SAFETY DATA SHEET

Bifenthrin Technical

This safety data sheet complies with the requirements of: Regulation (EC) No. 453/2010 and Regulation (EC) No. 1272/2008



SDS #: 660-CH-A

Revision date: 2020-04-14

Format: EU Version 3

Section 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Product Code(s) 660-CH-A

Product Name Bifenthrin Technical

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

Recommended Use: To be used as an active ingredient in insecticides only

Restrictions on Use: Use as recommended by the label.

1.3. Details of the supplier of the safety data sheet

<u>Supplier</u> CHEMINOVA A/S, a subsidiary of FMC Corporation

Thyborønvej 78 DK-7673 Harboøre

Denmark +45 9690 9690

SDS.Ronland@fmc.com

For further information, please contact:

Contact point (+45) 97 83 53 53 (24 h; for emergencies only)

1.4. Emergency telephone number

Emergency telephone Medical Emergencies: 1-6516326793

For leak, fire, spill or accidents: 972-37630639 (CHEMTREC)

Section 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture Regulation (EC) No 1272/2008

Acute toxicity - Oral	Category 2 - (H300)
Acute toxicity - Inhalation (Dusts/Mists)	Category 3 - (H331)
Skin sensitization	Category 1B - (H317)
Carcinogenicity	Category 2 - (H351)
Specific target organ toxicity (repeated exposure)	Category 1 - (H372)
Acute aquatic toxicity	Category 1 - (H400)
Chronic aquatic toxicity	Category 1 - (H410)

2.2. Label elements

Hazard pictograms

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Signal Word Danger

Hazard Statements

H300 - Fatal if swallowed

H317 - May cause an allergic skin reaction

H331 - Toxic if inhaled

H372 - Causes damage to organs through prolonged or repeated exposure

H351 - Suspected of causing cancer

H410 - Very toxic to aquatic life with long lasting effects

EUH401: Follow the instructions for use to avoid risks to human health and the environment.

Precautionary Statements

P261: Avoid breathing dust.

P264 - Wash hands thoroughly after handling

P273 - Avoid release to the environment

P280 - Wear protective gloves/protective clothing/eye protection/face protection

P302 + P352 - IF ON SKIN: Wash with plenty of soap and water

P310 - Immediately call a POISON CENTER or doctor/physician

P501: Dispose of contents/container as hazardous waste.

2.3. Other hazards

The substance does not meet the criteria for being PBT or vPvB.

Excessive dust formation may pose a dust explosion hazard.

Section 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

The product is a mixture, not a substance.

Chemical name	EC-No	CAS-No	Weight %	Classification according to Regulation (EC) No. 1272/2008 [CLP]	REACH registration number
Bifenthrin	-	82657-04-3	98.4	Acute Tox. 2 (H300) Acute Tox. 3 (H331) Skin Sens. 1B (H317) Carc. 2 (H351) STOT RE 1 (H372) Aquatic Acute 1 (H400) M=10000 Aquatic Chronic 1 (H410) M (Chronic)= 100000	No data available

Additional Information

For the full text of the H- and EUH- phrases mentioned in this Section, see Section 16

Section 4: FIRST AID MEASURES

4.1. Description of first aid measures

General Advice

If exposure has occurred, do not wait for symptoms to develop, but immediately start the procedures described below. People who come to the rescue should apply all required safety measures.

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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. Call a physician immediately.

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 vitamin E cream or fatty skin care oil or cream. See physician if

any symptom develops.

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. Use a bag valve mask or similar device to

perform artificial respiration if needed.

Ingestion If the exposed person is conscious, make him/her vomit quickly. Make the exposed person

rinse mouth and then drink 1 or 2 glasses of water or milk. Let him/her induce vomiting by touching the back of the throat with a finger. If vomiting occurs, let him/her rinse mouth and drink fluids again. Never give anything by mouth to an unconscious person. Get medical

attention immediately.

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

Most important symptoms and effects, both acute and delayed

Bifenthrin affects the central nervous system. On contact, it can cause feelings of burning, tingling or numbness in exposed areas (paraesthesia). After oral intake it may cause gastrointestinal discomfort, such as nausea, vomiting, diarrhoea.

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

Indication of immediate medical attention and special treatment needed, if necessary

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 lidocain a or vitamin E cream. For this purpose lidocain 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.

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 anesthetic can be considered.

Section 5: FIRE FIGHTING MEASURES

5.1. Extinguishing media

Suitable Extinguishing Media

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

Unsuitable extinguishing media

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No information available

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, 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

Personal Precautions

It is recommended to have a predetermined plan for the handling of spills. Empty, closable vessels for the collection of spills should be available.

