SAFETY DATA SHEET

F4018-4

Version	Revision Date:	SDS Number:	Date of last issue: 28.02.2024
1.3	01.11.2024	50002324	Date of first issue: 17.04.2023

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

1.1 Product identifier

Product name F4018-4

Other means of identification

Product code 50002324

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

Use of the Substance/Mixture : Biological fungicide/nematicide
Fungicide, nematicide

Recommended restrictions on use : Use as recommended by the label.

1.3 Details of the supplier of the safety data sheet

Supplier Address

FMC Agricultural Solutions A/S
Thyborønvej 78
DK-7673 Harboøre
Denmark

Telephone: +45 9690 9690
Telefax: +45 9690 9691
E-mail address: SDS-Info@fmc.com .

1.4 Emergency telephone number

For leak, fire, spill or accident emergencies, call:
1 703 / 741-5970 (CHEMTREC - International)
1 703 / 527-3887 (CHEMTREC - Alternate)
1 202 / 483-7616 (CHEMTREC - Alternate International)

Medical emergency:
All other countries: +1 651 / 632-6793 (Collect)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Not a hazardous substance or mixture.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Not a hazardous substance or mixture.

2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Components

Chemical name	CAS-No. EC-No. Index-No. Registration number	Classification	Concentration (% w/w)
Bacillus subtilis strain FMCH002	Not Assigned		4
BLI (FMCH001) BIOLOGICAL TECHNICAL (CHR. HANSEN)	Not Assigned		3,5
sodium hydrogensulphate	7681-38-1 231-665-7 016-046-00-X	Eye Dam. 1; H318	>= 1 - < 3

For explanation of abbreviations see section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

General advice : Do not leave the victim unattended.

If inhaled : If unconscious, place in recovery position and seek medical advice.
If symptoms persist, call a physician.

In case of skin contact : Wash off with soap and water.
If symptoms persist, call a physician.

In case of eye contact : Immediately flush eye(s) with plenty of water.
Remove contact lenses.

Protect unharmed eye.
If eye irritation persists, consult a specialist.

If swallowed : Rinse mouth with water.
Do not induce vomiting without medical advice.
Keep respiratory tract clear.
Do not give milk or alcoholic beverages.
Never give anything by mouth to an unconscious person.
If symptoms persist, call a physician.

4.2 Most important symptoms and effects, both acute and delayed

Risks : None known.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment : Treat symptomatically.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media : Dry chemical, CO2, water spray or regular foam.

Unsuitable extinguishing media : Do not spread spilled material with high-pressure water streams.

5.2 Special hazards arising from the substance or mixture

Hazardous combustion products : Thermal decomposition can lead to release of irritating gases and vapours.
Carbon oxides
Ammonia
Oxides of phosphorus

5.3 Advice for firefighters

Special protective equipment for firefighters : Firefighters should wear protective clothing and self-contained breathing apparatus.

Specific extinguishing methods : Remove undamaged containers from fire area if it is safe to do so.
Use a water spray to cool fully closed containers.

Further information : Standard procedure for chemical fires.
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions : Evacuate personnel to safe areas.

Use personal protective equipment.
If it can be safely done, stop the leak.
Do not touch or walk through the spilled material.
Never return spills in original containers for re-use.
For disposal considerations see section 13.
Only qualified personnel equipped with suitable protective equipment may intervene.
Mark the contaminated area with signs and prevent access to unauthorized personnel.

6.2 Environmental precautions

Environmental precautions : Prevent further leakage or spillage if safe to do so.
Try to prevent the material from entering drains or water courses.

If the product contaminates rivers and lakes or drains inform respective authorities.

6.3 Methods and material for containment and cleaning up

Methods for cleaning up : Neutralize with chalk, alkali solution or ammonia.
Wipe up with absorbent material (e.g. cloth, fleece).
Keep in suitable, closed containers for disposal.

6.4 Reference to other sections

See sections: 7, 8, 11, 12 and 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling : For personal protection see section 8.
Smoking, eating and drinking should be prohibited in the application area.

Advice on protection against fire and explosion : Normal measures for preventive fire protection.

Hygiene measures : General industrial hygiene practice. Avoid contact with skin, eyes and clothing. Do not inhale aerosol.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers : Store in original container.

Electrical installations / working materials must comply with the technological safety standards.

Advice on common storage : Do not store near acids.

Recommended storage tem- : > 4 °C

perature

Further information on storage stability : No decomposition if stored and applied as directed.

7.3 Specific end use(s)

Specific use(s) : Biological fungicide/nematicide seed treatment

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Contains no substances with occupational exposure limit values.

