FMC Agricultural Solutions A/S
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CVR No. DK 12 76 00 43

SAFETY DATA SHEET

Bestox® 100 g/l EC Insecticide

Revision: Sections containing a revision or new information are marked with a ♣.

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

1.1. **Product identifier** .....

Bestox® 100 g/l EC Insecticide
Contains alpha-cypermethrin and hydrocarbons, C9, aromatics

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

Can be used as insecticide only.

1.3. **Details of the supplier of the safety data sheet**

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Thyborønvej 78
DK-7673 Harboøre
Denmark
SDS.Ronland@fmc.com

1.4. **Emergency telephone number**

Medical emergencies:

Austria: +43 1 406 43 43
Belgium: +32 70 245 245
Bulgaria: +359 2 9154 409
Cyprus: 1401
Czech Republic: +420 224 919 293
+420 224 915 402
Denmark: +45 82 12 12 12
England and Wales: 111
Estonia: +372 7943500
Finland: +358 9 471 977
France: +33 (0) 1 45 42 59 59
Greece: 30 210 77 93 777
Hungary: +36 80 20 11 99
Ireland (Republic): +353 1 837 9964
Italy: +39 02 6610 1029
Latvia: +371 670 42 473
112
Lithuania: +370 523 62052
+370 687 53378
Luxembourg: +352 8002 5500
Malta: 112
Netherlands: +31 30 274 88 88
Norway: +47 22 591300
Poland: +48 22 619 66 54
+48 22 619 08 97
Portugal: 800 250 250 (in Portugal only)
+351 21 330 3284
Romania: +40 21318 3606
Scotland: +8454 24 24 24
Slovakia: +421 2 54 77 4 166
Slovenia: +386 41 650 500
South Africa: +27 83 123 3911 (Bateleur Emergency Response Co.)
Spain: +34 91 562 04 20
Sweden: +46 08-331231
112
Switzerland: 145
Turkey: 114
U.S.A. & Canada: +1 800 / 331 3148
All other countries: +1 651 / 632 6793 (Collect)

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For fire, leak, spill or other accident emergencies:
U.S.A.: +1 800 / 424 9300 (CHEMTREC)
All other countries: +1 703 / 527 3887 (CHEMTREC - Collect)

SECTION 2: HAZARDS IDENTIFICATION

2.1. **Classification of the substance or mixture**

Flammable liquid: Category 3 (H226)
Acute oral toxicity: Category 4 (H302)
Acute inhalation toxicity: Category 2 (H330)
Eye irritation: Category 2 (H319)
Specific target organ toxicity – single exposure: Category 3 (H335, H336)
Specific target organ toxicity – repeated exposure: Category 2 (H373)
Aspiration toxicity: Category 1 (H304)
Hazards to the aquatic environment, acute: Category 1 (H400)
chronic: Category 1 (H410)

WHO classification ..... Class II: Moderately hazardous

Chemical-physical hazards ..... The product is flammable.

Health hazards ..... The product is very toxic by inhalation and harmful by ingestion. It may cause irritation. It may have various effects on nervous system.

Environmental hazards ..... The substance is very toxic to aquatic organisms.

2.2. **Label elements**

According to EU Reg. 1272/2008 as amended

Product identifier ..... Bestox® 100 g/l EC Insecticide
Contains alpha-cypermethrin and hydrocarbons, C9, aromatics

Hazard pictograms (GHS02, GHS06, GHS08, GHS09)

Signal word ..... Danger

Hazard statements

H226 ..... Flammable liquid and vapour.
H302 ..... Harmful if swallowed.
H304 ..... May be fatal if swallowed and enters airways.
H319 ..... Causes serious eye irritation.
H330 ..... Fatal if inhaled.
H335 ..... May cause respiratory irritation.
H336 ..... May cause drowsiness or dizziness.
H373 ..... May cause damage to nervous system through prolonged or repeated exposure.
H410 ..... Very toxic to aquatic life with long lasting effects.

