Safety Data Sheet

acc. to The REACH etc. (Amendment etc.) (EU Exit) Regulations 2019, SI 2019/758 (as amended)

Solar Flux® Type B

Version number: 7.0
Replaces version of: 2019-04-03 (3)

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First version: 2018-10-09

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

1.1 Product identifier

Trade name **Solar Flux® Type B**

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

Relevant identified uses Welding powder

1.3 Details of the supplier of the safety data sheet

Golden Empire Corporation / Solar Flux
CA 91372 Calabasas
United States

Telephone: +1 424 645 8845
e-mail: eaw.solarflux@gmail.com

e-mail (competent person) sdb@csb-online.de

Please do not use this e-mail address to ask for the latest safety data sheet. For this purpose contact Golden Empire Corporation / Solar Flux.

1.4 Emergency telephone number

As above or nearest toxicological information centre.

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (acc. to GB CLP)

Classification

Section	Hazard class	Category	Hazard class and category	Hazard statement
3.7	reproductive toxicity	1B	Repr. 1B	H360FD
3.9	specific target organ toxicity - repeated exposure	1	STOT RE 1	H372

For full text of abbreviations: see SECTION 16

The most important adverse physicochemical, human health and environmental effects

Delayed or immediate effects can be expected after short or long-term exposure.

2.2 Label elements

Labelling (acc. to GB CLP)

Signal word danger

Pictograms

GHS08

Hazard statements

H360FD	May damage fertility. May damage the unborn child (if swallowed).
H372	Causes damage to organs (lung) through prolonged or repeated exposure (if inhaled).

Precautionary statements

P201	Obtain special instructions before use.
P260	Do not breathe dust.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P301+P330+P331	IF SWALLOWED: rinse mouth. Do NOT induce vomiting.
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P308+P313	IF exposed or concerned: Get medical advice/attention.
P405	Store locked up.
P501	Dispose of contents/container in accordance with local/regional/national/international regulations.

Supplemental hazard information

EUH029	Contact with water liberates toxic gas.
EUH032	Contact with acids liberates very toxic gas.

Hazardous ingredients for labelling	boric acid quartz
Additional labelling requirements	for professional users only see section 15 of the safety data sheet

2.3 Other hazards

There is no additional information.

Results of PBT and vPvB assessment

Does not contain a PBT-/vPvB-substance at a concentration of ≥ 0,1%.

Endocrine disrupting properties

Does not contain an endocrine disruptor (ED) at a concentration of ≥ 0,1%.

SECTION 3: Composition/information on ingredients

3.1 Substances

Not relevant (mixture).

3.2 Mixtures

Description of the mixture

Hazardous ingredients

Name of sub-stance	Identifier	Wt%	Classification acc. to GHS	Pictograms	Notes
calcium fluoride	CAS No 7789-75-5 EC No 232-188-7	10 – < 20	-	-	-
quartz	CAS No 14808-60-7 EC No 238-878-4	10 – < 20	STOT RE 1 / H372		-
manganese dioxide	CAS No 1313-13-9 EC No 215-202-6 Index No 025-001-00-3	5 – < 10	Acute Tox. 4 / H302 Acute Tox. 4 / H332 STOT RE 2 / H373 EUH031		-
boric acid	CAS No 10043-35-3 EC No 233-139-2 Index No 005-007-00-2	1 – < 5	Repr. 1B / H360FD		11
manganese	CAS No 7439-96-5 EC No 231-105-1	1 – < 5	-	-	-
lithium fluoride	CAS No 7789-24-4 EC No 232-152-0	1 – < 5	Acute Tox. 4 / H302 Eye Irrit. 2 / H319 EUH032		-

Notes

11: The classification of mixtures as reproductive toxicant is necessary if the sum of the concentrations of individual boron compounds that are classified as reproductive toxicant in the mixture as placed on the market is ≥ 0,3 %.

Name of substance	Specific Conc. Limits	M-Factors	ATE	Exposure route
manganese dioxide	-	-	500 $^{mg}/_{kg}$ 1.5 $^{mg}/_{l}$/4h	oral inhalation: dust/mist
lithium fluoride	-	-	706 $^{mg}/_{kg}$	oral

Remarks

for full text of H-phrases: see SECTION 16
The product contains crystalline silicic acids in the form of cristobalite and quartz which, if inhaled, are harmful to health. However, the evaluation of scientific findings is controversial. Recent diagnostic possibilities have provided the certainty that silicosis (pneumoconiosis) is a consequence of heavy exposure to quartz dust. There is also evidence that silicotic people have an increased lung cancer risk.