Derived No Effect Level (DNEL) according to Regulation (EC) No. 1907/2006:

Substance name	End Use	Exposure routes	Potential health effects	Value
glycerol	Consumers	Oral	Long-term systemic effects	229 mg/kg
	Consumers	Inhalation	Long-term local effects	33 mg/m3
	Workers	Inhalation	Long-term local effects	56 mg/m3
urea	Workers	Inhalation	Long-term systemic effects	292 mg/m3
	Workers	Inhalation	Acute systemic effects	292 mg/m3
	Workers	Dermal	Long-term systemic effects	580 mg/kg bw/day
	Workers	Dermal	Acute systemic effects	580 mg/kg bw/day
	Consumers	Inhalation	Long-term systemic effects	125 mg/m3
	Consumers	Inhalation	Acute systemic effects	125 mg/m3
	Consumers	Dermal	Long-term systemic effects	580 mg/kg bw/day
	Consumers	Dermal	Acute systemic effects	580 mg/kg bw/day
	Consumers	Oral	Long-term systemic effects	42 mg/kg bw/day
	Consumers	Oral	Acute systemic effects	42 mg/kg bw/day
pentasodium triphosphate	Workers	Inhalation	Long-term systemic effects	0,661 mg/m3
	Workers	Inhalation	Acute systemic effects	0,661 mg/m3
	Workers	Dermal	Long-term systemic effects	0,375 mg/kg bw/day
	Workers	Dermal	Acute systemic effects	0,375 mg/kg bw/day
	Consumers	Inhalation	Long-term systemic	0,661 mg/m3

			effects	
	Consumers	Inhalation	Acute systemic effects	0,660 mg/m3
	Consumers	Dermal	Long-term systemic effects	0,375 mg/kg bw/day
	Consumers	Dermal	Acute systemic effects	0,375 mg/kg bw/day
	Consumers	Oral	Long-term systemic effects	0,750 mg/kg bw/day
	Consumers	Oral	Acute systemic effects	0,750 mg/kg bw/day

Predicted No Effect Concentration (PNEC) according to Regulation (EC) No. 1907/2006:

Substance name	Environmental Compartment	Value
glycerol	Fresh water	0,885 mg/l
	Intermittent use/release	8,85 mg/l
	Sewage treatment plant	1000 mg/l
	Fresh water sediment	3,3 mg/l
	Marine sediment	0,33 mg/l
	Soil	0,141 mg/kg dry weight (d.w.)
sodium hydrogensulphate	Fresh water	11,09 mg/l
	Marine water	1,109 mg/l
	Fresh water sediment	40,2 mg/kg dry weight (d.w.)
	Marine sediment	4,02 mg/kg dry weight (d.w.)
	Soil	1,54 mg/kg dry weight (d.w.)
	Sewage treatment plant	800 mg/l
	Intermittent use (freshwater)	17,66 mg/l
urea	Fresh water	0,47 mg/l
	Marine water	0,047 mg/l
pentasodium triphosphate	Fresh water	0,005 mg/l
	Intermittent use (freshwater)	0,05 mg/l
	Marine water	0,005 mg/l
	Fresh water sediment	0,19 mg/kg
	Soil	0,14 mg/kg

8.2 Exposure controls

Personal protective equipment

Eye/face protection : Safety glasses

Hand protection

Material : Wear chemical resistant gloves, such as barrier laminate, butyl rubber or nitrile rubber.

Remarks : The suitability for a specific workplace should be discussed with the producers of the protective gloves.

Skin and body protection : Protective suit

Respiratory protection	:	In the case of dust or aerosol formation use respirator with an approved filter.
Protective measures	:	Plan first aid action before beginning work with this product. Wear suitable protective equipment. Ensure that eye flushing systems and safety showers are located close to the working place. Always have on hand a first-aid kit, together with proper instructions.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	:	liquid
Form	:	liquid
Colour	:	No data available
Odour	:	No data available
Odour Threshold	:	No data available
pH	:	4
Melting point/range	:	No data available
Boiling point/boiling range	:	No data available
Flash point	:	> 150 °C
Upper explosion limit / Upper flammability limit	:	No data available
Lower explosion limit / Lower flammability limit	:	No data available
Vapour pressure	:	No data available
Relative density	:	1,18 (20 °C)
Density	:	No data available
Solubility(ies) Water solubility	: :	 soluble
Partition coefficient: n-octanol/water	:	No data available
Auto-ignition temperature	:	No data available
Decomposition temperature	:	No data available

Viscosity

Viscosity, dynamic	:	No data available
Viscosity, kinematic	:	No data available
Explosive properties	:	Not explosive
Oxidizing properties	:	The product is not oxidizing.