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Supplementary hazard statements
EUH066 ..... Repeated exposure may cause skin dryness and cracking.
EUH401 ..... To avoid risks to human health and the environment, comply with the instructions of use.

Precautionary statements
P233 ..... Keep container tightly closed.
P260 ..... Do not breathe vapours.
P264 ..... Wash hands thoroughly after handling.
P280 ..... Wear protective gloves, protective clothing and face protection.
P310 ..... Immediately call a POISON CENTER or physician.
P501 ..... Dispose of contents and container as hazardous waste.

2.3. **Other hazards** ..... None of the ingredients in the product meets the criteria for being PBT or vPvB.

♣ SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. **Substances** ..... The product is a mixture, not a substance.

3.2. **Mixtures** ..... See section 16 for full text of hazard statements.

Active ingredient
Alpha-cypermethrin ..... Content: 12% by weight
CAS name ..... Cyclopropanecarboxylic acid, 3-(2,2-dichloroethenyl)-2,2-dimethyl-, (R)-cyano(3-phenoxyphenyl)methyl ester, (1S,3S)-rel-
CAS no. 67375-30-8
IUPAC name ..... Racemate comprising (S)-α-cyano-3-phenoxybenzyl-(1R)-cis-3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropanecarboxylate, and (R)-α-cyano-3-phenoxybenzyl-(1S)-cis-3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropanecarboxylate
ISO name/EU name ..... Alpha-cypermethrin
EC no. (EINECS no.) 257-842-9
EU index no. 607-422-00-X
Molecular weight 416.30
Classification of the ingredient ..... Acute oral toxicity: Category 3 (H301)
Acute inhalation toxicity: Category 4 (H332)
Specific target organ toxicity – single exposure: Category 3 (H335)
Specific target organ toxicity – repeated exposure: Category 3 (H373)
Hazards to the aquatic environment,
acute: Category 1 (H400), M-factor 1000
chronic: Category 1 (H410), M-factor 1000

Reportable ingredients	Content (% w/w)	CAS no.	EC no.	Classification
Hydrocarbons, C9, aromatics Reg. no. 01-2119455851-35	82		918-668-5	Flam. Liq. 3 (H226) STOT SE 3 (H335) STOT SE 3 (H336) Asp. Tox. 1 (H304)

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					Aquatic Chronic 2 (H411) EUH066
	Calcium dodecylbenzenesulphonate	3	26264-06-2	EINECS no.: 247-557-8	Skin Irrit. 2 (H315) Eye Dam. 1 (H318) Aquatic Chronic 2 (H411)

SECTION 4: FIRST AID MEASURES

4.1. **Description of first aid measures**

If exposure has occurred, do not wait for symptoms to develop, but immediately start the procedures described below.

Inhalation .....

If experiencing any discomfort, immediately remove from exposure. Light cases: Keep person under surveillance. Get medical attention immediately if symptoms develop. Serious cases: Get medical attention immediately or call for an ambulance.

If breathing has stopped, immediately start artificial respiration and maintain until a physician takes charge of the exposed person.

Skin contact .....

Immediately remove contaminated clothing and footwear. Do not start with flushing with water, but wipe off with dry cloth or using talcum powder, followed by washing with water and soap. Thereafter apply lidocaine, vitamin E cream, fatty skin care oil or cream. See physician if contamination is severe or if feeling unwell.

Eye contact .....

Immediately rinse eyes with much water or eyewash solution, occasionally opening eyelids, until no evidence of chemical remains. Remove contact lenses after a few minutes and rinse again. See physician immediately.

Ingestion .....

Call a doctor or get medical attention immediately. Make the exposed person rinse mouth and then drink 1 or 2 glasses of water. Induce vomiting only if:
1. a significant amount (more than a mouthful) has been ingested
2. patient is fully conscious
3. medical aid is not readily available
4. time since ingestion is less than one hour.