SECTION 4: First aid measures

4.1 Description of first aid measures

General notes

Self-protection of the first aider.
Remove affected person from the danger area and lay down.
Do not leave affected person unattended.
Take off immediately all contaminated clothing.
In all cases of doubt, or when symptoms persist, seek medical advice.

Following inhalation

Provide fresh air.
If breathing is irregular or stopped, immediately seek medical assistance and start first aid actions.

Following skin contact

After contact with skin, take off immediately all contaminated clothing, and wash immediately with plenty of water and soap.

Following eye contact

Rinse cautiously with water for several minutes.
Remove contact lenses, if present and easy to do. Continue rinsing.

Following ingestion

Rinse mouth. Do not induce vomiting.
Call a physician in any case.

Notes for the doctor

None.

4.2 Most important symptoms and effects, both acute and delayed

Varying degrees of pulmonary injury.

4.3 Indication of any immediate medical attention and special treatment needed

None.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

dry sand, use metal fire powder to extinguish

Unsuitable extinguishing media

water

5.2 Special hazards arising from the substance or mixture

Hazardous decomposition products: Section 10.

Hazardous combustion products

metal oxide smoke, toxic

5.3 Advice for firefighters

Non-combustible.
Keep containers cool with water spray.
In case of fire and/or explosion do not breathe fumes.
Co-ordinate firefighting measures to the fire surroundings.
Do not allow firefighting water to enter drains or water courses.
Collect contaminated firefighting water separately.
Fight fire with normal precautions from a reasonable distance.

Special protective equipment for firefighters

chemical protection suit, self-contained breathing apparatus (EN 133)

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Follow emergency procedures such as the need to evacuate the danger area or to consult an expert.
Remove persons to safety.
Ventilate affected area.
Avoid contact with skin and eyes.
Do not breathe dust.
Control of dust.
Wearing of suitable protective equipment (including personal protective equipment referred to under Section 8 of the safety data sheet) to prevent any contamination of skin, eyes and personal clothing.

For emergency responders

Wear breathing apparatus if exposed to vapours/dust/spray/gases.
Warning and evacuating people in the neighbourhood.

6.2 Environmental precautions

Knock down dust with water spray.
Keep away from drains, surface and ground water.
Retain contaminated washing water and dispose of it.
If substance has entered a water course or sewer, inform the responsible authority.

6.3 Methods and material for containment and cleaning up

Advice on how to contain a spill

Covering of drains.
Take up mechanically.

Advice on how to clean up a spill

Take up mechanically.
Collect spillage.

Other information relating to spills and releases

Place in appropriate containers for disposal.
Ventilate affected area.

6.4 Reference to other sections

Hazardous combustion products: see section 5.
Personal protective equipment: see section 8.
Incompatible materials: see section 10.
Disposal considerations: see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Avoid contact with skin and eyes.
Do not breathe dust.
Avoid dust generation.
Provision of sufficient ventilation.
Handle and open container with care.

Measures to prevent fire as well as aerosol and dust generation

Use local and general ventilation.
Removal of dust deposits.

Specific notes/details

Dust deposits may accumulate on all deposition surfaces in a technical room.

Handling of incompatible substances or mixtures

Do not mix with acids.
Do not mix with alkali.
Do not mix with oxidiser, Water.

Measures to protect the environment

Avoid release to the environment.
Do not empty into drains; dispose of this material and its container at hazardous or special waste collection point.

Advice on general occupational hygiene

Do not eat, drink and smoke in work areas.
Wash hands after use.
Preventive skin protection (barrier creams/ointments) is recommended.

Remove contaminated clothing and protective equipment before entering eating areas.

7.2 Conditions for safe storage, including any incompatibilities

Flammability hazards

None.

Incompatible substances or mixtures

Incompatible materials: see section 10.

Protect against external exposure, such as

heat, humidity

Consideration of other advice

Keep away from food, drink and animal feedingstuffs.

Ventilation requirements

Provision of sufficient ventilation.

Specific designs for storage rooms or vessels

Keep container tightly closed and in a well-ventilated place.
Store in a dry place.
Store locked up.

Packaging compatibilities

Keep only in original container.

