SAFETY DATA SHEET

TALSTAR 10 EC

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** .....

Talstar 10 EC
Contains bifenthrin, hydrocarbons, C9, aromatics and benzenesulfonic acid, mono-C11-13-branched alkyl derivs., calcium salts

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**

CHEMINOVA A/S, a subsidiary of FMC Corporation
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
France: +33 (0) 1 45 42 59 59
Finland: +358 9 471 977
Greece: 30 210 77 93 777
Hungary: +36 80 20 11 99
Ireland (Republic): +353 1 809 2166
Italy: +39 02 6610 1029
Lithuania: +370 523 62052
+370 687 53378
Luxembourg: +352 8002 5500
Netherlands: +31 30 274 88 88
Norway: +47 22 591300
Poland: +48 22 619 66 54
+48 22 619 08 97
Portugal: 808 250 143 (in Portugal only)
+351 21 330 3284
Romania: +40 21318 3606
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
United Kingdom: 111
U.S.A. & Canada: +1 800 / 331-3148 (ProPharma)
All other countries: +1 651 / 632-6793 (ProPharma - Collect)

For leak, fire, spill or 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 4 (H332)
Skin irritation: Category 2 (H315)
Eye damage: Category 1 (H318)
Carcinogenicity: Category 2 (H351)
Specific target organ toxicity – single exposure: Category 3 (H335 and H336)
Specific target organ toxicity – repeated exposure: Category 1 (H372)
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 harmful by ingestion and inhalation. It has irritating properties. It may cause allergic reactions. It may cause depression of nervous system.

The active ingredient **bifenthrin** is toxic by inhalation and if swallowed. It is suspected of causing cancer.

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

2.2. **Label elements**

According to EU Reg. 1272/2008 as amended

Product identifier ..... Talstar 10 EC
Contains bifenthrin, hydrocarbons, C9, aromatics and benzenesulfonic acid, mono-C11-13-branched alkyl derivs., calcium salts

Hazard pictograms (GHS02, GHS05, GHS07, 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.
H315 ..... Causes skin irritation
H318 ..... Causes serious eye damage.
H332 ..... Harmful if inhaled.

H335	May cause respiratory irritation.
H336	May cause drowsiness or dizziness.
H351	Suspected of causing cancer.
H372	Causes damage to nervous system through prolonged or repeated exposure.
H410	Very toxic to aquatic life with long lasting effects.

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

P261	Avoid breathing vapours.
P280	Wear protective gloves, protective clothing and eye protection.
P303+P361+P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310	Immediately call a POISON CENTER or doctor/physician.
P501	Dispose of contents/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.

Bifenthrin

Bifenthrin	Content: 12% by weight
CAS name	Cyclopropanecarboxylic acid, 3-[(1Z)-2-chloro-3,3,3-trifluoro-1-propen-1-yl]-2,2-dimethyl-, (2-methyl[1,1′-biphenyl]-3-yl)methyl ester, (1R,3R)-rel-
CAS no.	82657-04-3
IUPAC name	2-Methyl-3-phenylbenzyl (1RS)-cis-3-(2-chloro-3,3,3-trifluoro-prop-1-enyl)-2,2-dimethylcyclopropanecarboxylate
ISO name/EU name	Bifenthrin
EC no. (EINECS no.)	None
EU index no.	None
Molecular weight	422.9
Classification of the ingredient	Acute oral toxicity: Category 2 (H300) Acute inhalation toxicity: Category 3 (H331) Sensitisation – skin: Category 1B (H317) Carcinogenicity: Category 2 (H351) Specific target organ toxicity – repeated exposure: Category 1 (H372) Hazards to the aquatic environment, acute: Category 1 (H400) chronic: Category 1 (H410)

Reportable ingredients	Content (% w/w)	CAS no.	EC no.	Classification
Hydrocarbons, C9, aromatics Reg. no. 01-2119455851-35	81		918-668-5	Flam. Liq. 3 (H226) STOT SE 3 (H335) STOT SE 3 (H336) Asp. Tox. 1 (H304) Aquatic Chronic 2 (H411)
Benzenesulfonic acid, mono-C11-13-branched alkyl derivs., calcium salts	4	68953-96-8	EINECS no.: 273-234-6	Acute Tox. 4 (H312) 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 or milk. 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**

Bifenthrin can cause feelings of burning, tingling or numbness in exposed areas (paraesthesia).

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.

Notes 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, **bifenthrin** 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, hydrogen fluoride, sulphur dioxide, carbon monoxide, carbon dioxide and various chlorinated and fluorinated organic compounds.

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.

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 10 tonnes 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 boots.

Stop the source of the spill immediately if safe to do so. Keep unprotected persons away from the spill area. Avoid and reduce vapour and mist formation 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 non-sparking tools and 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.

6.4. **Reference to other sections** ..... 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.

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.

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

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.

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

The product is stable under normal conditions of warehouse storage.

Keep in tightly 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)** .....

This 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 bifenthrin.