Let the patient induce vomiting by touching the back of the throat with a finger. If vomiting occurs, take care that vomit does not enter airways. Let the exposed person rinse mouth and drink fluids again.

4.2. **Most important symptoms and effects, both acute and delayed**

On contact, alpha-cypermethrin can cause feelings of burning, tingling or numbness in exposed areas (paraesthesia), which is harmless at low exposure, but can be quite painful, especially in the eye. The effect may result from splash, aerosol or transfer from contaminated gloves. The effect is transient, lasting up to 24 hours, but may in exceptional cases last longer. It may be considered as a warning that overexposure has occurred and that work practice should be reviewed.

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If swallowed or inhaled small doses may produce non-specific symptoms (e.g. nausea, vomiting, diarrhoea). Larger doses may produce disturbance of the central nervous system (e.g. tremors, convulsions, coma).

4.3. **Indication of any immediate medical attention and special treatment needed**

If any sign of poisoning occurs, call a doctor (physician), clinic or hospital immediately. Explain that the victim has been exposed to a pyrethroid insecticide. Describe his/her condition and the extent of exposure. Immediately remove the exposed person from the area where the product is present.

As soon as a feeling of tingling is noted in any skin area (see section 11), it is recommended to immediately apply lidocaine or a vitamin E cream. For this purpose, lidocaine or vitamin E cream should be available at the workplace.

It may be helpful to show this safety data sheet to physician.

Note to physician .....

A specific antidote against this substance is not known. Gastric lavage and administration of activated charcoal can be considered. Normally recovery is spontaneous.

The product contains petroleum distillates which may pose an aspiration pneumonia hazard.

If allowed to penetrate the skin, **alpha-cypermethrin** may cause an irritation similar to sunburn. The substance will be drawn into a non-polar environment such as a fat-based oil or cream. Vitamin E cream has been reported to be beneficial. Water is highly polar and will not decrease, but may prolong the irritation. Hot water may increase the pain.

For eye contamination, instillation of local anaesthetic can be considered.

SECTION 5: FIRE-FIGHTING MEASURES

5.1. **Extinguishing media** .....

Dry chemical or carbon dioxide for small fires, water spray or foam for large fires. Avoid heavy hose streams.

5.2. **Special hazards arising from the substance or mixture**

The essential breakdown products are volatile, toxic, irritant and inflammable compounds such as hydrogen chloride, nitrogen oxides, carbon monoxide, carbon dioxide and various chlorinated organic compounds. Traces of hydrogen cyanide may be present.

5.3. **Advice for firefighters** .....

Use water spray to keep fire-exposed containers cool. Approach fire from upwind to avoid hazardous vapours and toxic decomposition products. Fight fire from protected location or maximum possible distance. Dike area to prevent water runoff. Firemen should wear self-contained breathing apparatus and protective clothing.

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SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. **Personal precautions, protective equipment and emergency procedures**

It is recommended to have a plan for the avoidance of spills. If spillage does occur, it has to be removed and the area cleaned immediately according to a predetermined plan. It is recommended to clean area or equipment also if contamination is suspected.

Empty, sealable vessels for the collection of spills should be available.

In case of large spill (involving 1 tonne of the product or more):
1. use personal protection equipment; see section 8
2. call emergency telephone no.; see section 1
3. alert authorities.

Observe all safety precautions when cleaning up spills. Use personal protection equipment. Depending on the magnitude of the spill this may mean wearing respirator, face mask or eye protection, chemical resistant clothing, gloves and rubber boots.

Stop the source of the spill immediately if safe to do so. Keep unprotected persons away from the spill area. Avoid and reduce formation of vapour or mist as much as possible. Remove sources of ignition.

6.2. **Environmental precautions** .....

Contain the spill to prevent any further contamination of surface, soil or water. Wash waters must be prevented from entering surface water drains. Uncontrolled discharge into water courses must be alerted to the appropriate regulatory body.

