SAFETY DATA SHEET

accordance with Annex II of Regulation (EC) No 1907/2006 and its amendment(s)

Product: **MIXLAND+® ZBOP 50 GA F500** Page: 1 / 9

SDS No.: 100152-100 (Version 2.0) Date 02.10.2019 (*Cancel and replace* : 23.11.2018)

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Identification of the product

Identification of the mixture: MIXLAND+® ZBOP 50 GA F500

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

Use of the Substance/Mixture : Vulcanization agent
Product and process orientated Research and development

1.3. Details of the supplier of the safety data sheet

Supplier

MLPC International
209, Avenue Charles Despiau
F-40370 RION-DES-LANDES, FRANCE
Telephone: + 33 (0) 5 58 57 02 00
E-mail address: http://www.mlpc-intl.com
fds@mlpc-intl.com

1.4. Emergency telephone number

+1-703-741-5970 CHEMTREC international emergency phone number (ARKEMA CCN830055)

2. HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008):
Skin irritation, 2, H315
Serious eye damage, 1, H318
Chronic aquatic toxicity, 2, H411

Additional information:
For the full text of the H, EUH-phrases mentioned in this Section, see Section 16.

2.2. Label elements

Label elements (REGULATION (EC) No 1272/2008):

Hazardous components which must be listed on the label:
Phosphorodithioic acid, mixed O,O-bis(2-ethylhexyl and iso-Bu) esters, zinc salts

Hazard pictograms:

Signal word: **Danger**

Hazard statements:
H315 : Causes skin irritation.
H318 : Causes serious eye damage.
H411 : Toxic to aquatic life with long lasting effects.

Precautionary statements:
Prevention:
P264 : Wash skin thoroughly after handling.
P273 : Avoid release to the environment.
P280 : Wear protective gloves or eye protection or face protection.
Response:
P305 + P351 + P338 + P310 : IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.
P391 : Collect spillage.
Disposal:
P501 : Dispose of contents or container to an approved waste disposal plant.

2.3. Other hazards : None.

Other:
Results of PBT and vPvB assessment : Based on the available information, it is not possible to conclude on PBT and vPvB criteria according to REACH regulation, annex XIII.

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.2. Mixtures

Chemical nature of the mixture[1]:
Mixture based on: Polymer and

Hazardous components (accordance with Annex II of Regulation (EC) No 1907/2006 and its amendment(s)) :

Chemical name[1] & REACH Registration Number[2]	EC-No.	CAS-No.	Concentration	Classification REGULATION (EC) No 1272/2008
Phosphorodithioic acid, mixed O,O-bis(2-ethylhexyl and iso-Bu) esters, zinc salts (01-2119948548-22)	270-478-5	68442-22-8	Approximately 50 %	Skin Irrit. 2; H315 Eye Dam. 1; H318 Aquatic Chronic 2; H411

[1]: See chapter 14 for Proper Shipping Name
[2] :See the text of the regulation for applicable exceptions or provisions -

4. FIRST AID MEASURES

4.1. Description of necessary first-aid measures:

General advice:
Take off immediately all contaminated clothing.

Inhalation:
Move to fresh air. Consult a physician.

Skin contact:
Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes.
If skin irritation occurs, seek medical advice/attention.

Eye contact:
Wash well-open eyes immediately, abundantly and thoroughly with water. Consult an ophthalmologist.

Ingestion:
Call a physician immediately. Do not induce vomiting without medical advice. Rinse mouth.

Protection of first-aiders:
If entering a saturated atmosphere, wear a self contained breathing apparatus.

4.2. Most important symptoms/effects, acute and delayed: No data available.

4.3. Indication of immediate medical attention and special treatment needed, if necessary: No data available.

5. FIREFIGHTING MEASURES

5.1. Extinguishing media

Suitable extinguishing media: Water spray, Foam, Dry powder

Unsuitable extinguishing media: All other extinguishants

5.2. Special hazards arising from the substance or mixture:
Thermal decomposition gives :, Nitrogen oxides (NOx), Sulphur oxides, Carbon oxides
Organic acids, Phosphorus compounds, Zinc oxide fumes.

5.3. Advice for firefighters:

Specific methods:
Suppress gases, fumes and/or dust with water spray jet. Remove all sources of ignition.
Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Do not allow run-off from fire fighting to enter drains or water courses. Cool containers/tanks with water spray.

Special protective actions for fire-fighters:
Wear self-contained breathing apparatus and protective suit.

6. ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures:
Avoid contact with skin and eyes and inhalation of dust.
Ventilate the area.

