FUSILADE FORTE

Version	Revision Date:	SDS Number:	This version replaces all previous versions.
3.1	27.12.2021	S165026034	

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

1.1 Product identifier

Trade name : FUSILADE FORTE

Design code : A12715A

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

Use of the Substance/Mixture : Herbicide

1.3 Details of the supplier of the safety data sheet

Company : Syngenta SA (Pty) Ltd
P.O. Box 1044, No. 4 Krokodildrift Avenue
Brits 0250
South Africa

Telephone : +27 (0)12 2506 300

Telefax : -

E-mail address of person responsible for the SDS : sds.ame@syngenta.com

1.4 Emergency telephone number

Emergency telephone number : +27 (0) 82 446 8946 (Griffon)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Reproductive toxicity, Category 2	H361d: Suspected of damaging the unborn child.
Short-term (acute) aquatic hazard, Category 1	H400: Very toxic to aquatic life.
Long-term (chronic) aquatic hazard, Category 2	H411: Toxic to aquatic life with long lasting effects.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms :

Signal word : Warning

Hazard statements : H317 May cause an allergic skin reaction.
H361d Suspected of damaging the unborn child.
H410 Very toxic to aquatic life with long lasting effects.

Precautionary statements :

Prevention:

P201 Obtain special instructions before use.
P261 Avoid breathing mist or vapours.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection/ hearing protection.

Response:

P308 + P313 IF exposed or concerned: Get medical advice/ attention.
P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.
P391 Collect spillage.

Hazardous components which must be listed on the label:
fluazifop-P-butyl (ISO)

2.3 Other hazards

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

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Components

Chemical name	CAS-No. EC-No. Index-No. Registration number	Classification	Concentration (% w/w)
(E)-18-ethoxyoctadec-3-ene	68920-66-1 500-236-9 01-2119489407-26	Skin Irrit. 2; H315 Aquatic Acute 1; H400 Aquatic Chronic 2; H411 M-Factor (Acute aquatic toxicity): 1	>= 25 - < 30
Distillates (petroleum), solvent-dewaxed heavy paraffinic; Baseoil — unspecified	64742-65-0 265-169-7 649-474-00-6 01-2119471299-27	Asp. Tox. 1; H304	>= 10 - < 20
fluazifop-P-butyl (ISO)	79241-46-6 607-305-00-3	Skin Sens. 1; H317 Repr. 2; H361d Aquatic Acute 1; H400	>= 10 - < 20

		Aquatic Chronic 1; H410 M-Factor (Acute aquatic toxicity): 1 M-Factor (Chronic aquatic toxicity): 1	
octan-1-ol	111-87-5 203-917-6 01-2119486978-10	Eye Irrit. 2; H319 Aquatic Chronic 3; H412	>= 10 - < 20
calcium dodecylbenzenesulphonate	26264-06-2 247-557-8	Skin Irrit. 2; H315 Eye Dam. 1; H318 Aquatic Chronic 3; H412	>= 1 - < 2,5
2-methylpropan-1-ol	78-83-1 201-148-0 603-108-00-1 01-2119484609-23	Flam. Liq. 3; H226 Skin Irrit. 2; H315 Eye Dam. 1; H318 STOT SE 3; H336 (Central nervous system) STOT SE 3; H335 (Respiratory system)	>= 1 - < 3
toluene	108-88-3 203-625-9 601-021-00-3 01-2119471310-51	Flam. Liq. 2; H225 Skin Irrit. 2; H315 Repr. 2; H361d STOT SE 3; H336 (Central nervous system) STOT RE 2; H373 Asp. Tox. 1; H304	>= 0,1 - < 1

For explanation of abbreviations see section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

General advice : Have the product container, label or Safety Data Sheet with you when calling the emergency number, a poison control center or physician, or going for treatment.

If inhaled : Move the victim to fresh air.
If breathing is irregular or stopped, administer artificial respiration.
Keep patient warm and at rest.
Call a physician or poison control centre immediately.

In case of skin contact : Take off all contaminated clothing immediately.
Wash off immediately with plenty of water.

If skin irritation persists, call a physician.
Wash contaminated clothing before re-use.

In case of eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
Remove contact lenses.
Immediate medical attention is required.