6.3. **Methods and materials for containment and cleaning up**

It is recommended to consider possibilities to prevent damaging effects of spills, such as bunding or capping. See GHS (Annex 4, Section 6).

Use explosion-proof equipment. If appropriate, surface water drains should be covered. Minor spills on the floor or other impervious surface should be absorbed onto an absorptive material such as universal binder, attapulgite, bentonite or other absorbent clays. Collect the contaminated absorbent in suitable containers. Clean area with much water and industrial detergent. Absorb wash liquid with absorbent and transfer to suitable containers. The used containers should be properly closed and labelled.

Large spills which soak into the ground should be dug up and transferred to suitable containers.

Spills in water should be contained as much as possible by isolation of the contaminated water. The contaminated water must be collected and removed for treatment or disposal.

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6.4. **Reference to other sections** ..... See subsection 7.1. for fire prevention.
See subsection 8.2. for personal protection.
See section 13 for disposal.

SECTION 7: HANDLING AND STORAGE

7.1. **Precautions for safe handling** .... The product is flammable. Formation of explosive vapour-air mixtures is possible. Fire prevention measures should be taken. Keep away from sources of ignition and protect from exposure to fire and heat. Take precautions against static discharge.

If the temperature of the liquid is below 30°C, which is 10°C below its flash point of 40°C, the fire and explosion hazard is considered minor. At higher temperatures the hazard gradually becomes more serious.

In an industrial environment, it is important to avoid all personal contact with the product, if possible by using closed systems with remote system control. The material should be handled by mechanical means as much as possible. Adequate ventilation or local exhaust ventilation is required. The exhaust gases should be filtered or treated otherwise. For personal protection in this situation, see section 8.

For its use as a pesticide, first look for precautions and personal protection measures on the officially approved label on the packaging or for other official guidance or policy in force. If these are lacking, see section 8.

Keep all unprotected persons and children away from working area.

Remove contaminated clothing immediately. Wash thoroughly after handling. Before removing gloves, wash them with water and soap. After work, take off all work clothes and footwear. Take a shower, using water and soap. Wear only clean clothes when leaving job. Wash protective clothing and protective equipment with water and soap after each use.

Inhalation of vapours of the product can cause lowered consciousness, which increases the risks of operating machinery and driving.

The work area should always be kept clean. Used personal protection equipment should either be thrown out or be cleaned immediately after use. Respirator should be cleaned and filter replaced according to instructions provided with respirator.

Do not discharge to the environment. Do not contaminate water when disposing of equipment wash waters. Collect all waste material and remains from cleaning equipment, etc., and dispose of as hazardous waste. See section 13 for disposal.

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7.2. **Conditions for safe storage, including any incompatibilities**

The product is stable under normal conditions of warehouse storage.

Keep in closed, labelled containers. The storage room should be constructed of incombustible material, closed, dry, ventilated and with impermeable floor, without access of unauthorised persons or children. A warning sign reading "POISON" is recommended. The room should only be used for storage of chemicals. Food, drink, feed and seed should not be present. A hand wash station should be available.

7.3. **Specific end use(s)** .....

The product is a registered pesticide, which may only be used for the applications it is registered for, in accordance with a label approved by the regulatory authorities.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. **Control parameters**

Personal exposure limits .....

To our knowledge, no exposure limits have been established for the active ingredient in this product.

Aromatic hydrocarbons .....

100 ppm total hydrocarbon is recommended. The mixture contains trimethyl benzene. The ACGIH recommends a TLV-TWA of 25 ppm (123 g/m^3) for trimethyl benzene.

However, personal exposure limits defined by local regulations may exist and must be observed.

Alpha-cypermethrin

DNEL .....

Not established
The EFSA has established an AOEL of 0.01 mg/kg bw/day

PNEC, aquatic environment .....

3 ng/l

Aromatic hydrocarbons

DNEL, dermal ..... 25 mg/kg bw/day
DNEL, inhalation ..... 150 mg/m^3
PNEC, aquatic environment ..... Not applicable

8.2. **Exposure controls** .....