6.2. Environmental precautions:
Do not let product enter drains. Do not contaminate surface water.

6.3. Methods and materials for containment and cleaning up:

Recovery:
Shovel or sweep up. Recover the product and place in a dry labelled container.

Elimination:
Dispose of as hazardous waste in compliance with local and national regulations.

6.4. Reference to other sections: None.

7. HANDLING AND STORAGE

7.1. Precautions for safe handling:

Technical measures/Precautions:
Provide appropriate exhaust ventilation at machinery. Provide showers, eye-baths. In the presence of an ignition source: Dust may form explosive mixture in air.

Safe handling advice:
In case of dust formation, wear a dust mask. Avoid static electricity build up with connection to earth.Avoid spark promoters. Ground/bond container and equipment. These alone may be insufficient to remove static electricity. Keep away from flames and sparks. Remove and wash contaminated clothing before re-use. Use only with adequate ventilation. Smoking, eating and drinking should be prohibited in the application area. Prohibit contact with skin and eyes. For information about personal protective equipment and exposure control for the use of each mixture refer to the attached safety data sheets.

Hygiene measures:
Handle in accordance with good industrial hygiene and safety practice. Avoid contact with the skin and the eyes.
Wash hands after handling. Remove contaminated clothing and protective equipment before entering eating areas.

7.2. Conditions for safe storage, including any incompatibilities:
Store protected from moisture and heat. Protect from light. Keep away from direct sunlight.

Keep in a well-ventilated place.

Incompatible products:
Strong acids Oxidizing agents

Packaging material:
Recommended: Cardboard lined with polyethylene liner, Paper bags lined with polyethylene

7.3. Specific end use(s): None.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters:

Exposure Limit Values

1-Butene, polymer with ethene

Source	Date	Value type	Value (ppm)	Value (mg/m3)	Remarks
ACGIH (US)	03 2015	TWA	–	10	Inhalable particles.
ACGIH (US)	03 2015	TWA	–	3	Respirable particles.

Amorphous silica

Source	Date	Value type	Value (ppm)	Value (mg/m3)	Remarks
OSHA Z3 (US)	2000	TWA	–	20 millions of particles per cubic foot of air	–
OSHA Z3 (US)	2000	TWA	–	0,8	The exposure limit is calculated from the equation, 80/(%SiO2), using a value of 100% SiO2. Lower values of % SiO2 will give higher exposure limits.

Derived No Effect Level (DNEL): PHOSPHORODITHIOIC ACID, MIXED O,O-BIS(2-ETHYLHEXYL AND ISO-BU) ESTERS, ZINC SALTS :

End Use	Inhalation	Ingestion	Skin contact
Workers	8,05 mg/m3 (LT, SE)		11,4 mg/kg
Consumers	1,98 mg/m3	0,24 mg/kg	5,71 mg/kg

LE : Local effects, **SE** : Systemic effects, **LT** : Long term, **ST** : Short term

Predicted No Effect Concentration: PHOSPHORODITHIOIC ACID, MIXED O,O-BIS(2-ETHYLHEXYL AND ISO-BU) ESTERS, ZINC SALTS :

Compartment:	Value:
Water	0,004 mg/l
Water (Intermittent release)	0,045 mg/l
Marine water	0,0046 mg/l
Effects on waste water treatment plants	100 mg/l
Fresh water sediment	0,045 mg/kg dw
Marine sediment	0,005 mg/kg dw
Soil	0,007 mg/kg dw
Oral (Secondary Poisoning)	10,67 mg/kg food

8.2. Exposure controls:

General protective measures: Ensure sufficient air exchange and/or exhaust in work areas
Appropriate engineering controls: Provide appropriate exhaust ventilation at machinery.

Personal protective equipment:
Respiratory protection: Effective dust mask
Hand protection: Impervious gloves
Eye/face protection: Tightly fitting safety goggles
Skin and body protection: Protective suit
Remove and wash contaminated clothing before re-use.

Environmental exposure controls: See chapter 6

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Appearance:
Physical state (20°C): solid
Form: pellets
Colour: light grey
Odour: Characteristic and slight

Olfactory threshold:	No data available.
pH:	No data available.
Melting point/range:	No data available.
Boiling point/boiling range:	No data available.
Flash point:	Active ingredient > 150 °C
Evaporation rate:	No data available.
Flammability (solid, gas):	No data available.
Vapour pressure:	No data available.
Vapour density:	No data available.
Density:	1,61 g/cm3 , at 20 °C
Water solubility:	No data available.
Partition coefficient: n-octanol/water:	PHOSPHORODITHIOIC ACID, MIXED O,O-BIS(2-ETHYLHEXYL AND ISO-BU) ESTERS, ZINC SALTS : log Kow : 1,67 (OECD Test Guideline 107)
Auto-ignition temperature:	No data available.
Decomposition temperature:	No data available.
Viscosity:	No data available.
Explosive properties:	No data available.
Oxidizing properties:	No data available.