9.2 Other information

No data available

SECTION 10: Stability and reactivity

10.1 Reactivity

No decomposition if stored and applied as directed.

10.2 Chemical stability

No decomposition if stored and applied as directed.

10.3 Possibility of hazardous reactions

Hazardous reactions : Stable under recommended storage conditions.
No hazards to be specially mentioned.

10.4 Conditions to avoid

Conditions to avoid : Avoid extreme temperatures
Avoid formation of aerosol.
Protect from frost.

10.5 Incompatible materials

Materials to avoid : Avoid strong acids, bases, and oxidizers

10.6 Hazardous decomposition products

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Not classified based on available information.

Product:

Acute oral toxicity	:	Acute toxicity estimate: > 5.000 mg/kg Method: Calculation method Assessment: The substance or mixture has no acute oral toxicity
Acute inhalation toxicity	:	Acute toxicity estimate: 20 mg/l Exposure time: 4 h

Test atmosphere: vapour
Method: Calculation method
Assessment: The substance or mixture has no acute inhalation toxicity

Acute dermal toxicity : Acute toxicity estimate: > 5.000 mg/kg
Method: Calculation method
Assessment: The substance or mixture has no acute dermal toxicity

Components:

sodium hydrogensulphate:

Acute oral toxicity : LD50 (Rat, female): > 2.000 mg/kg
Method: OECD Test Guideline 423
Remarks: Based on data from similar materials

Acute inhalation toxicity : LC0 (Rat, male and female): > 2,4 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: OECD Test Guideline 436
Remarks: Based on data from similar materials
no mortality

Skin corrosion/irritation

Not classified based on available information.

Product:

Species : Rabbit
Result : slight or no skin irritation.
Remarks : May cause skin irritation in susceptible persons.

Components:

sodium hydrogensulphate:

Species : Rabbit
Method : OECD Test Guideline 404
Result : No skin irritation

Serious eye damage/eye irritation

Not classified based on available information.

Product:

Species : Rabbit
Result : Slight or no eye irritation
Remarks : Not expected to be irritating to eyes.

Components:

sodium hydrogensulphate:

Species : Rabbit

Method	:	OECD Test Guideline 405
Result	:	Irreversible effects on the eye

Respiratory or skin sensitisation

Skin sensitisation

Not classified based on available information.

Respiratory sensitisation

Not classified based on available information.

Components:

sodium hydrogensulphate:

Test Type	:	Maximisation Test
Species	:	Guinea pig
Method	:	OECD Test Guideline 406
Result	:	Does not cause skin sensitisation.
Remarks	:	Based on data from similar materials

Germ cell mutagenicity

Not classified based on available information.

Components:

sodium hydrogensulphate:

Genotoxicity in vitro	:	Test Type: reverse mutation assay Test system: TA100 Result: negative Remarks: Based on data from similar materials Test Type: gene mutation test Test system: mouse lymphoma cells Method: OECD Test Guideline 476 Result: negative Remarks: Based on data from similar materials Test Type: Chromosome aberration test in vitro Test system: Chinese hamster fibroblasts Method: OECD Test Guideline 473 Remarks: Based on data from similar materials
Germ cell mutagenicity- Assessment	:	In vitro tests did not show mutagenic effects

Carcinogenicity

Not classified based on available information.

Reproductive toxicity

Not classified based on available information.

Components:

sodium hydrogensulphate:

Effects on fertility	:	Species: Rat, male and female Application Route: Oral Dose: 100, 300, 1000 mg/kg bw/day General Toxicity - Parent: NOEL: 1.000 mg/kg body weight Method: OECD Test Guideline 421 Result: negative Remarks: Based on data from similar materials
Effects on foetal development	:	Test Type: reproductive and developmental toxicity study Species: Mouse Application Route: Oral Dose: 2800 mg/kg/day General Toxicity Maternal: NOAEL: 2.800 mg/kg body weight Developmental Toxicity: NOAEL: 2.800 mg/kg body weight Result: negative Remarks: Based on data from similar materials
Reproductive toxicity - Assessment	:	Weight of evidence does not support classification for reproductive toxicity

STOT - single exposure

Not classified based on available information.

STOT - repeated exposure

Not classified based on available information.

Components:

sodium hydrogensulphate:

Assessment	:	The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Repeated dose toxicity

Components:

sodium hydrogensulphate:

Species	:	Rat, male and female
NOAEL	:	1.000 mg/kg
Application Route	:	Oral
Exposure time	:	7 weeks
Dose	:	100, 300, 1000 mg/kg bw/day
Method	:	OECD Test Guideline 421
Remarks	:	Based on data from similar materials

Species	:	Rabbit, male and female
LOAEL	:	2 mL/kg/day(16% w/w)
Application Route	:	Dermal
Exposure time	:	91 d
Dose	:	2 ml/kg/day-16 % w/w aq.- Sodi
Method	:	OECD Test Guideline 411
Remarks	:	Based on data from similar materials

Aspiration toxicity

Not classified based on available information.