When used in a closed system, personal protection equipment will not be required. The following is meant for other situations, when the use of a closed system is not possible, or when it is necessary to open the system. Consider the need to render equipment or piping systems non-hazardous before opening.

The precautions mentioned below are primarily meant for handling of the undiluted product and for preparing the spray solution, but can be recommended for spraying as well.

In cases of incidental high exposure, maximal personal protection equipment may be necessary, such as respirator, face mask, chemical resistant coveralls.

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Respiratory protection — In the event of an accidental discharge of the material which produces a heavy vapour or mist, workers must put on officially approved respiratory protection equipment with a universal filter type including particle filter.

Protective gloves ..... Wear chemical resistant gloves, such as barrier laminate, butyl rubber or nitrile rubber. The breakthrough times of these materials for the product are unknown. Generally, however, the use of protective gloves will give only partial protection against dermal exposure. Small tears in the gloves and cross-contamination can easily occur. It is recommended to limit the work to be done manually and to change the gloves immediately if there is a suspicion of contamination. Be careful not to touch anything with contaminated gloves. Used gloves should be thrown out and not be reused. Wash hands with water and soap immediately after work is finished.

Eye protection ..... Wear face shield rather than goggles or safety glasses. The possibility of eye contact should be excluded.

Other skin protection — Wear appropriate chemical resistant clothing to prevent skin contact depending on the extent of exposure. During most normal work situations where exposure to the material cannot be avoided for a limited time span, waterproof pants and apron of chemical resistant material or coveralls of polyethylene (PE) will be sufficient. Coveralls of PE must be discarded after use if contaminated. In cases of excessive or prolonged exposure, coveralls of barrier laminate may be required.

♣ SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. **Information on basic physical and chemical properties**

Physical state	Liquid
Colour	Light brown
Odour	Of aromatic hydrocarbons
Melting point/freezing point	Not determined
Boiling point or initial boiling point and boiling range	**Aromatic hydrocarbons** : 155 - 181°C
Flammability	Flammable
Lower and upper explosive limit ..	**Aromatic hydrocarbons** : 0.8 - 7.0 vol% (≈ 0.8 - 7.0 kPa)
Flash point	40°C (Tag closed cup)
Auto-ignition temperature	Not determined
Decomposition temperature	Not determined
pH	Not determined
Kinematic viscosity	Not determined
Solubility	The product is emulsifiable in water. Solubility of **alpha-cypermethrin** at 20°C in

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	ethyl acetate	584 g/l
	n-hexane	6.5 g/l
	water	0.00397 mg/l
Partition coefficient n-octanol/water (log value)	**Alpha-cypermethrin**	: log K_{ow} = 5.5 at 20°C
	Aromatic hydrocarbons	: some of the main components have log K_{ow} = 3.4 - 4.1
Vapour pressure	**Alpha-cypermethrin**	: 3.4 x 10^{-7} Pa at 25°C
	Aromatic hydrocarbons	: 0.20 kPa at 20°C
Density and/or relative density	Relative density: 0.911 at 20°C	
Relative vapour density	**Aromatic hydrocarbons**	: > 1 (air = 1)
Particle characteristics	Not applicable (liquid)	

9.2. **Other information**

Evaporation rate ..... **Aromatic hydrocarbons** : 0.15 (butyl acetate = 1)

SECTION 10: STABILITY AND REACTIVITY

10.1. **Reactivity** ..... To our knowledge, the product has no special reactivities.

10.2. **Chemical stability** ..... The product is stable during normal handling and storage at ambient temperatures.

10.3. **Possibility of hazardous reactions** None known.

10.4. **Conditions to avoid** ..... Heating of the product may evolve harmful and irritant vapours.

10.5. **Incompatible materials** ..... None known.

10.6. **Hazardous decomposition products** See subsection 5.2.