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

Bifenthrin
DNEL ..... 0.0075 mg/kg bw/day
PNEC, aquatic environment ..... 0.095 ng/l

Aromatic hydrocarbons
DNEL, dermal ..... 12.5 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 may be necessary, such as respirator, face mask, chemical resistant coveralls.

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 long 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 physical and chemical properties**

Appearance	Light-brown liquid	
Odour	Mild, of aromatic hydrocarbons	
Odour threshold	Not determined	
pH	1% dispersion in water: 5.28	
Melting point/freezing point	Not determined	
Initial boiling point and boiling range	Decomposes	
Flash point	40°C	
Evaporation rate	(Butyl acetate = 1)	
	Aromatic hydrocarbons	: 0.15
Flammability (solid/gas)	Not applicable (liquid)	
Upper/lower flammability or explosive limits	**Aromatic hydrocarbons**	: 0.8 - 7.0 vol% (≈ 0.8 - 7.0 kPa)
Vapour pressure	**Bifenthrin**	: 2.4×10^{-5} Pa at 25°C
	Aromatic hydrocarbons	: 0.20 kPa at 20°C
Vapour density	(Air = 1)	
	Aromatic hydrocarbons	: > 1
Relative density	Not determined Density: 0.913 - 0.916 g/ml	
Solubility(ies)	**Bifenthrin** is soluble in xylene, toluene, acetone, n-heptane, ethyl acetate, chloroform, 1,2-dichloroethane and diethyl ether and slightly soluble in methanol. Solubility of **bifenthrin** in water: < 1 µg/l at pH 7 and 20°C	
Partition coefficient n-octanol/water	**Bifenthrin**	: log K_{ow} > 6
	Aromatic hydrocarbons	: some of the main components have log K_{ow} = 3.4 - 4.1
Autoignition temperature	Not determined	
Decomposition temperature	Not determined	
Viscosity	Not determined	
Explosive properties	Not explosive	
Oxidising properties	Not oxidising	

9.2. **Other information**

Miscibility ..... The product is dispersible in water.

SECTION 10: STABILITY AND REACTIVITY

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

10.2. **Chemical stability** ..... Bifenthrin decomposes on heating.

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

10.4. **Conditions to avoid** ..... Heating of the product will produce 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 toxicological effects** * = Based on available data, the classification criteria are not met.

Product

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

Route(s) of entry - ingestion: LD_{50}, oral, rat: 383 mg/kg (method US-EPA 81-1)

- skin: LD_{50}, dermal, rabbit: > 2000 mg/kg (method US-EPA 81-2) *

- inhalation: LC_{50}, inhalation, rat (male): 5.16 mg/l/4 h

LC_{50}, inhalation, rat (female): > 2.20 mg/l/4 h

Skin corrosion/irritation ..... Irritating to skin (method US-EPA 81-5). May cause dry skin.

Serious eye damage/irritation ..... Severely irritating to eyes (method US-EPA 81-4).

Respiratory or skin sensitisation ... Not sensitising to skin (method US-EPA 81-6). *

Germ cell mutagenicity ..... The product contains no ingredients known to be mutagenic. *

Carcinogenicity ..... For bifenthrin, increased tumour rate in liver and urinary bladder of male mice (method EPA 83-2) was observed, but not in rats.

Reproductive toxicity ..... The product contains no ingredients which are found to have adverse effects on fertility. *

STOT – single exposure ..... May cause drowsiness and dizziness and irritation of airways.

STOT – repeated exposure ..... The following was measured for the active ingredient bifenthrin:
Target organ: nervous system.
Repeated exposure may cause neurotoxic effects. Tremors and convulsions were seen in a 90-day test on rats at dose level (LOAEL) of 7.5 mg/kg bw/day (method EPA 82-1).

Aspiration hazard ..... The product presents an aspiration pneumonia hazard.

Symptoms and effects, acute and delayed: On contact, bifenthrin 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.

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).

Bifenthrin

Toxicokinetics, metabolism and distribution		The substance is only partially absorbed after oral intake. It is distributed mainly to skin and fatty tissues. It is partially metabolised and excreted completely within 48 hours. There is no potential for accumulation.
Acute toxicity		Bifenthrin is toxic by inhalation and if swallowed. Toxicity by skin contact is less severe. The acute toxicity is measured as:
Route(s) of entry	- ingestion	LD_{50}, oral, rat: approx. 55 mg/kg (method EPA 81-1)
	- skin	LD_{50}, dermal, rat: > 2000 mg/kg (method EPA 81-2) *
	- inhalation	LC_{50}, inhalation, rat: 1.01 mg/l/4 h (method OECD 403)
Skin corrosion/irritation		Not irritating to skin (method EPA 81-5). *
Serious eye damage/irritation		Not irritating to eyes (method EPA 81-4). *
Respiratory or skin sensitisation ...		Weakly sensitising (method OECD 406).

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)
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.