If swallowed : If swallowed, seek medical advice immediately and show this container or label.
Do not induce vomiting: contains petroleum distillates and/or aromatic solvents.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms : Aspiration may cause pulmonary oedema and pneumonitis.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment : There is no specific antidote available.
Treat symptomatically.
Do not induce vomiting: contains petroleum distillates and/or aromatic solvents.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media : Extinguishing media - small fires
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
Extinguishing media - large fires
Alcohol-resistant foam

Unsuitable extinguishing media : Do not use a solid water stream as it may scatter and spread fire.

5.2 Special hazards arising from the substance or mixture

Specific hazards during firefighting : As the product contains combustible organic components, fire will produce dense black smoke containing hazardous products of combustion (see section 10).
Exposure to decomposition products may be a hazard to health.
Flash back possible over considerable distance.

5.3 Advice for firefighters

Special protective equipment for firefighters : Wear full protective clothing and self-contained breathing apparatus.

Further information : Do not allow run-off from fire fighting to enter drains or water courses.
Cool closed containers exposed to fire with water spray.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions : Refer to protective measures listed in sections 7 and 8.
Keep people away from and upwind of spill/leak.
Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.
Remove all sources of ignition.
Pay attention to flashback.

6.2 Environmental precautions

Environmental precautions : Prevent further leakage or spillage if safe to do so.
Do not flush into surface water or sanitary sewer system.
If the product contaminates rivers and lakes or drains inform respective authorities.

6.3 Methods and material for containment and cleaning up

Methods for cleaning up : Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).
Clean contaminated surface thoroughly.
Clean with detergents. Avoid solvents.
Retain and dispose of contaminated wash water.

6.4 Reference to other sections

For disposal considerations see section 13., Refer to protective measures listed in sections 7 and 8.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling : Avoid contact with skin and eyes.
When using do not eat, drink or smoke.
Use only in an area containing flame proof equipment.
Take precautionary measures against static discharges.
For personal protection see section 8.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers : Keep containers tightly closed in a dry, cool and well-ventilated place. Keep out of the reach of children. Keep away from combustible material. Keep in an area equipped with sprinklers. Keep away from food, drink and animal feedingstuffs. No smoking.

7.3 Specific end use(s)

Specific use(s) : Refer to protective measures listed in sections 7 and 8.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure Limits

Components	CAS-No.	Value type (Form of exposure)	Control parameters	Basis
fluazifop-P-butyl (ISO)	79241-46-6	TWA	0,1 mg/m3	Syngenta
2-methylpropan-1-ol	78-83-1	TWA OEL-RL	50 ppm 150 mg/m3	ZA OEL
	Further information: Recommended Limit			
		STEL OEL-RL	75 ppm 225 mg/m3	ZA OEL
	Further information: Recommended Limit			
toluene	108-88-3	TWA OEL-RL	50 ppm 188 mg/m3	ZA OEL
	Further information: Absorption through the skin, Recommended Limit			
		STEL OEL-RL	150 ppm 560 mg/m3	ZA OEL
	Further information: Absorption through the skin, Recommended Limit			
		TWA	50 ppm 192 mg/m3	2006/15/EC
		STEL	100 ppm 384 mg/m3	2006/15/EC

Biological occupational exposure limits

Substance name	CAS-No.	Control parameters	Sampling time	Basis
toluene	108-88-3	Hippuric acid: 2.5 g/g creatinine (Urine)	End of shift	ZA BEI
		Toluene: 1 mg/l (venous blood)	End of shift	ZA BEI
		o-Cresol: 1 mg/g Creatinine (Urine)	End of shift	ZA BEI

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

Substance name	End Use	Exposure routes	Potential health effects	Value
(E)-18-ethoxyoctadec-3-ene	Workers	Inhalation	Long-term systemic effects	294 mg/m3
	Workers	Dermal	Long-term systemic effects	2080 mg/kg
	Consumers	Inhalation	Long-term systemic effects	87 mg/m3
	Consumers	Dermal	Long-term systemic effects	1250 mg/kg
	Consumers	Oral	Long-term systemic	25 mg/kg