In case of large spill (involving 1 tonnes of the product or more):

- 1. use personal protection equipment (see Section 8)
- 2. call emergency telephone number in 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 airborne dust as much as possible, if appropriate by moistening. Remove all sources of ignition.

For further clean-up instructions, call FMC Emergency Hotline number listed in Section 1 "Product and Company Identification" above.

For emergency responders

Use personal protection recommended in Section 8.

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 material for containment and cleaning up

Methods for Containment It is recommended to consider possibilities to prevent damaging effects of spills, such as

bunding or capping. 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

as universal binder, attapuigite, bentonite or other absorbent clays. Collect the

contaminated absorbent in suitable containers. Clean area with much water and industrial detergent. Absorb wash liquid onto absorbent and transfer to suitable containers. The used

containers should be properly closed and labelled.

Methods for cleaning up Large 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 section 8 for more information. See section 13 for more information.

Section 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

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Handling

Like most organic powders, the substance can form explosive mixtures with air. Avoid dust formation and take precautionary measures against static discharge. Use explosion protected equipment. Keep away from sources of ignition and protect from exposure to fire and heat.

In an industrial environment, it is recommended to avoid any personal contact with the product, if possible, using remotely controlled systems with remote control. Otherwise, it is recommended to process the material with maximum mechanical means. Adequate ventilation or local exhaust ventilation is required. Exhaust gases must be filtered or treated differently. For personal protection in this situation, see Section 8.

Remove contaminated clothing and shoes. Wash thoroughly after handling. Use protective gloves made from chemicals such as nitrile or neoprene. Wash gloves with soap and water before reuse. Check regularly for leaks. Do not dispose into the environment. Do not contaminate water when disposing of the flushing water for equipment. Collect all waste and residues from cleaning equipment, etc. And dispose of them as hazardous waste. See Section 13 for disposal.

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.

As soon as a feeling of tingling is noted in any skin area, it is recommended to immediately apply lidocaine or a vitamin E cream.

Avoid contact with eyes, skin or clothing. Avoid breathing vapour or dust. Remove contaminated clothing immediately. Wash thoroughly after handling. Before removing gloves, wash them with water and soap and then throw them out. 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.

Hygiene measures

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. Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities

Storage

The product is stable under normal conditions of warehouse storage. Protect against extremes of heat and cold. Store 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)

Specific Use(s)

The product is an active ingredient meant for the production of pesticides which may only be used for officially allowed applications.

Risk Management Methods (RMM)

The information required is contained in this Safety Data Sheet.

Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

Derived No Effect Level (DNEL) Systemic. 0.0075 mg/kg bw/day.

Predicted No Effect Concentration Aquatic. 0.095 ng/l.

(PNEC)

8.2. Exposure controls

Engineering measures

Apply technical measures to comply with the occupational exposure limits (if listed above). When working in confined spaces (tanks, containers, etc.), make sure there is an adequate source of air for breathing and wear the recommended equipment. Ventilate all transport vehicles prior to discharge.

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Personal protective equipment

Eye/Face Protection For dust, splash, mist or spray exposure, wear chemical protective goggles. Maintain eye

wash fountain and quick-drench facilities in work area.

Hand Protection Wear chemical protective gloves made of materials such as nitrile or neoprene.

Skin and Body ProtectionWear 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 appreciable or prolonged exposure,

coveralls of barrier laminate may be required.

Respiratory Protection The product does not automatically present an airborne exposure concern during normal

handling. In the event of an accidental discharge of the material which produces a heavy vapour or mist, workers should put on officially approved respiratory protection equipment

with a universal filter type including particle filter.

Environmental exposure controls Do not release to the environment.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Physical State Solid

Appearance Powder or waxy solid
Odor Aromatic or mild solvent
Color White / Beige

Color White / Beige
Odor threshold Not applicable
pH Not applicable
Melting point/freezing point 79.6°C (98.6%)

Boiling Point/Range Ebullition of decomposed product: 291.3°C (98.6%)

Flash point Not applicable

Evaporation Rate No information available

Flammability (solid, gas) Flammability Limit in Air

Upper flammability limit:
Lower flammability limit:
Vapor pressure

No information available
No information available
2.4 x 10-4 Pa @ 25°C
1.78 x 10-5 Pa @ 20°C

Vapor density

No information available

Specific gravity

No information available

Water solubility < 0.001 mg/l at 20°C, pH 5 (97.8%) < 0.001 mg/l at 20°C, pH 7(97.8%) 0.00376 mg/l at 20°C, pH 9 (97.8%)