9.2. Other data: None.

10. STABILITY AND REACTIVITY

10.1. Reactivity: No data available.

10.2. Chemical stability:
The product is stable under normal handling and storage conditions.

10.3. Possibility of hazardous reactions: No data available.

10.4. Conditions to avoid:
Store protected from moisture and heat. Protect from light. Keep away from direct sunlight.
Keep away from heat and sources of ignition.

10.5. Incompatible materials to avoid:
Strong acids and strong bases

10.6. Hazardous decomposition products:
Nitrogen oxides (NOx), Carbon dioxide (CO_2), Sulphur oxides

11. TOXICOLOGICAL INFORMATION

All available and relevant data on this product and/or the components quoted in section 3 and/or the analogue substances/metabolites have been taken into account for the hazard assessment.

11.1. Information on toxicological effects:

Acute toxicity:

Inhalation:
No data available.

Ingestion: **According to its composition : May be harmful if swallowed.**

PHOSPHORODITHIOIC ACID, MIXED O,O-BIS(2-ETHYLHEXYL AND ISO-BU) ESTERS, ZINC SALTS :
• In animals : LD50/Rat: 2.000 - 5.000 mg/kg

Dermal: **Based on the available information, it is not possible to conclude on the hasard potential of this mixture.**

PHOSPHORODITHIOIC ACID, MIXED O,O-BIS(2-ETHYLHEXYL AND ISO-BU) ESTERS, ZINC SALTS :
• In animals : No mortality/Rat: 2.000 mg/kg (Method: OECD Test Guideline 402) ((Results obtained on a similar product).)

Local effects (Corrosion / Irritation / Serious eye damage):

Skin contact: **According to its composition : Causes skin irritation.**

PHOSPHORODITHIOIC ACID, MIXED O,O-BIS(2-ETHYLHEXYL AND ISO-BU) ESTERS, ZINC SALTS :
• In animals : Skin irritation (OECD Test Guideline 404, Rabbit, Exposure time: 4 h) ((Results obtained on a similar product).)

Eye contact: **According to its composition : Causes serious eye damage.**

PHOSPHORODITHIOIC ACID, MIXED O,O-BIS(2-ETHYLHEXYL AND ISO-BU) ESTERS, ZINC SALTS :
• In animals : Severely irritating, or even corrosive, to eyes (Rabbit)

Respiratory or skin sensitisation:

Inhalation: No data available.

Skin contact: **Based on the available information, it is not possible to conclude on the hasard potential of this mixture.**

PHOSPHORODITHIOIC ACID, MIXED O,O-BIS(2-ETHYLHEXYL AND ISO-BU) ESTERS, ZINC SALTS :
• In animals : Not a skin sensitizer (Method: OECD Test Guideline 406 Guinea pig maximization test, Guinea pig) ((Results obtained on a similar product).)

CMR effects :

Mutagenicity: **Based on the available information, it is not possible to conclude on the hasard potential of this mixture.**

In vitro

PHOSPHORODITHIOIC ACID, MIXED O,O-BIS(2-ETHYLHEXYL AND ISO-BU) ESTERS, ZINC SALTS :
In vitro gene mutation study in bacteria: Inactive (Method: OECD Test Guideline 471) ((Results obtained on a similar product).)
In vitro mammalian cell gene mutation test: Active, Inactive (Method: OECD Test Guideline 476) ((Results obtained on a similar product).)

In vivo

PHOSPHORODITHIOIC ACID, MIXED O,O-BIS(2-ETHYLHEXYL AND ISO-BU) ESTERS, ZINC SALTS :
In vivo micronucleus test: Inactive (Method: OECD Test Guideline 474) ((Results obtained on a similar product).)

Carcinogenicity: No data available.