			effects	
octan-1-ol	Workers	Dermal	Short-term exposure, Systemic effects	125 mg/kg
	Workers	Inhalation	Short-term exposure, Systemic effects	220 mg/m3
	Workers	Dermal	Long-term systemic effects	125 mg/kg
	Workers	Inhalation	Long-term systemic effects	220 mg/m3
	Consumers	Dermal	Short-term exposure, Systemic effects	75 mg/kg
	Consumers	Inhalation	Short-term exposure, Systemic effects	65 mg/m3
	Consumers	Oral	Short-term exposure, Systemic effects	75 mg/kg
	Consumers	Dermal	Long-term systemic effects	75 mg/kg
	Consumers	Inhalation	Long-term systemic effects	65 mg/m3
	Consumers	Oral	Long-term systemic effects	75 mg/kg
calcium dodecylbenzenesulphonate	Workers	Dermal	Long-term systemic effects	1,7 mg/kg
	Consumers	Dermal	Acute systemic effects	85 mg/kg
	Consumers	Oral	Long-term local effects	89 mg/kg
2-methylpropan-1-ol	Workers	Inhalation	Long-term systemic effects, Long-term local effects	310 mg/m3
	Consumers	Inhalation	Long-term systemic effects, Long-term local effects	55 mg/m3
	Consumers	Oral	Long-term systemic effects, Long-term local effects	25 mg/kg
toluene	Workers	Inhalation	Long-term systemic effects	192 mg/m3
	Workers	Dermal	Long-term systemic effects	384 mg/kg
	Workers	Inhalation	Acute local effects	384 mg/m3
	Workers	Inhalation	Acute systemic effects	384 mg/m3
	Workers	Inhalation	Long-term local effects	192 mg/m3
	Consumers	Oral	Long-term systemic effects	8,13 mg/kg
	Consumers	Dermal	Long-term systemic effects	226 mg/kg
	Consumers	Inhalation	Acute systemic effects	226 mg/m3

	Consumers	Inhalation	Acute local effects	226 mg/m3
	Consumers	Inhalation	Long-term local effects	56,5 mg/m3
	Consumers	Inhalation	Long-term systemic effects	56,5 mg/m3

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

Substance name	Environmental Compartment	Value
(E)-18-ethoxyoctadec-3-ene	Fresh water	0,007 mg/l
	Marine water	0,001 mg/l
	Sewage treatment plant	10 g/l
	Fresh water sediment	22,79 mg/kg
	Marine sediment	2,28 mg/kg
	Soil	1 mg/kg
	Freshwater - intermittent	0,1 mg/l
octan-1-ol	Fresh water	0,2 mg/l
	Marine water	0,02 mg/l
	Fresh water sediment	2,1 mg/kg
	Marine sediment	0,21 mg/kg
	Soil	1,6 mg/kg
calcium dodecylbenzenesulphonate	Fresh water	0,023 mg/l
	Marine water	0,0023 mg/l
	Intermittent use/release	0,01 mg/l
	Fresh water sediment	0,174 mg/kg
	Marine sediment	0,0174 mg/kg
	Sewage treatment plant	3 mg/kg
	Soil	0,62 mg/kg
2-methylpropan-1-ol	Fresh water	0,4 mg/l
	Sewage treatment plant	10 mg/l
	Soil	0,0699 mg/kg
	Marine sediment	0,152 mg/kg
	Fresh water sediment	1,52 mg/kg
	Marine water	0,04 mg/l
toluene	Fresh water	0,68 mg/l
	Marine sediment	16,39 mg/kg
	Sewage treatment plant	13,61 mg/l
	Intermittent release	0,68 mg/l
	Marine water	0,68 mg/l
	Fresh water sediment	16,39 mg/kg
	Soil	2,89 mg/kg

8.2 Exposure controls

Engineering measures

Containment and/or segregation is the most reliable technical protection measure if exposure cannot be eliminated.

The extent of these protection measures depends on the actual risks in use.

Maintain air concentrations below occupational exposure standards.
Where necessary, seek additional occupational hygiene advice.