7.3 Specific end use(s)

No information available.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limit values (Workplace Exposure Limits)

Country	Name of agent	CAS No	Identifier	TWA [mg/m³]	Notation	Source
EU	fluorine, inorganic compounds	-	IOELV	2.5	-	2000/39/EC
EU	manganese, inorganic compounds	1313-13-9	IOELV	0.2	Mn, i	2017/164/EU
EU	manganese, inorganic compounds	1313-13-9	IOELV	0.05	Mn, r	2017/164/EU
EU	crystalline silica	14808-60-7	IOELV	0.1	dust, r	2017/2398/EU
EU	manganese	7439-96-5	IOELV	0.2	i	2017/164/EU
EU	manganese	7439-96-5	IOELV	0.05	r	2017/164/EU
GB	fluorides, inorganic	-	WEL	2.5	F	EH40/2005
GB	dust	-	WEL	10	i	EH40/2005
GB	dust	-	WEL	4	r	EH40/2005

Occupational exposure limit values (Workplace Exposure Limits)

Country	Name of agent	CAS No	Identifier	TWA [mg/m³]	Notation	Source
GB	manganese, inorganic compounds	1313-13-9	WEL	0.2	Mn, i	EH40/2005
GB	manganese, inorganic compounds	1313-13-9	WEL	0.05	Mn, r	EH40/2005
GB	silica, crystalline	14808-60-7	WEL	0.1	r	EH40/2005
GB	manganese	7439-96-5	WEL	0.2	i	EH40/2005
GB	manganese	7439-96-5	WEL	0.05	r	EH40/2005

Notation

dust	as dust
F	calculated as F (fluorine)
i	inhalable fraction
Mn	calculated as Mn (manganese)
r	respirable fraction
TWA	time-weighted average (long-term exposure limit): measured or calculated in relation to a reference period of 8 hours time-weighted average (unless otherwise specified)

Human health values

Relevant DNELs of components

Name of substance	CAS No	End-point	Threshold level	Protection goal, route of exposure	Used in	Exposure time
calcium fluoride	7789-75-5	DNEL	5 mg/m³	human, inhalatory	worker (industry)	chronic - systemic effects
manganese dioxide	1313-13-9	DNEL	0.2 mg/m³	human, inhalatory	worker (industry)	chronic - systemic effects
manganese dioxide	1313-13-9	DNEL	0.004 mg/kg bw/day	human, dermal	worker (industry)	chronic - systemic effects
boric acid	10043-35-3	DNEL	8.3 mg/m³	human, inhalatory	worker (industry)	chronic - systemic effects
boric acid	10043-35-3	DNEL	392 mg/kg bw/day	human, dermal	worker (industry)	chronic - systemic effects
manganese	7439-96-5	DNEL	0.2 mg/m³	human, inhalatory	worker (industry)	chronic - systemic effects
manganese	7439-96-5	DNEL	0.2 mg/m³	human, inhalatory	worker (industry)	chronic - local effects
manganese	7439-96-5	DNEL	0.004 mg/kg	human, dermal	worker (industry)	chronic - systemic effects

Relevant DNELs of components

Name of sub-stance	CAS No	End-point	Threshold level	Protection goal, route of exposure	Used in	Exposure time
			bw/day			
lithium fluoride	7789-24-4	DNEL	10 mg/m³	human, inhalat-ory	worker (industry)	chronic - systemic effects
lithium fluoride	7789-24-4	DNEL	44.8 mg/kg bw/day	human, dermal	worker (industry)	chronic - systemic effects

Environmental values

Relevant PNECs of components

Name of substance	CAS No	Endpoint	Threshold level	Environmental com-partment
calcium fluoride	7789-75-5	PNEC	0.37 $^{mg}/_{l}$	freshwater
calcium fluoride	7789-75-5	PNEC	0.022 $^{mg}/_{l}$	marine water
calcium fluoride	7789-75-5	PNEC	104.8 $^{mg}/_{l}$	sewage treatment plant (STP)
calcium fluoride	7789-75-5	PNEC	21.8 $^{mg}/_{kg}$	soil
manganese dioxide	1313-13-9	PNEC	0 $^{mg}/_{l}$	freshwater
manganese dioxide	1313-13-9	PNEC	0 $^{mg}/_{l}$	marine water
manganese dioxide	1313-13-9	PNEC	100 $^{mg}/_{l}$	sewage treatment plant (STP)
manganese dioxide	1313-13-9	PNEC	0.037 $^{mg}/_{kg}$	freshwater sediment
manganese dioxide	1313-13-9	PNEC	0.004 $^{mg}/_{kg}$	marine sediment
manganese dioxide	1313-13-9	PNEC	0.028 $^{mg}/_{kg}$	soil
boric acid	10043-35-3	PNEC	2.9 $^{mg}/_{l}$	freshwater
boric acid	10043-35-3	PNEC	2.9 $^{mg}/_{l}$	marine water
boric acid	10043-35-3	PNEC	10 $^{mg}/_{l}$	sewage treatment plant (STP)
boric acid	10043-35-3	PNEC	5.7 $^{mg}/_{kg}$	soil
manganese	7439-96-5	PNEC	0.455 $^{mg}/_{l}$	freshwater
manganese	7439-96-5	PNEC	0.005 $^{mg}/_{l}$	marine water
manganese	7439-96-5	PNEC	20.4 $^{mg}/_{l}$	sewage treatment plant (STP)
manganese	7439-96-5	PNEC	0.578 $^{mg}/_{kg}$	freshwater sediment
manganese	7439-96-5	PNEC	0.058 $^{mg}/_{kg}$	marine sediment

