

## SECTION 1 IDENTIFICATION OF THE MIXTURE AND OF THE COMPANY

### 1.1 PRODUCT IDENTIFIER

Trade name	Bluestim®
Material number	C04E0
Product type	Organic fertilizer
REACH registration number	01-2119520508-42

### 1.2 RELEVANT IDENTIFIED USES OF THE MIXTURE AND USES ADVISED AGAINST

The uses of the mixture	Organic fertilizer for foliar application Bluestim® contains glycine betaine, a naturally occurring osmolyte enhancing plant cell osmoregulation and crop performance under conditions of environmental stress caused by heat, cold, salinity and drought. Use for other purposes is prohibited.
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### 1.3 DETAILS OF THE SUPPLIER OF THE SAFETY DATA SHEET

	Supplier	Producer
Street and number	Biobest Group NV Ilse Velden, 18	VERDERA OY / Lallemand Plant Care SAS Kurjenkellontie 5 B
City – Country – ZIP Code	2260 Westerlo, Belgium	02270 Espoo, Finland
PO Box		P.O. Box 5
Postcode and city - country		02271 Espoo, Finland
Phone (toll free)	+32 14 25 79 80	+358 10 217 3700
Fax	+32 14 25 79 82	+358 10 217 3711
E-mail	<a href="mailto:sds@biobestgroup.com">sds@biobestgroup.com</a>	<a href="mailto:infoverdera@lallemand.com">infoverdera@lallemand.com</a>

### 1.4 EMERGENCY TELEPHONE NUMBER

Contact 112 or the nearest regional poison information centre

## SECTION 2 HAZARDS IDENTIFICATION

### 2.1 CLASSIFICATION OF THE MIXTURE

**Classification in accordance with Directives 67/548 / EEC and 1999/45 / EC):** Not classified as dangerous.

**Specific hazards for humans and the environment:**

The product is not subject to a marking requirement according to the calculation method of the "General Classification guideline for preparations of the EC", latest edition.

**Classification system:** The classification corresponds to the current EC lists, but is supplemented by data from technical publications and information provided by the company.

### 2.2. LABEL ELEMENTS / PRECAUTION STATEMENTS

Labeling according to EEC directives: No marking required

### 2.3. OTHER SUPPLEMENTAL HAZARD INFORMATION

Over a long period of contact, the product may cause allergic reactions in sensitive individuals. Due to the hygroscopic nature of the dry product, avoid prolonged contacts with skin, eyes and mucous membranes.

## SECTION 3 COMPOSITION/ INFORMATION ON INGREDIENTS

### 3.1 MIXTURES

Substance name	CAS-, EC- or index number	REACH Registration No.	Concentration	Classification <ul style="list-style-type: none"><li>- Pictograms</li><li>- H-statements</li><li>- Category</li></ul>
Glycine betaine	CAS No. 107-43-7 EC No. 203-490-6	01-2119520508-42	99%	None

Chemical composition: Glycine betaine, min. 96%. Does not contain any hazardous substance.

Synonyms: Betaine, 1-Carboxy-N,N,N-trimethylmethan-aminium inner salt, trimethylglycine.

## SECTION 4 FIRST AID MEASURES

### 4.1 DESCRIPTION OF FIRST AID MEASURES

<b>If swallowed</b>	Rinse mouth and have the person drink plenty of water. If symptoms persist, get medical advice/attention.
<b>If on skin or clothing</b>	Immediately rinse skin with plenty of soap and water. If skin irritation occurs, get medical advice/attention.
<b>If inhaled</b>	Remove victim to fresh air. If feeling unwell, get medical advice/attention.
<b>If in eyes</b>	Immediately rinse with plenty of water. If eye irritation persists, get medical advice/attention.

General: Call a poison control center or doctor for further treatment advice. Have the product container or label with you when calling a poison control center or doctor or going for treatment.

## SECTION 5 FIRE-FIGHTING MEASURES

### 5.1 EXTINGUISHING MEDIA

<b>Adequate media</b>	All common extinguishing media e.g. water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
<b>Unsuitable media</b>	None/unknown.

### 5.2 SPECIAL HAZARD ARISING FROM THE SUBSTANCE OR MIXTURE

If overheated, there is a risk for formation of decomposition products (trimethylamine, ketene). Formation of nitrous vapours in combustion.