Personal protective equipment

Eye protection	:	No special protective equipment required.
Hand protection		
Material	:	Nitrile rubber
Break through time	:	> 480 min
Glove thickness	:	0,5 mm
Remarks	:	Wear protective gloves. The choice of an appropriate glove does not only depend on its material but also on other quality features and is different from one producer to the other. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. The break through time depends amongst other things on the material, the thickness and the type of glove and therefore has to be measured for each case. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.
Skin and body protection	:	Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place. Remove and wash contaminated clothing before re-use. Wear as appropriate: Impervious clothing
Respiratory protection	:	No personal respiratory protective equipment normally required. When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.
Protective measures	:	The use of technical measures should always have priority over the use of personal protective equipment. When selecting personal protective equipment, seek appropriate professional advice.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance	:	clear to slightly turbid, liquid
Colour	:	light brown to dark brown
Odour	:	characteristic
Odour Threshold	:	No data available
pH	:	4 - 8 Concentration: 1 % w/v

Melting point/range	:	No data available
Boiling point/boiling range	:	No data available
Flash point	:	86 °C Method: Pensky-Martens closed cup
Evaporation rate	:	No data available
Flammability (solid, gas)	:	No data available
Upper explosion limit / Upper flammability limit	:	No data available
Lower explosion limit / Lower flammability limit	:	No data available
Vapour pressure	:	No data available
Relative vapour density	:	No data available
Density	:	0,936 g/cm3 (40 °C) 0,948 g/cm3 (25 °C)
Solubility(ies) Solubility in other solvents	:	Solvent: Water
Partition coefficient: n-octanol/water	:	No data available
Auto-ignition temperature	:	265 °C
Decomposition temperature	:	No data available
Viscosity Viscosity, dynamic	:	54,1 - 54,8 mPa.s (20 °C) 22,1 - 22,4 mPa.s (40 °C)
Viscosity, kinematic	:	22 mm2/s (40 °C)
Explosive properties	:	Not explosive
Oxidizing properties	:	The substance or mixture is not classified as oxidizing.

9.2 Other information

Surface tension	:	32,4 mN/m, 20 °C
Particle size	:	No data available

SECTION 10: Stability and reactivity

10.1 Reactivity

None reasonably foreseeable.

10.2 Chemical stability

Stable under normal conditions.

10.3 Possibility of hazardous reactions

Hazardous reactions : No dangerous reaction known under conditions of normal use.

10.4 Conditions to avoid

Conditions to avoid : No decomposition if used as directed.

10.5 Incompatible materials

Materials to avoid : None known.

10.6 Hazardous decomposition products

Hazardous decomposition products : No hazardous decomposition products are known.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Information on likely routes of exposure : Ingestion
Inhalation
Skin contact
Eye contact

Acute toxicity

Product:

Acute oral toxicity : LD50 (Rat, male and female): > 2.000 mg/kg
Assessment: The substance or mixture has no acute oral toxicity

Acute dermal toxicity : LD50 (Rat, male and female): > 4.000 mg/kg
Assessment: The substance or mixture has no acute dermal toxicity

Components:

fluazifop-P-butyl (ISO):

Acute oral toxicity : LD50 (Rat, female): 2.451 mg/kg
Assessment: The component/mixture is minimally toxic after single ingestion.

Acute inhalation toxicity : LC50 (Rat, male and female): > 5,2 mg/l

Exposure time: 4 h
Test atmosphere: dust/mist
Assessment: The substance or mixture has no acute inhalation toxicity

Acute dermal toxicity : LD50 (Rabbit, male and female): > 2.110 mg/kg
Assessment: The substance or mixture has no acute dermal toxicity

2-methylpropan-1-ol:

Acute oral toxicity : LD50 (Rat): 2.830 - 3.350 mg/kg

Acute inhalation toxicity : LC50 (Rat): > 24,6 mg/l
Exposure time: 4 h
Test atmosphere: vapour
Assessment: The substance or mixture has no acute inhalation toxicity

Acute dermal toxicity : LD50 (Rabbit): > 2.000 - 2.460 mg/kg

Skin corrosion/irritation

Product:

Species : Rabbit
Result : Mild skin irritation

Components:

(E)-18-ethoxyoctadec-3-ene:

Species : Rabbit
Result : Irritating to skin.

fluazifop-P-butyl (ISO):

Species : Rabbit
Result : No skin irritation

calcium dodecylbenzenesulphonate:

Result : Irritating to skin.

2-methylpropan-1-ol:

Result : Irritating to skin.

toluene:

Species : Rabbit
Result : Irritating to skin.

