Daphnia magna (Water flea)) 13 mg/l 2.6 x 10<sup>8</sup> CFU/L Exposure time: 48 h The value mentioned relates to the active ingredient.</p> <p>EC50 (Daphnia magna (Water flea)) 1.6 x 10<sup>6</sup> CFU/mL Exposure time: 21 d The value mentioned relates to the active ingredient.</p> <p>NOEC (Daphnia magna (Water flea)) 7.9 x 10<sup>5</sup> CFU/mL Exposure time: 21 d The value mentioned relates to the active ingredient.</p>
<b>Toxicity to aquatic plants</b>	<p>NOEC (Desmodesmus subspicatus (green algae)) &gt;= 100 mg/l The value mentioned relates to the active ingredient.</p> <p>LOEC (Desmodesmus subspicatus (green algae)) &gt; 100 mg/l The value mentioned relates to the active ingredient.</p>
<b>Biodegradability</b>	<p>Bacillus subtilis: Evaluation of biodegradability is not relevant for micro-organisms.</p>
<b>Bioaccumulation</b>	<p>Bacillus subtilis: Evaluation of bioaccumulation is not relevant for micro-organisms.</p>
<b>Mobility in soil</b>	<p>Bacillus subtilis: Evaluation of mobility in soil is not relevant for micro-organisms.</p>
<b>Results of PBT and vPvB assessment</b>	
<b>PBT and vPvB assessment</b>	<p>Bacillus subtilis: Evaluation of PBT/vPvB properties is not relevant for micro-organisms.</p>
<b>Environmental precautions</b>	<p>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. Do not apply when weather conditions favor runoff or drift. Apply this product as specified on the label.</p>

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### SECTION 13: DISPOSAL CONSIDERATIONS

#### Waste treatment methods

<b>Product</b>	Dispose in accordance with all local, state/provincial and federal regulations.
<b>Contaminated packaging</b>	Consult state and local regulations regarding the proper disposal of container. Follow advice on product label and/or leaflet.
<b>RCRA Information</b>	Characterization and proper disposal of this material as a special or hazardous waste is dependent upon Federal, State and local laws and are the user's responsibility. RCRA classification may apply.

### SECTION 14: TRANSPORT INFORMATION

According to national and international transport regulations this material is not classified as dangerous goods / hazardous material.

Freight Classification:	INSECTICIDES OR FUNGICIDES O/T POISON INSECTICIDES OR FUNGICIDES, N.O.I., OTHER THAN POISON
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### SECTION 15: REGULATORY INFORMATION

**EPA Registration No.** 264-1152

#### US Federal Regulations

##### TSCA list

Water 7732-18-5

#### US. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D)

No export notification needs to be made.

#### SARA Title III - Section 302 - Notification and Information

Not applicable.

#### SARA Title III - Section 313 - Toxic Chemical Release Reporting

None.

#### US States Regulatory Reporting

##### CA Prop65

This product does not contain any substances known to the State of California to cause cancer.

WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

Attapulgite clay	12174-11-7	Carcinogenic.
Crystalline quartz (respirable)	14808-60-7	Carcinogenic.

#### US State Right-To-Know Ingredients

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Attapulgate clay

12174-11-7

CA, MN, RI

### Environmental CERCLA

None.

### Clean Water Section 307(a)(1)

None.

### Safe Drinking Water Act Maximum Contaminant Levels

None.

### EPA/FIFRA Information:

This chemical is a pesticide product regulated by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information required on the pesticide label:

**Signal word:** Caution!

**Hazard statements:** Harmful if inhaled.

## SECTION 16: OTHER INFORMATION

### Abbreviations and acronyms

49CFR	Code of Federal Regulations, Title 49
ACGIH	US. ACGIH Threshold Limit Values
ATE	Acute toxicity estimate
CAS-Nr.	Chemical Abstracts Service number
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
EINECS	European inventory of existing commercial substances
ELINCS	European list of notified chemical substances
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
N.O.S.	Not otherwise specified
NTP	US. National Toxicology Program (NTP) Report on Carcinogens
OECD	Organization for Economic Co-operation and Development
TDG	Transportation of Dangerous Goods
TWA	Time weighted average
UN	United Nations
WHO	World health organisation

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### NFPA 704 (National Fire Protection Association):

|| Health - 2      Flammability - 1      Instability - 0      Others - none

### HMIS (Hazardous Materials Identification System, based on the Fourth Edition Ratings Guide)

|| Health - 1      Flammability - 1      Physical Hazard - 0      PPE -

0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard,  
\* = chronic health hazard

**Reason for Revision:** The following sections have been revised: Section 11: Toxicological Information. Section 15: Regulatory information. Section 16: Other Information. Reviewed and updated for general editorial purposes.

**Revision Date:** 11/03/2023

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

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