♣ SECTION 11: TOXICOLOGICAL INFORMATION

11.1. **Information on hazard classes as defined in Regulation (EC) No 1272/2008**

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

Product

Acute toxicity ..... The product is very toxic by inhalation and harmful by ingestion, but is not considered harmful by skin contact. The acute toxicity is measured as:

Route(s) of entry	- ingestion	LD_{50}, oral, rat: 942 mg/kg
	- skin	LD_{50}, dermal, rabbit: > 2000 mg/kg *
	- inhalation	LC_{50}, inhalation, rat: 0.20 mg/l/4 h

Skin corrosion/irritation ..... Moderately irritating to skin. * May cause dry skin.

Serious eye damage/irritation ..... Moderately irritating to eyes.

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Respiratory or skin sensitisation ...		Not a skin sensitizer. *
Germ cell mutagenicity		The product contains no ingredient known to be mutagenic. *
Carcinogenicity		The product contains no ingredients known to be carcinogenic. *
Reproductive toxicity		The product contains no ingredients known to have adverse effects on reproduction. *
STOT – single exposure		Inhalation may cause nervous system depression and irritation of airways.
STOT – repeated exposure		The following is measured on the active ingredient alpha-cypermethrin: Target organ: nervous system. Repeated exposure may cause neurotoxic effects. Various symptoms of toxicity including neurotoxicity were observed in a 90-day oral test with rats (method OECD 408). NOAEL 180 ppm (9 mg/kg bw/day).
Aspiration hazard		The product presents an aspiration pneumonia hazard.
Alpha-cypermethrin		
Toxicokinetics, metabolism and distribution		After oral administration, alpha-cypermethrin is absorbed, initially widely distributed in the body and finally distributed mostly to the skin and fatty tissues. It is extensively metabolised. It is eliminated almost completely within 96 hours.
Acute toxicity		Alpha-cypermethrin is toxic if swallowed and harmful by inhalation. Toxicity by skin contact is less severe. Results for acute toxicity vary much with study design and vehicle. The following results are mentioned in literature:
Route(s) of entry	- ingestion	LD_{50}, oral, rat: 40 - > 4000 mg/kg
	- skin	LD_{50}, dermal, rat: > 2000 mg/kg *
	- inhalation	LC_{50}, inhalation, rat: > 0.32 - > 1.59 mg/l/4 h
Skin corrosion/irritation		Not irritating to skin (EU method B.4). *
Serious eye damage/irritation		Not irritating to eyes (EU method B.5). *
Respiratory or skin sensitisation ...		Not a skin sensitizer (EU method B.6). *
Hydrocarbons, C9, aromatics		
Acute toxicity		The substance is not considered as harmful. * The acute toxicity is measured as:
Route(s) of entry	- ingestion	LD_{50}, oral, rat: 3592 mg/kg (method similar to OECD 401)
	- skin	LD_{50}, dermal, rabbit: > 3160 mg/kg (method similar to OECD 402)
	- inhalation	LC_{50}, inhalation, rat: > 6.2 mg/l/4 h (method similar to OECD 403)

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Skin corrosion/irritation ..... Mildly irritating to skin at prolonged exposure. * Can cause skin dryness (method similar to OECD 404).

Serious eye damage/irritation ..... May cause mild, short-lasting discomfort to eyes (method similar to OECD 405). *

Respiratory or skin sensitisation ... Not expected to cause allergic reactions (method similar to OECD 406). *

Aspiration hazard ..... Aromatic hydrocarbons present an aspiration hazard.

Calcium dodecylbenzenesulphonate

Acute toxicity ..... The substance is not considered as harmful by skin contact, ingestion and inhalation. * The acute toxicity is measured as:

Route(s) of entry - ingestion LD_{50}, oral, rat: 4000 mg/kg

Skin corrosion/irritation ..... Irritating to skin.

Serious eye damage/irritation ..... Irritating to eyes with the potential to cause permanent eye damage.

11.2. **Information on other hazards** .... No more relevant information is available.