Serious eye damage/eye irritation

Product:

Species : Rabbit
Result : No eye irritation

Components:

fluazifop-P-butyl (ISO):

Species : Rabbit
Result : No eye irritation

octan-1-ol:

Species : Rabbit
Result : Irritation to eyes, reversing within 21 days

calcium dodecylbenzenesulphonate:

Result : Irreversible effects on the eye

2-methylpropan-1-ol:

Result : Risk of serious damage to eyes.

Respiratory or skin sensitisation

Product:

Test Type : Buehler Test
Species : Guinea pig
Result : May cause sensitisation by skin contact.

Components:

fluazifop-P-butyl (ISO):

Species : Mouse
Result : May cause sensitisation by skin contact.

2-methylpropan-1-ol:

Species : Guinea pig
Result : Did not cause sensitisation on laboratory animals.
Remarks : Information given is based on data obtained from similar substances.

Germ cell mutagenicity

Components:

(E)-18-ethoxyoctadec-3-ene:

Germ cell mutagenicity- : In vitro tests did not show mutagenic effects

Assessment

fluazifop-P-butyl (ISO):

Germ cell mutagenicity-Assessment : Animal testing did not show any mutagenic effects.

Carcinogenicity

Components:

Distillates (petroleum), solvent-dewaxed heavy paraffinic; Baseoil — unspecified:

Carcinogenicity - Assessment : Classified based on DMSO extract content < 3% (Regulation (EC) 1272/2008, Annex VI, Part 3, Note L)

fluazifop-P-butyl (ISO):

Carcinogenicity - Assessment : No evidence of carcinogenicity in animal studies.

Reproductive toxicity

Components:

fluazifop-P-butyl (ISO):

Reproductive toxicity - Assessment : Embryo/foetoxic effects have been reported in rats.
,Developmental neurotoxicity has been observed in the absence of maternal toxicity.
,Some evidence of adverse effects on development, based on animal experiments.

toluene:

Reproductive toxicity - Assessment : Some evidence of adverse effects on development, based on animal experiments.

STOT - single exposure

Components:

2-methylpropan-1-ol:

Assessment : The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with respiratory tract irritation., The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with narcotic effects.

toluene:

Assessment : The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with narcotic effects.

STOT - repeated exposure

Components:

toluene:

Target Organs	:	Central nervous system
Assessment	:	The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 2.

Repeated dose toxicity

Components:

fluazifop-P-butyl (ISO):

Remarks	:	No adverse effect has been observed in chronic toxicity tests.

Aspiration toxicity

Components:

Distillates (petroleum), solvent-dewaxed heavy paraffinic; Baseoil — unspecified:

May be fatal if swallowed and enters airways.

toluene:

May be fatal if swallowed and enters airways.

SECTION 12: Ecological information

12.1 Toxicity

Product:

Toxicity to algae/aquatic plants	:	ErC50 (Raphidocelis subcapitata (freshwater green alga)): 1,2 mg/l Exposure time: 72 h NOEC (Raphidocelis subcapitata (freshwater green alga)): 0,13 mg/l End point: Growth rate Exposure time: 72 h EC10 (Raphidocelis subcapitata (freshwater green alga)): 0,42 mg/l End point: Growth rate Exposure time: 72 h

Components:

(E)-18-ethoxyoctadec-3-ene:

Toxicity to fish	:	LC50 (Fish): > 1 - < 10 mg/l

Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Invertebrates): > 1 - < 10 mg/l
Toxicity to algae/aquatic plants	:	EC50 (algae): <= 1 mg/l Exposure time: 72 h Remarks: Information taken from reference works and the literature.
M-Factor (Acute aquatic toxicity)	:	1
Toxicity to fish (Chronic toxicity)	:	NOEC: > 0,1 - < 1 mg/l Exposure time: 30 d Species: Pimephales promelas (fathead minnow) Remarks: Information taken from reference works and the literature.
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	NOEC: > 0,01 - < 0,1 mg/l Exposure time: 21 d Species: Daphnia magna (Water flea)

Ecotoxicology Assessment

Acute aquatic toxicity	:	Very toxic to aquatic life.
Chronic aquatic toxicity	:	Toxic to aquatic life with long lasting effects.

fluazifop-P-butyl (ISO):