Relevant PNECs of components				
Name of substance	**CAS No**	**Endpoint**	**Threshold level**	**Environmental compartment**
manganese	7439-96-5	PNEC	14.58 $^{mg}/_{kg}$	soil
lithium fluoride	7789-24-4	PNEC	5.05 $^{mg}/_{l}$	freshwater
lithium fluoride	7789-24-4	PNEC	0.505 $^{mg}/_{l}$	marine water
lithium fluoride	7789-24-4	PNEC	85.78 $^{mg}/_{l}$	sewage treatment plant (STP)
lithium fluoride	7789-24-4	PNEC	25.05 $^{mg}/_{kg}$	freshwater sediment
lithium fluoride	7789-24-4	PNEC	2.505 $^{mg}/_{kg}$	marine sediment
lithium fluoride	7789-24-4	PNEC	2.06 $^{mg}/_{kg}$	soil

8.2 Exposure controls

Avoid contact during pregnancy/while nursing.

Appropriate engineering controls

Use local and general ventilation.

Individual protection measures (personal protective equipment)

Eye/face protection

Wear eye/face protection. (EN 166)

Hand protection

Protective gloves		
Material	**Material thickness**	**Breakthrough times of the glove material**
no information available	no information available	no information available

Wear suitable gloves.
Chemical protection gloves are suitable, which are tested according to EN 374.
Check leak-tightness/impermeability prior to use.

Body protection

Protective clothing for use against solid particulates.
(EN 13832, EN 340, EN 13034, EN 14605).

Respiratory protection

In case of inadequate ventilation wear respiratory protection.
Particle filter device (DIN EN 143).

Environmental exposure controls

Use appropriate container to avoid environmental contamination.
Keep away from drains, surface and ground water.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	solid (powder)
Colour	dark grey
Odour	odourless
Melting point/freezing point	not determined
Boiling point or initial boiling point and boiling range	1,682 °C
Flammability	non-combustible
Lower and upper explosion limit	not applicable (solid)
Flash point	not applicable
Auto-ignition temperature	not applicable (solid)
Decomposition temperature	not relevant
pH (value)	not applicable
Viscosity	not relevant (solid)
Solubility(ies)	
Water solubility	42 $^{mg}/_{l}$
Partition coefficient n-octanol/water (log value)	not relevant (inorganic)
Vapour pressure	not determined
Density and/or relative density	
Density	2.2 $^{g}/_{cm^3}$ at 20 °C
Relative vapour density	not relevant (solid)
Particle characteristics	no data available

9.2 Other information

Information with regard to physical hazard classes	hazard classes acc. to GHS (physical hazards): not relevant
Other safety characteristics	there is no additional information

SECTION 10: Stability and reactivity

10.1 Reactivity

This information is not available.

10.2 Chemical stability

The material is stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.
See below "Conditions to avoid".

10.3 Possibility of hazardous reactions

Contact with acids liberates very toxic gas.

10.4 Conditions to avoid

Protect from moisture.
Avoid dust generation.

10.5 Incompatible materials

acids, bases, oxidisers, aluminium, halogen

Release of toxic materials with:

water

10.6 Hazardous decomposition products

Hazardous combustion products: see section 5.
Hydrogen fluoride (HF).
Metallic oxides containing heavy metals.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Classification procedure

If not otherwise specified the classification is based on:
Ingredients of the mixture (additivity formula).