Benzenesulfonic acid, mono-C11-13-branched alkyl derivs., calcium salts

Toxicokinetics, metabolism and distribution		After oral intake, the substance is readily absorbed, metabolised and excreted with its metabolites, mainly in the bile.
Acute toxicity		The substance is harmful by skin contact, but not considered harmful by ingestion. The acute toxicity is measured on a similar substance as:
Route(s) of entry	- ingestion	LD_{50}, oral, rat: > 2000 mg/kg (method OECD 401) *
	- skin	LD_{50}, dermal, rat: 1000 - 1600 mg/kg (method OECD 402)
	- inhalation	LC_{50}, inhalation, rat: not available
Skin corrosion/irritation		Irritating to skin (measured on a similar substance).
Serious eye damage/irritation		Irritating to eyes with the potential to cause permanent eye damage (measured on a similar substance).

Respiratory or skin sensitisation ... Not a skin sensitizer (measured on a similar substance, method OECD 406). *

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 measured on the active ingredient **bifenthrin**:

- Fish	Rainbow trout (*Oncorhynchus mykiss*)	96-h LC_{50}: 0.10 µg/l 30-day NOEC: 0.012 µg/l
- Invertebrates	Daphnids (*Daphnia magna*)	48-h LC_{50}: 0.11 µg/l 21-day NOEC: 0.00095 µg/l
- Algae	Green algae	IC_{50} above solubility limit
- Earthworms	*Eisenia foetida foetida*	14-day LC_{50}: > 18.9 mg/kg soil
- Birds	Bobwhite quail (*Colinus virginianus*)	LD_{50}: 1800 mg/kg
- Insects	Bees (*Apis mellifera*)	24-h LD_{50}, oral: 0.1 µg/bee

12.2. **Persistence and degradability** .... **Bifenthrin** is not readily biodegradable. Its primary half-lifetimes in soil are measured to be several months depending on circumstances. It is not toxic to microorganisms in waste water treatment plants, but it is degraded only slowly.

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 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 octanol-water partition coefficients.

Bifenthrin has the potential to bioaccumulate, but in view of its high acute toxicity to aquatic organisms, bioaccumulation is not relevant.

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** ..... **Bifenthrin** is not mobile in soil. 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. **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 feasible, 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 following order:
1. Reuse or recycling should first be considered. Reuse is prohibited except by the authorisation 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** 1993

14.2. **UN proper shipping name** ..... Flammable liquid, n.o.s. (alkyl(C3-C4)benzenes and bifenthrin)

14.3. **Transport hazard class(es)** 3

14.4. **Packing group** III

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. **Transport in bulk according to Annex II of MARPOL 73/78 and the IBC code** ..... 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): dangerous for the environment
Second Seveso category: flammable

The employer shall assess any risks to the safety or health and any possible effect on the pregnancies or breastfeeding of workers and decide what measures should be taken (Dir. 92/85/EEC).

Young people under the age of 18 are not allowed to work with the substance.

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.

♣ SECTION 16: OTHER INFORMATION

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

List of abbreviations .....

ACGIH	American Conference of Governmental Industrial Hygienists
BOD_5	Biological Oxygen Demand within 5 days
CAS	Chemical Abstracts Service
COD	Chemical Oxygen Demand
Dir.	Directive
DNEL	Derived No Effect Level
EC	European Community, or Emulsifiable Concentrate
EINECS	European INventory of Existing Commercial Chemical Substances
GHS	Globally Harmonized classification and labelling System of chemicals, Fifth revised edition 2013
IBC	International Bulk Chemical code
IC_{50}	50% Inhibition Concentration
ISO	International Organisation for Standardization
IUPAC	International Union of Pure and Applied Chemistry
LC_{50}	50% Lethal Concentration
LD_{50}	50% Lethal Dose
LOAEL	Lowest Observed Adverse Effect Level
MARPOL	Set of rules from the International Maritime Organisation (IMO) for prevention of sea pollution
NOEC	No Observed Effect Concentration
n.o.s.	Not otherwise specified
OECD	Organisation for Economic Cooperation and Development
PBT	Persistent, Bioaccumulative, Toxic
PNEC	Predicted No Effect Concentration
Reg.	Registration, or

	Regulation
STOT	Specific Target Organ Toxicity
TLV	Threshold Limit Value
TWA	Time Weighted Average
US-EPA	Environmental Protection Agency, USA
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 date
Skin irritation: test data
Eye damage: test data
Carcinogenicity: calculation rules
Specific target organ toxicity – single exposure: calculation rules
Specific target organ toxicity – repeated exposure: calculation rules
Aspiration toxicity: calculation rules
Hazards to the aquatic environment: calculation rules

Used hazard statements .....

H226	Flammable liquid and vapour.
H300	Fatal if swallowed.
H302	Harmful if swallowed.
H304	May be fatal if swallowed and enters airways.
H312	Harmful in contact with skin.
H315	Causes skin irritation
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H331	Toxic if inhaled.
H332	Harmful if inhaled.
H335	May cause respiratory irritation.
H336	May cause drowsiness or dizziness.
H351	Suspected of causing cancer.
H372	Causes 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 Corporation / Cheminova A/S / GHB