Toxicity to fish	:	LC50 (Oncorhynchus mykiss (rainbow trout)): 1,41 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): > 1 mg/l Exposure time: 48 h EC50 (Americamysis): 0,54 mg/l Exposure time: 96 h
Toxicity to algae/aquatic plants	:	ErC50 (Raphidocelis subcapitata (freshwater green alga)): 1,8 mg/l Exposure time: 96 h NOEC (Raphidocelis subcapitata (freshwater green alga)): 1,8 mg/l End point: Growth rate Exposure time: 96 h ErC50 (Navicula pelliculosa (Freshwater diatom)): 1,4 mg/l Exposure time: 72 h NOEC (Navicula pelliculosa (Freshwater diatom)): 0,34 mg/l End point: Growth rate Exposure time: 72 h

M-Factor (Acute aquatic toxicity)	:	1
Toxicity to fish (Chronic toxicity)	:	NOEC: 0,077 mg/l Exposure time: 32 d Species: Pimephales promelas (fathead minnow) Test Type: Early-life Stage
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	NOEC: 0,25 mg/l Exposure time: 21 d Species: Daphnia magna (Water flea) NOEC: 0,048 mg/l Exposure time: 28 d Species: Americamysis
M-Factor (Chronic aquatic toxicity)	:	1

Ecotoxicology Assessment

Acute aquatic toxicity	:	Very toxic to aquatic life.

octan-1-ol:

Toxicity to fish	:	LC50 (Pimephales promelas (fathead minnow)): 13,3 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 20 mg/l Exposure time: 48 h
Toxicity to algae/aquatic plants	:	ErC50 (Raphidocelis subcapitata (freshwater green alga)): 14 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	NOEC: 1 mg/l Exposure time: 21 d Species: Daphnia magna (Water flea)

calcium dodecylbenzenesulphonate:

Ecotoxicology Assessment

Chronic aquatic toxicity	:	Harmful to aquatic life with long lasting effects.

2-methylpropan-1-ol:

Toxicity to fish	:	LC50 (Pimephales promelas (fathead minnow)): 1.430 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia pulex (Water flea)): 1.100 mg/l Exposure time: 48 h
Toxicity to algae/aquatic	:	EC50 (Raphidocelis subcapitata (freshwater green alga)):

plants		1.799 mg/l Exposure time: 72 h
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	NOEC: 20 mg/l Exposure time: 21 d Species: Daphnia magna (Water flea)

toluene:

Toxicity to fish	:	LC50 (Oncorhynchus mykiss (rainbow trout)): 5,5 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Ceriodaphnia dubia (water flea)): 3,78 mg/l Exposure time: 48 h

12.2 Persistence and degradability

Components:

(E)-18-ethoxyoctadec-3-ene:

Biodegradability	:	Result: Readily biodegradable.

fluazifop-P-butyl (ISO):

Biodegradability	:	Result: Not readily biodegradable.
Stability in water	:	Degradation half life: 1,5 - 1,7 h Remarks: Product is not persistent.

octan-1-ol:

Biodegradability	:	Result: Readily biodegradable.

2-methylpropan-1-ol:

Biodegradability	:	Result: Readily biodegradable.

toluene:

Biodegradability	:	Result: Readily biodegradable.

12.3 Bioaccumulative potential

Components:

fluazifop-P-butyl (ISO):

Bioaccumulation	:	Remarks: Does not bioaccumulate.
Partition coefficient: n-octanol/water	:	log Pow: > 5,3 (25 °C)

toluene:

Bioaccumulation	:	Remarks: Does not bioaccumulate.

12.4 Mobility in soil

Components:

fluazifop-P-butyl (ISO):

Distribution among environmental compartments	:	Remarks: immobile
Stability in soil	:	Dissipation time: < 2 d Percentage dissipation: 50 % (DT50) Remarks: Product is not persistent.

12.5 Results of PBT and vPvB assessment

Product:

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

Components:

(E)-18-ethoxyoctadec-3-ene:

Assessment	:	This substance is not considered to be persistent, bioaccumulating and toxic (PBT).. This substance is not considered to be very persistent and very bioaccumulating (vPvB).

fluazifop-P-butyl (ISO):

Assessment	:	This substance is not considered to be persistent, bioaccumulating and toxic (PBT).. This substance is not considered to be very persistent and very bioaccumulating (vPvB).

octan-1-ol:

Assessment	:	This substance is not considered to be persistent, bioaccumulating and toxic (PBT).. This substance is not considered to be very persistent and very bioaccumulating (vPvB).