Solubility in other solvents methanol = 48.0 g/l at 20°C

xylene= 556.3 g/l at 20°C acetone = 735.7 g/l at 20°C heptane = 144.5 g/l at 20°C ethyl acetate = 579.8 g/l at 20°C 1,2-dichloroethane = 743.2 g/l at 20°C

Partition coefficient Log Kow = 6.6 (comparative HPLC method)

Autoignition temperature No information available

Decomposition temperature 280°C (98.6%)

Viscosity, kinematic No information available Viscosity, dynamic No information available

Explosive propertiesOxidizing properties
Not explosive Non-oxidizing

9.2. Other information

Softening point No information available Molecular weight No information available

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VOC content (%)

Relative density

Bulk density

No information available

1.212 g/cm³ @ 25°C

Kst

No information available

Section 10: STABILITY AND REACTIVITY

10.1. Reactivity

Stable under recommended storage conditions.

10.2. Chemical stability

Decomposes on heating. Direct local heating such as electric heating or by steam must be avoided.

Explosion data

Sensitivity to Mechanical Impact None known. Sensitivity to Static Discharge None known.

10.3. Possibility of hazardous reactions

Hazardous polymerization

None known.

Hazardous reactions

None under normal processing.

10.4. Conditions to avoid

Heating of the product will produce harmful and irritant vapors.

10.5. Incompatible materials

Strong oxidizing agents, Strong acids, Strong bases.

10.6. Hazardous decomposition products

See Section 5 for more information.

Section 11: TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

Acute toxicity

Mutagenicity

Product Information

LC50 Inhalation (dust)

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

LD50 Oral 70.1 mg/kg (male rat)

53.8 mg/kg (female rat) **LD50 Dermal** > 2000 mg/kg (rat) US EPA Test Guideline OPP 81-2

0.8 mg/L 4 hr (female rat) (Method: OECD 403) 1.1 mg/l 4h (male rat) (Method: OECD 403)

Skin corrosion/irritationNo irritation (rabbit). US EPA Test Guideline OPP 81-5. **Serious eye damage/eye irritation**Non-irritating (rabbit). US EPA Test Guideline OPP 81-4.

Sensitization Sensitizer, OECD Test Guideline 406

Negative in Chinese hamster ovary cells. (Method a.o. Dir. 87/302/EEC Part B).

Carcinogenicity

No indications of a carcinogenic effect in rats (method EPA 83-5). Female mice at 50, 200 and 600 ppm had significant higher incidence of combined lung adenomas and carcinomas,

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hepatocellular adenomas and carcinomas, which were dose-related but not significant in number. Male mice had increased incidence of benign hemangiopericytomas in the urinary bladder (method EPA 83-2).

Reproductive toxicity

No effects on fertility are found in animal tests (method EPA 83-4). No teratogenic (birth

defects causing) effects are found (method EPA 83-3).

No specific effects after single exposure have been observed. STOT - single exposure STOT - repeated exposure

Target Organs: Nervous system.

Repeated exposure may cause neurotoxic effects. Tremors were observed in a 90-day oral

test with rats at exposure levels of 7 - 9 mg/kg bw/day (method EPA 82-1).

On contact, bifenthrin can cause feelings of burning, tingling or numbness in exposed areas **Symptoms**

(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.

Aspiration hazard The substance does not present an aspiration pneumonia hazard.

Section 12: ECOLOGICAL INFORMATION

12.1. Toxicity

Ecotoxicity Very toxic to aquatic life with long lasting effects

Bifenthrin (82657-04-3)					
Active Ingredient(s)	Duration	Species	Value	Units	
	14-day LC50	Eisenia fetida	> 8	mg/kg soil	
	LD50	Bobwhite quail	1800	mg/kg	
	96 h LC50	Salmo gairdneri	0.1	μg/L	
	48 h EC50	Daphnia magna	0.11	μg/L	
	21 d NOEC	Daphnia magna	0.00095	μg/L	
	21 d NOEC	Pimephales promelas	1.86	μg/L	
	30 d NOEC	Salmo gairdneri	0.012	μg/L	

12.2. Persistence and degradability

Not readily biodegradable. Primary half-life in soil is generally measured to be over 100 days.

12.3. Bioaccumulative potential

See section 9 for n-octanol/water partition coefficient. Bifenthrin has the potential to bioaccumulate, but in view of its high acute toxicity to aquatic organisms, bioaccumulation is not relevant for these species.

12.4. Mobility in soil

Mobility in soil

Not mobile in soil.