Classification acc. to GHS

Acute toxicity

Test data are not available for the complete mixture.

Acute toxicity of components

Acute toxicity estimate (ATE) of components

Name of substance	CAS No	Exposure route	ATE
manganese dioxide	1313-13-9	oral	500 $^{mg}/_{kg}$
manganese dioxide	1313-13-9	inhalation: dust/mist	1.5 $^{mg}/_{l}$/4h
lithium fluoride	7789-24-4	oral	706 $^{mg}/_{kg}$

Acute toxicity of components

Name of substance	CAS No	Exposure route	End-point	Value	Species	Method	Source
calcium fluoride	7789-75-5	inhalation: dust/mist	LC50	>5,070 $^{mg}/_{m^3}$/4h	rat	OECD Guideline 403	ECHA
calcium fluoride	7789-75-5	oral	LD0	>2,000 $^{mg}/_{kg}$	rat, female	OECD Guideline 423	ECHA
boric acid	10043-35-3	oral	LD50	3,450 $^{mg}/_{kg}$	rat, male	-	ECHA
boric acid	10043-35-3	oral	LD50	4,080 $^{mg}/_{kg}$	rat, female	-	ECHA
boric acid	10043-35-3	dermal	LD0	>2,000 $^{mg}/_{kg}$	rabbit	FIFRA (40 CFR 163)	ECHA
manganese	7439-96-5	oral	LD0	>2,000 $^{mg}/_{kg}$	rat, female	OECD Guideline 420	ECHA
manganese	7439-96-5	inhalation: dust/mist	LC0	>5.14 $^{mg}/_{l}$/4h	rat	OECD Guideline 403	ECHA
lithium fluoride	7789-24-4	oral	LD50	706 $^{mg}/_{kg}$	rat	OECD Guideline 401	ECHA
lithium fluoride	7789-24-4	inhalation: dust/mist	LC50	>15.57 $^{mg}/_{l}$/4h	rat	OECD Guideline 403	ECHA
lithium fluoride	7789-24-4	dermal	LD50	>2,000 $^{mg}/_{kg}$	rat	OECD Guideline 402	ECHA

Skin corrosion/irritation

Classification could not be established because:
Data are lacking, inconclusive, or conclusive but not sufficient for classification.

Serious eye damage/eye irritation

Classification could not be established because:
Data are lacking, inconclusive, or conclusive but not sufficient for classification.

Respiratory or skin sensitisation
Skin sensitisation

Classification could not be established because:
Data are lacking, inconclusive, or conclusive but not sufficient for classification.

Respiratory sensitisation

Classification could not be established because:
Data are lacking, inconclusive, or conclusive but not sufficient for classification.

Germ cell mutagenicity

Classification could not be established because:
Data are lacking, inconclusive, or conclusive but not sufficient for classification.

Carcinogenicity

Classification could not be established because:
Data are lacking, inconclusive, or conclusive but not sufficient for classification.

Reproductive toxicity

May damage the unborn child (if swallowed).
May damage fertility (if swallowed).

Specific target organ toxicity - single exposure

Classification could not be established because:
Data are lacking, inconclusive, or conclusive but not sufficient for classification.

Specific target organ toxicity - repeated exposure

Causes damage to organs (lung) through prolonged or repeated exposure (if inhaled).

Hazard category	Target organ	Exposure route
1	lung	if inhaled

Aspiration hazard

Shall not be classified as presenting an aspiration hazard.

11.2 Information on other hazards

Endocrine disrupting properties

Does not contain an endocrine disruptor (ED) at a concentration of ≥ 0,1%.

SECTION 12: Ecological information

12.1 Toxicity

Aquatic toxicity (acute)

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

Aquatic toxicity (acute) of components

Name of substance	CAS No	Endpoint	Exposure time	Value	Species	Method	Source
manganese	7439-96-5	LC50	96 h	>3.6 $^{mg}/_{l}$	rainbow trout (Oncorhynchus mykiss)	OECD Guideline 203	ECHA Chem
manganese	7439-96-5	EC50	48 h	>1.6 $^{mg}/_{l}$	daphnia magna	OECD Guideline	ECHA Chem