2-methylpropan-1-ol:

Assessment	:	This substance is not considered to be persistent, bioaccumulating and toxic (PBT).. This substance is not considered to be very persistent and very bioaccumulating (vPvB).

toluene:

Assessment	:	This substance is not considered to be persistent, bioaccumulating and toxic (PBT).

12.6 Other adverse effects

Product:

Endocrine disrupting potential	:	The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product	:	Where possible recycling is preferred to disposal or incineration. It must undergo special treatment, e.g. at suitable disposal site, to comply with local regulations.
Contaminated packaging	:	Dispose of as unused product.

SECTION 14: Transport information

14.1 UN number

IMDG	:	UN 3082
IATA	:	UN 3082

14.2 UN proper shipping name

IMDG	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (FLUAZIFOP-P-BUTYL)
IATA	:	Environmentally hazardous substance, liquid, n.o.s. (FLUAZIFOP-P-BUTYL)

14.3 Transport hazard class(es)

IMDG	:	9
IATA	:	9

14.4 Packing group

IMDG

Packing group	:	III
Labels	:	9
EmS Code	:	F-A, S-F

IATA (Cargo)

Packing instruction (cargo aircraft)	:	964

Packing instruction (LQ)	:	Y964
Packing group	:	III
Labels	:	Miscellaneous

IATA (Passenger)

Packing instruction (passenger aircraft)	:	964
Packing instruction (LQ)	:	Y964
Packing group	:	III
Labels	:	Miscellaneous

14.5 Environmental hazards

IMDG

Marine pollutant	:	yes

IATA (Passenger)

Environmentally hazardous	:	yes

IATA (Cargo)

Environmentally hazardous	:	yes

14.6 Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

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

Not applicable for product as supplied.

SECTION 15: Regulatory information

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

Other regulations:

None known.

15.2 Chemical safety assessment

A Chemical Safety Assessment is not required for this substance when it is used in the specified applications.

SECTION 16: Other information

Full text of H-Statements

H225	:	Highly flammable liquid and vapour.
H226	:	Flammable liquid and vapour.
H304	:	May be fatal if swallowed and enters airways.
H315	:	Causes skin irritation.
H317	:	May cause an allergic skin reaction.
H318	:	Causes serious eye damage.

H319	:	Causes serious eye irritation.
H335	:	May cause respiratory irritation.
H336	:	May cause drowsiness or dizziness.
H361d	:	Suspected of damaging the unborn child.
H373	:	May cause damage to organs 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.
H412	:	Harmful to aquatic life with long lasting effects.

Full text of other abbreviations

Aquatic Acute	:	Short-term (acute) aquatic hazard
Aquatic Chronic	:	Long-term (chronic) aquatic hazard
Asp. Tox.	:	Aspiration hazard
Eye Dam.	:	Serious eye damage
Eye Irrit.	:	Eye irritation
Flam. Liq.	:	Flammable liquids
Repr.	:	Reproductive toxicity
Skin Irrit.	:	Skin irritation
Skin Sens.	:	Skin sensitisation
STOT RE	:	Specific target organ toxicity - repeated exposure
STOT SE	:	Specific target organ toxicity - single exposure
2006/15/EC	:	Europe. Indicative occupational exposure limit values
ZA BEI	:	South Africa. Hazardous Chemical Substances Regulations, Biological Exposure Indices.
ZA OEL	:	South Africa. Hazardous Chemical Substances Regulations, Occupational Exposure Limits
2006/15/EC / TWA	:	Limit Value - eight hours
2006/15/EC / STEL	:	Short term exposure limit
ZA OEL / TWA OEL-RL	:	Long term occupational exposure limits - recommended limit
ZA OEL / STEL OEL-RL	:	Short term occupational exposure limits - recommended limit

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

Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; SVHC - Substance of very high concern; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

Further information

Classification of the mixture:		**Classification procedure:**
Skin Sens. 1	H317	Based on product data or assessment
Repr. 2	H361d	Calculation method
Aquatic Acute 1	H400	Calculation method
Aquatic Chronic 2	H411	Based on product data or assessment

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

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