♣ SECTION 12: ECOLOGICAL INFORMATION

12.1. **Toxicity** ..... The product is extremely toxic to fish, aquatic invertebrates and insects. It is not considered as harmful to aquatic plants, soil micro- and macroorganisms and birds.

The ecotoxicity of **alpha-cypermethrin** is measured as:

- Fish	Rainbow trout (*Salmo gairdneri*)	96-h LC_{50}: 2.8 µg/l
	Fathead minnow (*Pimephales promelas*)	34-day NOEC: < 0.03 µg/l
- Invertebrates	Daphnids (*Daphnia magna*)	48-h EC_{50}: 0.3 µg/l 21-day NOEC: 0.03 µg/l
- Algae	Green algae (*Selenastrum capricornutum*)	96-h E_rC_{50}: > 0.1 mg/l
- Earthworms	*Eisenia foetida foetida*	14-day LC_{50}: > 100 mg/kg substrate
- Insects	Bees (*Apis mellifera* L.)	24-h LD_{50}, contact: 0.033 µg/bee 24-h LD_{50}, oral: 0.059 µg/bee

12.2. **Persistence and degradability** .... **Alpha-cypermethrin** is not readily biodegradable. Primary degradation half-lifetimes are generally a few weeks in aerobic soil, depending on circumstances.

Aromatic hydrocarbons are not readily biodegradable. However, they are expected to be degraded in the environment at a moderate rate. A BOD_5/COD ratio of 0.43 was measured. When evaporated, the

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mixture is expected to degrade rapidly in the air.

The product contains minor amounts of not readily biodegradable components, which may not be degradable in waste water treatment plants.

12.3. **Bioaccumulative potential** ..... See section 9 for n-octanol/water partition coefficients.

Alpha-cypermethrin has the potential to bioaccumulate at continuous exposure. It is excretedin several weeks.

Aromatic hydrocarbons have a moderate potential to bioaccumulate if continuous exposure is maintained. Most components can be metabolised by many organisms, bacteria, fungi, etc. Bioaccumulation factors (BCFs) of some of the main components are 300 - 400 (by model calculation).

12.4. **Mobility in soil** ..... **Alpha-cypermethrin** is not mobile in the environment. It binds tightly to soil particles.

Aromatic hydrocarbons are not mobile in the environment, but they are highly volatile and will rapidly evaporate to the air if released onto water or on the surface of soil. They float and can migrate to sediment.

12.5. **Results of PBT and vPvB assessment** ..... None of the ingredients meets the criteria for being PBT or vPvB.

12.6. **Endocrine disrupting properties** None of the ingredients is known to have endocrine disrupting properties.

12.7. **Other adverse effects** ..... Other relevant hazardous effects in the environment are not known.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. **Waste treatment methods** ..... Remaining quantities of the material and empty but unclean packaging should be regarded as hazardous waste.

Disposal of waste and packagings must always be in accordance with all applicable local regulations.

Disposal of product ..... According to the Waste Framework Directive (2008/98/EC), possibilities for reuse or reprocessing should first be considered. If this is not possible, the material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing.

Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

Disposal of packaging ..... It is recommended to consider possible ways of disposal in the

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following order:
1. Reuse or recycling should first be considered. Reuse is prohibited except for the registration holder. If offered for recycling, containers must be emptied and triply rinsed (or equivalent). Do not discharge rinsing water to sewer systems.
2. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.
3. Delivery of the packaging to a licensed service for disposal of hazardous waste.
4. Disposal in a landfill or burning in open air should only occur as a last resort. For disposal in a landfill, containers should be emptied completely, rinsed and punctured to make them unusable for other purposes. If burned, stay out of smoke.