Name of substance	CAS No	Endpoint	Exposure time	Value	Species	Method	Source
						202	
manganese	7439-96-5	EC50	72 h	2.8 mg/l	green algae (Desmodesmus subspicatus)	OECD Guideline 201	ECHA Chem
manganese	7439-96-5	ErC50	72 h	4.5 mg/l	green algae (Desmodesmus subspicatus)	OECD Guideline 201	ECHA
lithium fluoride	7789-24-4	EC50	48 h	132.4 mg/l	aquatic invertebrates	-	ECHA
lithium fluoride	7789-24-4	EC50	72 h	112 mg/l	algae (Desmodesmus subspicatus)	OECD Guideline 201	ECHA
lithium fluoride	7789-24-4	ErC50	72 h	>400 mg/l	algae (Desmodesmus subspicatus)	OECD Guideline 201	ECHA

Aquatic toxicity (chronic)

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

Aquatic toxicity (chronic) of components

Name of substance	CAS No	Endpoint	Exposure time	Value	Species	Method	Source
calcium fluoride	7789-75-5	NOEC	20 h	14.6 mg/l	microorganisms	-	ECHA
calcium fluoride	7789-75-5	NOEC	28 h	464 mg/l	microorganisms	-	ECHA
calcium fluoride	7789-75-5	NOEC	16 h	474.5 mg/l	microorganisms	-	ECHA
calcium fluoride	7789-75-5	NOEC	3 h	510 mg/l	microorganisms	-	ECHA
manganese dioxide	1313-13-9	EC50	3 h	>1,000 mg/l	Bacteria (activated sludge)	OECD Guideline 209	ECHA
manganese dioxide	1313-13-9	NOEC	3 h	1,000 mg/l	Bacteria (activated sludge)	OECD Guideline 209	ECHA
manganese	7439-96-5	EC50	3 h	1,000 mg/l	activated sludge of a predominantly domestic sewage	OECD Guideline 209	ECHA
manganese	7439-96-5	NOEC	8 d	1.7 mg/l	water flea (Daphnia)	OECD Guideline	ECHA Chem

Name of substance	CAS No	Endpoint	Exposure time	Value	Species	Method	Source
						211	
manganese	7439-96-5	NOEC	72 h	2.5 mg/l	green algae (Desmodesmus subspicatus)	OECD Guideline 201	ECHA
manganese	7439-96-5	NOEC	3 h	1,000 mg/l	activated sludge of a predominantly domestic sewage	OECD Guideline 209	ECHA
manganese	7439-96-5	LOEC	72 h	5.3 mg/l	green algae (Desmodesmus subspicatus)	OECD Guideline 201	ECHA
manganese	7439-96-5	growth (EbCx) 10%	72 h	2.6 mg/l	green algae (Desmodesmus subspicatus)	OECD Guideline 201	ECHA
manganese	7439-96-5	growth (EbCx) 20%	72 h	2.6 mg/l	green algae (Desmodesmus subspicatus)	OECD Guideline 201	ECHA
manganese	7439-96-5	growth rate (ErCx) 10%	72 h	3.4 mg/l	green algae (Desmodesmus subspicatus)	OECD Guideline 201	ECHA
manganese	7439-96-5	growth rate (ErCx) 20%	72 h	3.7 mg/l	green algae (Desmodesmus subspicatus)	OECD Guideline 201	ECHA
lithium fluoride	7789-24-4	NOEC	21 d	14.1 mg/l	daphnia magna	-	ECHA
lithium fluoride	7789-24-4	NOEC	21 d	4 mg/l	rainbow trout (Oncorhynchus mykiss)	-	ECHA
lithium fluoride	7789-24-4	NOEC	72 h	25 mg/l	algae (Desmodesmus subspicatus)	OECD Guideline 201	ECHA
lithium fluoride	7789-24-4	LOEC	72 h	50 mg/l	algae (Desmodesmus subspicatus)	OECD Guideline 201	ECHA
lithium fluoride	7789-24-4	growth rate (ErCx) 10%	72 h	80 mg/l	algae (Desmodesmus subspicatus)	OECD Guideline 201	ECHA

12.2 Persistence and degradability

Biodegradation

No data available.

Persistence

No data available.

12.3 Bioaccumulative potential

n-octanol/water (log KOW) not relevant
(inorganic)

Bioaccumulative potential of components

Name of substance	CAS No	BCF	Log KOW
calcium fluoride	7789-75-5	≤0.66	-
boric acid	10043-35-3	-	-1.09 (pH value: 7.5, 22 °C)
manganese	7439-96-5	19	-

12.4 Mobility in soil

No data available.

12.5 Results of PBT and vPvB assessment

Does not contain a PBT-/vPvB-substance at a concentration of ≥ 0,1%.