Further information

Product:

Remarks : No data available

SECTION 12: Ecological information

12.1 Toxicity

Components:

sodium hydrogensulphate:

Toxicity to fish	:	LC50 (Pimephales promelas (fathead minnow)): 7.960 mg/l Exposure time: 96 h Test Type: static test Remarks: Based on data from similar materials
Toxicity to daphnia and other aquatic invertebrates	:	LC50 (Daphnia magna (Water flea)): 1.766 mg/l Exposure time: 48 h Test Type: static test Remarks: Based on data from similar materials
Toxicity to algae/aquatic plants	:	EC50 (Marine Diatom): 1.900 mg/l Exposure time: 120 h Test Type: static test Remarks: Based on data from similar materials
Toxicity to microorganisms	:	NOEC (activated sludge): 8 g/l Exposure time: 37 d Remarks: Based on data from similar materials
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	LOEC: 1.329 mg/l Exposure time: 7 d Species: Ceriodaphnia dubia (water flea) Test Type: semi-static test Remarks: Based on data from similar materials

12.2 Persistence and degradability

No data available

12.3 Bioaccumulative potential

Components:

sodium hydrogensulphate:

Bioaccumulation	:	Bioconcentration factor (BCF): 0,5 Method: QSAR Remarks: Bioaccumulation is unlikely.

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

Product:

Assessment	:	This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6 Other adverse effects

Product:

Endocrine disrupting potential	:	The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.
Additional ecological information	:	No data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product	:	The product should not be allowed to enter drains, water courses or the soil. Do not contaminate ponds, waterways or ditches with chemical or used container. Send to a licensed waste management company.
Contaminated packaging	:	Empty containers should be taken to an approved waste handling site for recycling or disposal.

SECTION 14: Transport information

14.1 UN number

ADN	:	Not regulated as a dangerous good
ADR	:	Not regulated as a dangerous good
RID	:	Not regulated as a dangerous good
IMDG	:	Not regulated as a dangerous good
IATA	:	Not regulated as a dangerous good

14.2 UN proper shipping name

ADN	:	Not regulated as a dangerous good

ADR	:	Not regulated as a dangerous good
RID	:	Not regulated as a dangerous good
IMDG	:	Not regulated as a dangerous good
IATA	:	Not regulated as a dangerous good

14.3 Transport hazard class(es)

ADN	:	Not regulated as a dangerous good
ADR	:	Not regulated as a dangerous good
RID	:	Not regulated as a dangerous good
IMDG	:	Not regulated as a dangerous good
IATA	:	Not regulated as a dangerous good

14.4 Packing group

ADN	:	Not regulated as a dangerous good
ADR	:	Not regulated as a dangerous good
RID	:	Not regulated as a dangerous good
IMDG	:	Not regulated as a dangerous good
IATA (Cargo)	:	Not regulated as a dangerous good
IATA (Passenger)	:	Not regulated as a dangerous good

14.5 Environmental hazards

Not regulated as a dangerous good

14.6 Special precautions for user

Remarks	:	Not classified as dangerous in the meaning of transport regulations.

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

Not applicable for product as supplied.

SECTION 15: Regulatory information

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

The components of this product are reported in the following inventories:

TCSI	:	Not in compliance with the inventory
TSCA	:	Product contains substance(s) not listed on TSCA inventory.
AIIC	:	Not in compliance with the inventory
DSL	:	This product contains the following components that are not on the Canadian DSL nor NDSL.

		BLI (FMCH001) BIOLOGICAL TECHNICAL (CHR. HANSEN) Bacillus subtilis strain FMCH002
ENCS	:	Not in compliance with the inventory
ISHL	:	Not in compliance with the inventory
KECI	:	Not in compliance with the inventory
PICCS	:	Not in compliance with the inventory
IECSC	:	Not in compliance with the inventory
NZIoC	:	Not in compliance with the inventory
TECI	:	Not in compliance with the inventory

15.2 Chemical safety assessment

A chemical safety assessment is not required for this product (mixture).

SECTION 16: Other information

Full text of H-Statements

H318	:	Causes serious eye damage.

Full text of other abbreviations

Eye Dam.	:	Serious eye damage

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - Agreement concerning the International Carriage of Dangerous Goods by Road; AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA - European Chemicals Agency; EC-Number - European Community number; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quanti-

tative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; SVHC - Substance of very high concern; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

Further information

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