### 5.3 ADVICE FOR FIREFIGHTERS

Wear fire/flame resistant clothing. Wear respiratory protection (self-contained breathing apparatus).

## SECTION 6 ACCIDENTAL RELEASE MEASURES

### 6.1 PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES

It is recommended to use personal protective equipment such as gloves, safety glasses and protective clothing / coveralls. Avoid contact with skin and eyes. Avoid the build-up of dust. If excessive dust is present, wear glasses and avoid breathing.

### 6.2 ENVIRONMENTAL PRECAUTIONS

Avoid release to the environment. Do not contaminate water with the product, its container or by disposal of equipment wash waters.

### 6.3 METHODS AND MATERIAL FOR CONTAINMENT AND CLEANING UP

**Spills:** Reclaim material when possible. Pick-up and arrange disposal without creating dust. Do not dry sweep dust. Wet dust with water before sweeping or use a vacuum to collect dust. After cleaning, flush area thoroughly with water.

**Product & Waste Disposal:** Dispose of all waste (contents and container) in accordance with local, state and federal regulations.

### 6.4 REFERENCE TO OTHER SECTIONS

For further information regarding personal protection and waste management see Section 8 and 13.

## SECTION 7 HANDLING AND STORAGE

### 7.1 PRECAUTIONS FOR SAFE HANDLING

Use personal protective equipment as required. Avoid dust formation. Avoid inhalation, ingestion and contact with skin and eyes. Do not breath dust. Provide appropriate exhaust ventilation at places where dust is formed. Use approved respirator and safety glasses.

### 7.2 CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES

Keep out of reach of children and livestock. Store in original tightly closed container in a cool (2-20°C), dry and well-ventilated place. Do not expose to frost or store at temperatures above 35 ° C. Protect from humidity.

Information concerning storage with other products: not needed.

## SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

### 8.1 CONTROL PARAMETERS

**Components with occupational exposure limit values that must be observed:** The product does not contain any significant quantity of substances with limit values that must be monitored at the workplace.

### 8.2 EXPOSURE CONTROLS

#### Appropriate hygiene and engineering controls

Ensure adequate ventilation. Local exhaust ventilation of dust at the point of generation. Avoid contact with skin, eyes and clothing. Handle in accordance with good industrial hygiene and safety practice.

#### Eye / face protection

Safety glasses with side-shields.

#### Skin protection

Wear suitable protective clothing.

#### Hand protection

Wear protective gloves (especially in case of non protected open wounds).

#### Respiratory protection

In case of insufficient ventilation: Effective dust mask (P2).

## SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

### 9.1 INFORMATION ON BASIC PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance</b>	Crystalline solid. Brown.
<b>Odour</b>	Faint molasses odour.
<b>pH</b>	7-8 (5% solution)
<b>Melting point/Freezing point</b>	Not applicable
<b>Initial boiling point and boiling range</b>	Not applicable
<b>Flash point</b>	Not applicable
<b>Evaporation rate</b>	Not applicable
<b>Flammability (solid, gas)</b>	Not applicable
<b>Upper/lower flammability or explosive limits</b>	Not applicable
<b>Vapour pressure</b>	Not applicable
<b>Vapour density</b>	Not applicable
<b>Relative density</b>	0.5-0.6 kg/l
<b>Solubility(ies)</b>	160 g / 100 g (in water, 25°C)
<b>Partition coefficient: n-octanol/water</b>	Not applicable
<b>Auto-ignition temperature</b>	Not applicable
<b>Decomposition temperature</b>	Not applicable
<b>Viscosity</b>	Not applicable
<b>Explosive properties</b>	Not applicable
<b>Oxidizing properties</b>	Not applicable

### 9.2 OTHER INFORMATION

None.

## SECTION 10 STABILITY AND REACTIVITY

<b>Reactivity</b>	No data available.
<b>Chemical stability</b>	Stable under normal conditions.
<b>Possibility of hazardous reactions</b>	None under normal processing.
<b>Conditions to avoid</b>	Very hygroscopic; protect from moisture. Avoid dust formation. Dust can form an explosive mixture in air.
<b>Incompatible materials</b>	Reactive with strong alkalis.
<b>Hazardous decomposition products</b>	Risk for formation of trimethylamine, ketenes and / or nitrous gas