12.6 Endocrine disrupting properties

Does not contain an endocrine disruptor (ED) at a concentration of ≥ 0,1%.

12.7 Other adverse effects

No data available.

Remarks

Wassergefährdungsklasse, WGK (water hazard class): 3.
Keep away from drains, surface and ground water.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

This material and its container must be disposed of as hazardous waste.

Sewage disposal-relevant information

Do not empty into drains.

Waste treatment of containers/packagings

Completely emptied packages can be recycled.
Handle contaminated packages in the same way as the substance itself.

Remarks

Please consider the relevant national or regional provisions.

SECTION 14: Transport information

14.1 UN number not subject to transport regulations

14.2 UN proper shipping name -

14.3 Transport hazard class(es) -

14.4 Packing group -

14.5 Environmental hazards -

14.6 Special precautions for user -

14.7 Maritime transport in bulk according to IMO instruments -

SECTION 15: Regulatory information

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

Relevant provisions of the European Union (EU)

Seveso Directive

2012/18/EU (Seveso III)				
No	**Dangerous substance/hazard categories**	**Qualifying quantity (tonnes) for the application of lower and upper-tier requirements**		**Notes**
O3	other hazards (EUH029)	50	200	60)

Notation

60) substances or mixtures with hazard statement EUH029

Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS)

None of the ingredients are listed.

Regulation on the marketing and use of explosives precursors

None of the ingredients are listed.

Regulation on drug precursors

None of the ingredients are listed.

Regulation on substances that deplete the ozone layer (ODS)

None of the ingredients are listed.

Regulation concerning the export and import of hazardous chemicals (PIC)

None of the ingredients are listed.

Regulation on persistent organic pollutants (POP)

None of the ingredients are listed.

National regulations (GB)

List of substances subject to authorisation (GB REACH, Annex 14) / SVHC - candidate list

Substance of Very High Concern (SVHC) acc. to GB REACH and HSE			
Name of substance	**CAS No**	**Listed in**	**Remarks**
boric acid	10043-35-3	Candidate list	Repr. A57c

Legend

Candidate list	Substances meeting the criteria referred to in Article 57 and for eventual inclusion in Annex XIV
Repr. A57c	Toxic for reproduction (Article 57c)

Restrictions according to GB REACH, Annex 17

Dangerous substances with restrictions (GB REACH, Annex 17)			
Name of substance	**Name acc. to inventory**	**CAS No**	**Conditions of restriction**
boric acid	toxic for reproduction	-	R28-30

Legend

R28-30 Without prejudice to the other parts of this Annex the following shall apply to entries 28 to 30:
1. Shall not be placed on the market, or used,
— as substances,
— as constituents of other substances, or,
— in mixtures,
For supply to the general public when the individual concentration in the substance or mixture is equal to or greater than:
— either the relevant specific concentration limit specified in the GB mandatory classification and labelling list, or, the relevant generic concentration limit specified in the GB mandatory classification and labelling list.
Without prejudice to the implementation of other legislation relating to the classification, packaging and labelling of substances and mixtures, suppliers shall ensure before the placing on the market that the packaging of such substances and mixtures is marked visibly, legibly and indelibly as follows:
'Restricted to professional users'.
2. By way of derogation, paragraph 1 shall not apply to:
(a) medicinal or veterinary products as defined by the Veterinary Regulations 2013 and the Human Medicines Regulations 2012;
(b) cosmetic products as defined by Regulation 1223/2009;
(c) the following fuels and oil products:
— motor fuels which are covered by the Motor Fuel (Composition and Content) Regulations 1999,
— mineral oil products intended for use as fuel in mobile or fixed combustion plants,
— fuels sold in closed systems (e.g. liquid gas bottles);
(d) artists' paints covered by Regulation (EC) No 1272/2008;
(e) the substances listed in Appendix 11, column 1, for the applications or uses listed in Appendix 11, column 2. Where a date is specified in column 2 of Appendix 11, the derogation shall apply until the said date.

15.2 Chemical Safety Assessment

No Chemical Safety Assessment has been carried out for this mixture by the supplier.