12.5. Results of PBT and vPvB assessment

The substance does not meet the criteria for being PBT or vPvB.

12.6. Other adverse effects

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None known.

Section 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Residual waste

Remaining quantities of the material and empty but unclean packaging should be regarded as hazardous waste. Dispose of as hazardous waste in compliance with local and national regulations.

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.

Contaminated containers and packages

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.
- 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

IMDG/IMO

14.1 UN/ID no 3349

14.2 Proper Shipping Name Pyrethroid pesticide, solid, toxic (Bifenthrin)

14.3 Hazard class 6.1
14.4 Packing Group III
14.5 Marine Pollutant Yes
Environmental Hazard Yes

14.6 Special ProvisionsDo not release to the environment

14.7 Transport in bulk according to This product is not transported in bulk containers.

Annex II of MARPOL 73/78 and the

IBC Code

RID

14.1 UN/ID no 3349

14.2 Proper Shipping Name Pyrethroid pesticide, solid, toxic (Bifenthrin)

14.3 Hazard class6.114.4 Packing GroupIII14.5 Environmental HazardYes

14.6 Special ProvisionsDo not release to the environment

ADR/RID

14.1 UN/ID no 3349

14.2 Proper Shipping Name Pyrethroid pesticide, solid, toxic (Bifenthrin)

14.3 Hazard class 6.1 **14.4 Packing Group** III

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14.5 Environmental Hazard Yes

14.6 Special ProvisionsDo not release to the environment

ICAO/IATA

14.1 UN/ID no 3349

14.2 Proper Shipping Name Pyrethroid pesticide, solid, toxic (Bifenthrin)

14.3 Hazard class6.114.4 Packing GroupIII14.5 Environmental HazardYes

14.6 Special ProvisionsDo not release to the environment

Section 15: REGULATORY INFORMATION

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

European Union

Take note of Directive 92/85/EC on the protection of pregnant and breastfeeding women at work The employer shall assess any risks to the safety or health and anypossible effect on the pregnancies or breastfeeding of workers anddecide what measures should be taken (Dir. 92/85/EEC).

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

Authorizations and/or restrictions on use:

This product does not contain substances subject to authorization (Regulation (EC) No. 1907/2006 (REACH), Annex XIV) This product does not contain substances subject to restriction (Regulation (EC) No. 1907/2006 (REACH), Annex XVII)

Persistent Organic Pollutants

Not Applicable

Dangerous substance category per Seveso Directive (2012/18/EU)

Toxic

Dangerous for the environment

Ozone-depleting substances (ODS) regulation (EC) 1005/2009

Not Applicable

International Inventories

Chemical name	TSCA (United States)	DSL (Canada)	EINECS/ELINC S (Europe)	ENCS (Japan)	China (IECSC)	KECL (Korea)	PICCS (Philippines)	AICS (Australia)
Bifenthrin 82657-04-3				Х	X	X		

15.2. Chemical safety assessment

A chemical safety assessment is not required to be included for this product.

Section 16: OTHER INFORMATION

Key or legend to abbreviations and acronyms used in the safety data sheet

Full text of H-Statements referred to under sections 2 and 3

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H300 - Fatal if swallowed H331 - Toxic if inhaled

H317 - May cause an allergic skin reaction

H351 - Suspected of causing cancer

H372 - Causes damage to organs through prolonged or repeated exposure

H410 - Very toxic to aquatic life with long lasting effects

EUH401 - To avoid risks to human health and the environment, comply with the instructions for use

Legend

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road

CAS: CAS (Chemical Abstracts Service)

Ceiling: Maximum limit value:

DNEL: Derived No Effect Level (DNEL)

EINECS: EINECS (European Inventory of Existing Chemical Substances)

GHS: Globally Harmonized System (GHS)

IATA: International Air Transport Association (IATA)
ICAO: International Civil Aviation Organization

IMDG: International Maritime Dangerous Goods (IMDG)

LC50: LC50 (lethal concentration)

LD50: LD50 (lethal dose)

PBT: Persistent, Bioaccumulative, and Toxic (PBT) Chemicals

RID: Regulations Concerning the International Transport of Dangerous Goods by Rail

STEL: Short term exposure limit

SVHC: Substances of Very High Concern for Authorization:

TWA: time weighted average

vPvB: very Persistent and very Bioaccumulative

Classification procedure

Annex VI of Regulation (EC) No 1272/2008 (CLP Regulation)

Key literature references and sources for data

Data are available from published literature and can be found several places.

Revision date: 2020-04-14

Reason for revision: Not applicable.

Training Advice 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.

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End of Safety Data Sheet