♣ SECTION 14: TRANSPORT INFORMATION

ADR/RID/IMDG/IATA/ICAO classification

14.1.	**UN number**	3351
14.2.	**UN proper shipping name**	Pyrethroid pesticide, liquid, toxic, flammable (alpha-cypermethrin, alkyl(C3-C4)benzenes)
14.3.	**Transport hazard class(es)**	6.1 (3)
14.4.	**Packing group**	II
14.5.	**Environmental hazards**	Marine pollutant
14.6.	**Special precautions for user**	Avoid any unnecessary contact with the product. Misuse can result in damage to health. Do not discharge to the environment.
14.7.	**Maritime transport in bulk according to IMO instruments** ..	The product is not transported in bulk by ship.

SECTION 15: REGULATORY INFORMATION

15.1.	**Safety, health and environmental regulations/legislation specific for the substance or mixture**	Seveso category (Dir. 2012/18/EU): flammable Second Seveso category: toxic Third Seveso category: dangerous for the environment Young people under the age of 18 are not allowed to work with the product. All ingredients are covered by EU chemical legislation.
15.2.	**Chemical safety assessment**	A chemical safety assessment is not required to be included for this product.

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♣ SECTION 16: OTHER INFORMATION

Relevant changes in the safety data sheet ..... Minor corrections only.

List of abbreviations .....

ACGIH	American Conference of Governmental Industrial Hygienists
AOEL	Acceptable Operator Exposure Level
BOD_5	Biological Oxygen Demand in 5 days
CAS	Chemical Abstracts Service
COD	Chemical Oxygen Demand
Dir.	Directive
DNEL	Derived No Effect Level
EC	Emulsifiable Concentrate, or European Community
EC_{50}	50% Effect Concentration
E_rC_{50}	50% Effect Concentration based on growth
EFSA	European Food Safety Authority
EINECS	European INventory of Existing Commercial Chemical Substances
GHS	Globally Harmonized classification and labelling System of chemicals, seventh revised edition 2017
IMO	International Maritime Organisation
ISO	International Organisation for Standardization
IUPAC	International Union of Pure and Applied Chemistry
LC_{50}	50% Lethal Concentration
LD_{50}	50% Lethal Dose
NOAEL	No Observed Adverse Effect Level
NOEC	No Observed Effect Concentration
OECD	Organisation for Economic Cooperation and Development
PBT	Persistent, Bioaccumulative, Toxic
PNEC	Predicted No Effect Concentration
Reg.	Regulation
STOT	Specific Target Organ Toxicity
TLV	Threshold Limit Value
TWA	Time Weighted Average
vPvB	very Persistent, very Bioaccumulative
WHO	World Health Organisation

References ..... Data measured on the product are unpublished company data. Data on ingredients are available from published literature and can be found several places.

Method for classification ..... Flammable liquid: test data
Acute oral toxicity: test data
Acute inhalation toxicity: test data
Eye irritation: test data
Specific target organ toxicity – single exposure: calculation rules
Specific target organ toxicity – repeated exposure: calculation rules
Aspiration toxicity: test data

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Hazards to the aquatic environment: calculation rules

Used hazard statements .....

H226	Flammable liquid and vapour.
H301	Toxic if swallowed.
H302	Harmful if swallowed.
H304	May be fatal if swallowed and enters airways.
H315	Causes skin irritation
H319	Causes serious eye irritation.
H330	Fatal if inhaled.
H332	Harmful if inhaled.
H335	May cause respiratory irritation.
H336	May cause drowsiness or dizziness.
H373	May cause damage to nervous system through prolonged or repeated exposure
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.
H411	Toxic to aquatic life with long lasting effects.
EUH066	Repeated exposure may cause skin dryness and cracking.
EUH401	To avoid risks to human health and the environment, comply with the instructions of use.

Advice on training ..... This material should only be used by persons who are made aware of its hazardous properties and have been instructed in the required safety precautions.

The information provided in this safety data sheet is believed to be accurate and reliable, but uses of the product vary and situations unforeseen by FMC Corporation may exist. The user has to check the validity of the information under local circumstances.

Prepared by: FMC Agricultural Solutions A/S / GHB