## SECTION 11 TOXICOLOGICAL INFORMATION

### 11.1 INFORMATION ON TOXICOLOGICAL EFFECTS

<b>Acute toxicity</b>	Product: Generally regarded as safe by ingestion. Substance (betaine anhydrous): LD50 (oral/rat) > 11179 mg/kg.
<b>Skin corrosion/irritation</b>	Prolonged or repeated contact may dry skin and cause irritation.
<b>Serious eye damage/irritation</b>	Not an irritant. Dust contact with the eyes can lead to mechanical irritation.
<b>Respiratory or skin sensitization</b>	Not a sensitizer in guinea pig sensitization studies. Inhalation of dust in high concentration may cause irritation of respiratory system and may cause allergic type reactions in sensitive persons.
<b>Germ cell mutagenicity</b>	Negative in Ames assay with and without metabolic activation up

to 5000 µg/plate. Negative in chromosomal aberration using human lymphocytes. No increases in micronuclei were noted in the bone marrow of mice dosed up to 2 g/kg by the oral route.

#### Other information

Product does not present an acute toxicity hazard based on known information.

## SECTION 12 ECOLOGICAL INFORMATION

### 12.1 TOXICITY

Contains no substances known to be hazardous to the environment or that are not degradable in waste water treatment plants.

### 12.2 PERSISTENCE AND DEGRADABILITY

Readily biodegradable, according to appropriate OECD test. Biological degradability (28d): 88% (Betaine).

### 12.3 BIOACCUMULATIVE POTENTIAL

Bioaccumulation is unlikely.

### 12.4 MOBILITY IN THE SOIL

The product is water soluble, and may spread in water systems.

### 12.5 RESULTS OF PBT AND vPvB ASSESSMENT

The mixture contains no substance considered to be persistent, bioaccumulating nor toxic (PBT). The mixture contains no substance considered to be very persistent nor very bioaccumulating (vPvB).

### 12.6 OTHER ADVERSE EFFECT

No known adverse effects.

Component information below is as complete as possible. Data related to substance Betaine Anhydrous:

Toxicity to algae: EC50/72h/algae = 1199 mg/l (Desmodesmus subspicatus).

Toxicity to Daphnia: EC50/48hr/Daphnia = 4335 mg/l.

Biodegradation: Readily biodegradable (88% after 28 days).

Log Pow: -3,1 (at 20°C).

Chemical Oxygen Demand (COD): 14 mg/g (Cr).

Biochemical Oxygen Demand (BOD): 720 mg/g (BOD5 ATU)

Dissolved Organic Carbon (DOC): 300 mg/g.

## SECTION 13 DISPOSAL CONSIDERATIONS

### 13.1 WASTE TREATMENT METHODS

Dispose of all waste (contents and container) in accordance with national, local, state and federal regulations.

## SECTION 14 TRANSPORT INFORMATION

Product is not classified as dangerous goods according to international transportation regulations in force ADR, RID, ADN, IATA and AMDG.

**Environmental hazards** Not regulated.

**Special precautions for user** Not regulated.

**Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code** Not regulated.

## SECTION 15 REGULATORY INFORMATION

### 15.1 SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS/LEGISLATION SPECIFIC FOR THE SUBSTANCE OR MIXTURE

This product is not classified as dangerous according to the hazard criteria of the Hazard Communication Standard (HCS) and the Controlled Products Regulations and the SDS contains all the information required by those regulations.

### 15.2 CHEMICAL SAFETY ASSESSMENT

A Chemical Safety Assessment has been carried out for this substance according to REACH Reg. 453/2010.

## SECTION 16 OTHER INFORMATION

### 16.1 INDICATION OF CHANGES

Version 1: Safety Data Sheet based on information obtained from the producer Lallemand Plant Care, January 24, 2017.

### 16.2 ABBREVIATIONS AND ACRONYMS

None.

### 16.3 KEY LITERATURE REFERENCES AND SOURCES FOR DATA

Regulations, databases, literature.

### 16.4 USED METHOD IN EVALUATING CLASSIFICATION

This safety datasheet complies with the requirements of the Hazard Communication Standard (HCS) and of the Controlled Products Regulations and is consistent with the UN Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

### 16.5 DISCLAIMER

The information provided in this Safety Data Sheet is correct to the best of our knowledge at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification, since the conditions of the operations mentioned are beyond our control. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process unless specified in the text. The distributor Biobest Group NV and the supplier Lallemand Plant Care SAS disclaim any liability for loss or damage resulting from the use of these data, information or suggestions for different purposes than those mentioned.