SECTION 16: Other information

Abbreviations and acronyms

Abbr.	Descriptions of used abbreviations
2000/39/EC	Commission Directive establishing a first list of indicative occupational exposure limit values in implementation of Council Directive 98/24/EC
2017/164/EU	Commission Directive establishing a fourth list of indicative occupational exposure limit values pursuant to Council Directive 98/24/EC, and amending Commission Directives 91/322/EEC, 2000/39/EC and 2009/161/EU
2017/2398/EU	Directive of the European Parliament and of the Council amending Directive 2004/37/EC on the protection of workers from the risks related to exposure to carcinogens or mutagens at work
Acute Tox.	Acute toxicity
ADR	Accord relatif au transport international des marchandises dangereuses par route (Agreement concerning the International Carriage of Dangerous Goods by Road)
ATE	Acute Toxicity Estimate
BCF	Bioconcentration factor
CAS	Chemical Abstracts Service (service that maintains the most comprehensive list of chemical substances)
DGR	Dangerous Goods Regulations (see IATA/DGR)
DNEL	Derived No-Effect Level
EC50	Effective Concentration 50 %. The EC50 corresponds to the concentration of a tested substance causing 50 % changes in response (e.g. on growth) during a specified time interval
EC No	The EC Inventory (EINECS, ELINCS and the NLP-list) is the source for the seven-digit EC number, an identifier of substances commercially available within the EU (European Union)
ED	Endocrine disruptor
EH40/2005	EH40/2005 Workplace exposure limits (http://www.nationalarchives.gov.uk/doc/open-government-licence/)
EINECS	European Inventory of Existing Commercial Chemical Substances
ELINCS	European List of Notified Chemical Substances
ErC50	≡ EC50: in this method, that concentration of test substance which results in a 50 % reduction in either growth (EbC50) or growth rate (ErC50) relative to the control
Eye Dam.	Seriously damaging to the eye
Eye Irrit.	Irritant to the eye
GB CLP	The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use) (Amendment etc.) (EU Exit) Regulations 2019, SI 2019/720 (as amended)
GB REACH	The REACH etc. (Amendment etc.) (EU Exit) Regulations 2019, SI 2019/758 (as amended)
GHS	"Globally Harmonized System of Classification and Labelling of Chemicals" developed by the United Nations
HSE	Health and Safety Executive
IATA	International Air Transport Association

Abbr.	Descriptions of used abbreviations
IATA/DGR	Dangerous Goods Regulations (DGR) for the air transport (IATA)
IMDG	International Maritime Dangerous Goods Code
index No	The Index number is the identification code given to the substance in Part 3 of Annex VI to Regulation (EC) No 1272/2008
IOELV	Indicative occupational exposure limit value
LC50	Lethal Concentration 50%: the LC50 corresponds to the concentration of a tested substance causing 50 % lethality during a specified time interval
LD50	Lethal Dose 50 %: the LD50 corresponds to the dose of a tested substance causing 50 % lethality during a specified time interval
LOEC	Lowest Observed Effect Concentration
log KOW	n-Octanol/water
NLP	No-Longer Polymer
NOEC	No Observed Effect Concentration
PBT	Persistent, Bioaccumulative and Toxic
PNEC	Predicted No-Effect Concentration
Repr.	Reproductive toxicity
RID	Règlement concernant le transport International ferroviaire des marchandises Dangereuses (Regulations concerning the International carriage of Dangerous goods by Rail)
STOT RE	Specific target organ toxicity - repeated exposure
TWA	Time-weighted average
vPvB	Very Persistent and very Bioaccumulative
WEL	Workplace exposure limit

Key literature references and sources for data

The REACH etc. (Amendment etc.) (EU Exit) Regulations 2019, SI 2019/758 (as amended).
The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use) (Amendment etc.) (EU Exit) Regulations 2019, SI 2019/720 (as amended).
GB mandatory classification and labelling.
Agreement concerning the International Carriage of Dangerous Goods by Road (ADR).
Regulations concerning the International Carriage of Dangerous Goods by Rail (RID).
International Maritime Dangerous Goods Code (IMDG).
Dangerous Goods Regulations (DGR) for the air transport (IATA).

Classification procedure

Physical and chemical properties.
Health hazards.
Environmental hazards.
The method for classification of the mixture is based on ingredients of the mixture (additivity formula).

List of relevant phrases (code and full text as stated in section 2 and 3)

Code	Text
H302	Harmful if swallowed.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H360FD	May damage fertility. May damage the unborn child (if swallowed).
H372	Causes damage to organs (lung) through prolonged or repeated exposure (if inhaled).
H373	May cause damage to organs (lung) through prolonged or repeated exposure (if inhaled).

Responsible for the safety data sheet

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Disclaimer

This information is based upon the present state of our knowledge.
This SDS has been compiled and is solely intended for this product.