Reproductive toxicity:

Fertility: **Based on the available information, it is not possible to conclude on the hasard potential of this mixture.**

PHOSPHORODITHIOIC ACID, MIXED O,O-BIS(2-ETHYLHEXYL AND ISO-BU) ESTERS, ZINC SALTS :
• In animals : Reproductive/Developmental Effects Screening Assay: No toxicity to reproduction.
NOAEL (Parental toxicity): 40 mg/kg bw/day
NOAEL (Fertility): > 160 mg/kg bw/day
NOAEL (Developmental Toxicity): > 160 mg/kg bw/day
(Method: OECD Test Guideline 422, Rat, By oral route) ((Results obtained on a similar product).)

Specific target organ toxicity :

Single exposure : No data available.

Repeated exposure: **Based on the available information, it is not possible to conclude on the hasard potential of this mixture.**

PHOSPHORODITHIOIC ACID, MIXED O,O-BIS(2-ETHYLHEXYL AND ISO-BU) ESTERS, ZINC SALTS :
• In animals : By oral route: Local irritation of the stomach
NOAEL= 40 mg/kg, LOAEL= 160 mg/kg (Method: OECD Test Guideline 422, Rat, 28 d) ((Results obtained on a similar product).)
No adverse systemic effects reported.
NOAEL= > 160 mg/kg

Aspiration hazard:

Not applicable

12. ECOLOGICAL INFORMATION

Ecotoxicology Assessment: All available and relevant data on this product and/or the components quoted in section 3 and/or the analogue substances/metabolites have been taken into account for the hazard assessment.

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

12.1. Acute toxicity :

Fish: **From its composition, it must be considered as: Toxic to fish.**

PHOSPHORODITHIOIC ACID, MIXED O,O-BIS(2-ETHYLHEXYL AND ISO-BU) ESTERS, ZINC SALTS :
May be considered as comparable to a similar product for which experimental results are:
LL50, 96 h (Oncorhynchus mykiss (rainbow trout)) : 4,5 mg/l (Method: OECD Test Guideline 203)

Aquatic invertebrates: **From its composition, it must be considered as: Harmful to daphnia.**

PHOSPHORODITHIOIC ACID, MIXED O,O-BIS(2-ETHYLHEXYL AND ISO-BU) ESTERS, ZINC SALTS :
May be considered as comparable to a similar product for which experimental results are:
EL50, 48 h (Daphnia magna (Water flea)) : 23 mg/l (Method: OECD Test Guideline 202)

Aquatic plants: **From its composition, it must be considered as: Harmful to algae.**

PHOSPHORODITHIOIC ACID, MIXED O,O-BIS(2-ETHYLHEXYL AND ISO-BU) ESTERS, ZINC SALTS :
May be considered as comparable to a similar product for which experimental results are:
ErL50, 72 h (Scenedesmus subspicatus) : 24 mg/l (Method: OECD Test Guideline 201)

Microorganisms:

PHOSPHORODITHIOIC ACID, MIXED O,O-BIS(2-ETHYLHEXYL AND ISO-BU) ESTERS, ZINC SALTS :
May be considered as comparable to a similar product for which experimental results are:
EC50, 3 h (Activated sludge) : > 10.000 mg/l (Method: OECD Test Guideline 209)

Aquatic toxicity / Long term toxicity:

Aquatic invertebrates:

PHOSPHORODITHIOIC ACID, MIXED O,O-BIS(2-ETHYLHEXYL AND ISO-BU) ESTERS, ZINC SALTS :
May be considered as comparable to a similar product for which experimental results are:
NOEC, 21 d (Daphnia magna (Water flea)) : 0,4 mg/l (Method: OECD Test Guideline 211)

Aquatic plants:

PHOSPHORODITHIOIC ACID, MIXED O,O-BIS(2-ETHYLHEXYL AND ISO-BU) ESTERS, ZINC SALTS :
May be considered as comparable to a similar product for which experimental results are:
NOEC, 72 h (Scenedesmus subspicatus) : 10 mg/l (Method: OECD Test Guideline 201)

12.2. Persistence and degradability :

Biodegradation (In water): **Based on the available information, it is not possible to conclude on biodegradability of this mixture.**

PHOSPHORODITHIOIC ACID, MIXED O,O-BIS(2-ETHYLHEXYL AND ISO-BU) ESTERS, ZINC SALTS :
May be considered as comparable to a similar product for which experimental results are:
Not readily biodegradable.: 1,5 % after 28 d

12.3. Bioaccumulative potential :

Bioaccumulation: **Based on the available information, it is not possible to conclude on the bioaccumulation potential of this mixture.**

PHOSPHORODITHIOIC ACID, MIXED O,O-BIS(2-ETHYLHEXYL AND ISO-BU) ESTERS, ZINC SALTS :
Partition coefficient: n-octanol/water: log Kow : 1,67 (Method: OECD Test Guideline 107)

12.4. Mobility in soil - Distribution among environmental compartments: No data available.

12.5. Results of PBT and vPvB assessment :
Based on the available information, it is not possible to conclude on PBT and vPvB criteria according to REACH regulation, annex XIII.

12.6. Other adverse effects: None known.

13. DISPOSAL CONSIDERATIONS

13.1. Waste treatment:

Disposal of product: Destroy the product by incineration (in accordance with local and national regulations).

Disposal of packaging: Destroy packaging by incineration at an approved waste disposal site (in accordance with local and national regulations).

14. TRANSPORT INFORMATION

Regulation	14.1. UN number	14.2.UN proper shipping name	14.3.Class*	Label	14.4. PG*	14.5. Environmental hazards	14.6. Special precautions for user
ADR	3077	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (PHOSPHORODITHIOIC ACID, MIXED O,O-BIS(2-ETHYLHEXYL AND ISO-BU) ESTERS, ZINC SALTS)	9	9	III	yes	
ADN	3077	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (PHOSPHORODITHIOIC ACID, MIXED O,O-BIS(2-ETHYLHEXYL AND ISO-BU) ESTERS, ZINC SALTS)	9	9	III	yes	
RID	3077	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (PHOSPHORODITHIOIC ACID, MIXED O,O-BIS(2-ETHYLHEXYL AND ISO-BU) ESTERS, ZINC SALTS)	9	9	III	yes	
IATA Cargo	3077	Environmentally hazardous substance, solid, n.o.s. (Phosphorodithioic acid, mixed O,O-bis(2-ethylhexyl and isobutyl) esters, zinc salts)	9	9MI	III	yes	
IATA Passenger	3077	Environmentally hazardous substance, solid, n.o.s. (Phosphorodithioic acid, mixed O,O-bis(2-ethylhexyl and isobutyl) esters, zinc salts)	9	9MI	III	yes	
IMDG	3077	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (PHOSPHORODITHIOIC ACID, MIXED O,O-BIS(2-ETHYLHEXYL AND ISO-BU) ESTERS, ZINC SALTS)	9	9	III	Marine pollutant	EmS Number: F-A, S-F Mark: MP

*Description: 14.3. Transport hazard class(es)
14.4. Packing group

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: Not applicable

15. REGULATORY INFORMATION

Safety data sheets: accordance with Annex II of Regulation (EC) No 1907/2006 and its amendment(s)

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

15.2. Chemical safety assessment: None.

INVENTORIES:

EINECS:	Conforms to
TSCA:	Conforms to
DSL:	All components of this product are on the Canadian DSL
IECSC (CN):	Conforms to
ENCS (JP):	Does not conform
ISHL (JP):	Does not conform
KECI (KR):	Does not conform
PICCS (PH):	Conforms to
AICS:	Does not conform
NZIOC:	Conforms to
TSCA 12B:	

16. OTHER INFORMATION

Full text of H, EUH-phrases referred to under sections 2 and 3

H315	Causes skin irritation.
H318	Causes serious eye damage.
H411	Toxic to aquatic life with long lasting effects.

Update:

Safety datasheet sections which have been updated:		Type:
1	1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING	Revisions

Thesaurus:
NOAEL : No Observed Adverse Effect Level (NOAEL)
LOAEL : Lowest Observed Adverse Effect Level (LOAEL)
bw : Body weight
food : oral feed
dw : Dry weight
vPvB : very Persistent and very Bioaccumulative
PBT : Persistent, Bioaccumulative and Toxic

This information applies to the PRODUCT AS SUCH and conforming to specifications of ARKEMA. In case of formulations or mixtures, it is necessary to ascertain that a new danger will not appear. The information contained is based on our knowledge of the product, at the date of publishing and it is given quite sincerely. Users are advised of possible additional hazards when the product is used in applications for which it was not intended. This sheet shall only be used and reproduced for prevention and security purposes. The references to legislative, regulatory and codes of practice documents cannot be considered as exhaustive. It is the responsibility of the person receiving the product to refer to the totality of the official documents concerning the use, the possession and the handling of the product. It is also the responsibility of the handlers of the product to pass on to any subsequent persons who will come into contact with the product (usage, storage, cleaning of containers, other processes) the totality of the information contained within this safety data sheet and necessary for safety at work, the protection of health and the protection of environment.

NB: In this document the numerical separator of the thousands is the "." (point), the decimal separator is "," (comma).