Substance key: 000000133932	Revision Date: 05/31/2019
Version : 3 - 8 / USA	Date of printing :07/27/2020

SECTION 1. IDENTIFICATION

Identification of the company:	Clariant Plastics & Coatings (Deutschland) GmbH Frankfurt am Main, 65926 Telephone No.: +49 69 305 18000 **Information of the substance/preparation:** Product Stewardship, +1-704-331-7710 **Emergency tel. number:** +1 800-424-9300 CHEMTREC

Trade name:	**EXOLIT RP 6500 0050**
Material number:	195990
Primary product use:	Flame retardants
Restrictions on use :	Industrial manufacture of screening smoke ammunition or smoke payloads.
Chemical family:	Dispersion of red phosphorus in epoxy resin

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with 29 CFR 1910.1200

Skin irritation	:	Category 2
Eye irritation	:	Category 2B
Skin sensitisation	:	Category 1
Specific target organ toxicity - repeated exposure (Oral)	:	Category 2

GHS label elements

Hazard pictograms :

Signal word : Warning

Hazard statements : H315 + H320 Causes skin and eye irritation.
H317 May cause an allergic skin reaction.
H373 May cause damage to organs through prolonged or repeated exposure if swallowed.

Precautionary statements :

Prevention:

P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.

P264 Wash skin thoroughly after handling.
P272 Contaminated work clothing must not be allowed out of the workplace.
P280 Wear protective gloves.

Response:

P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P314 Get medical advice/ attention if you feel unwell.
P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.
P337 + P313 If eye irritation persists: Get medical advice/ attention.
P362 Take off contaminated clothing and wash before reuse.

Disposal:

P501 Dispose of contents/ container to an approved waste disposal plant.

Other hazards

Explosive when mixed with oxidizing substances.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Components

Chemical name	CAS-No.	Concentration (% w/w)
Epoxy resin, molecular weight <= 700	25068-38-6	50 - 70
Red phosphorus	7723-14-0	30 - 50
Tin sulphate	7488-55-3	1 - 5

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

SECTION 4. FIRST AID MEASURES

General advice : Remove/Take off immediately all contaminated clothing.
Get medical attention.

If inhaled : Move the victim to fresh air.
Give oxygen or artificial respiration if needed.
Get immediate medical advice/ attention.
Never give anything by mouth to an unconscious person.

In case of skin contact : Remove contaminated clothing. Flush all affected areas with large amounts of water for at least 15 minutes. Seek medical attention immediately.

In case of eye contact : Immediately flush eyes with large amounts of water for at least 15 minutes, holding lids apart to ensure flushing of the entire

surface. Washing eyes within 1 minute is essential to achieve maximum effectiveness. Seek medical attention immediately.

If swallowed : If swallowed, DO NOT induce vomiting.
Do not give anything to drink.
Call a physician immediately.

Most important symptoms and effects, both acute and delayed : The possible symptoms known are those derived from the labelling (see section 2).
No additional symptoms are known.

Notes to physician : After a burn to the skin caused by phosphorus, any residual product adhering to the wound must be removed mechanically with a brush in order to prevent further burns or toxic effects through dermal absorption of yellow phosphorus. The wound must then be rinsed immediately with a commercial solution of 2% copper sulphate in order to neutralise any residual yellow phosphorous. Any such wound must be kept damp in all circumstances during movement of the victim for further medical treatment, so that any residual yellow phosphorus does not lead to further inflammation.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media : Foam
Dry powder
Water spray jet

Unsuitable extinguishing media : High volume water jet
Carbon dioxide (CO2)

Specific hazards during firefighting : In case of fire hazardous decomposition products may be produced such as:
Phosphorus oxides (eg Phosphorus pentoxide)
Phosphorus pentoxide in air forms a dense, non-transparent, corrosive mist of phosphoric acid.
Carbon monoxide
Carbon dioxide (CO2)

Emits toxic and corrosive fumes under fire conditions. Fine powder may present dust explosion hazard. May form explosive mixtures with oxidizing agents.
May be ignited by friction, heat, sparks, or flames. Powders and dusts may explode or burn with explosive violence.
In case of combustion, yellow/white phosphorus is reformed, which may cause self-ignition of areas already extinguished.
In order to avoid self-ignition, fire residues should be kept damp or under water.

Further information : Fire fighters should wear fire resistant protective clothing and NIOSH approved self-contained breathing apparatus. Water spray, water spray with detergent, sand or foam containing

surfactants should be used for containing the fire. For safety reasons, gaseous extinguishing media or carbon dioxide must not be used. In case of fires, hazardous combustion gases such as oxides of phosphorous are formed. Fight fire from a safe distance due to explosion hazard. Cover extinguished areas with 10 % copper sulfate or soda solution. Detergents may be added to the solutions.

Special protective equipment for firefighters	:	Self-contained breathing apparatus In case of fire, use acid-resistant equipment / personal protective equipment. Full protective suit

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	See: Exposure controls and personal protection. Remove all spark producing devices or ignition sources. Wear proper personnel protective equipment. Dampen carefully and collect into suitable container for disposal. Do not allow to dry out. Prevent from entering into soil, ditches, sewers, waterways and/or groundwater.
Environmental precautions	:	The product should not be allowed to enter drains, water courses or the soil.
Methods and materials for containment and cleaning up	:	Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Keep in suitable, closed containers for disposal.

SECTION 7. HANDLING AND STORAGE

Advice on protection against fire and explosion	:	Cover extinguished areas with 10% copper sulphate or sode solution. Detergents may be added to the solutions Avoid shock and friction.
Advice on safe handling	:	Use personal protective equipment. Avoid breathing dust. Avoid contact with skin and eyes. Wash thoroughly after handling. Store in a dry place. Keep away from heat. Store in original container. Keep container tightly closed. Avoid contact with skin, eyes and clothing. Wash thoroughly after handling. Avoid dust formation. Keep away from sources of ignition. Lead off electrostatic charges. Avoid impact, friction and accumulation of electronic charge. Keep working area moist and well ventilated.

Ensure that dried product residues are re-dampened before transferring, handling or transporting.

Further information on storage conditions : Store in original container.
Keep container tightly closed.
Store in a cool, dry, well-ventilated area.

Materials to avoid : Do not store with strong oxidizing agents

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Red phosphorus	7723-14-0	TWA	0.1 mg/m3	NIOSH REL
		TWA	0.1 mg/m3	OSHA Z-1
		TWA	0.1 mg/m3	OSHA P0
Tin sulphate	7488-55-3	TWA	2 mg/m3 (Tin)	OSHA Z-1
		TWA	2 mg/m3 (Tin)	ACGIH
		TWA	2 mg/m3 (Tin)	OSHA P0
		TWA	2 mg/m3 (Tin)	NIOSH REL

Engineering measures : A system of local and/or general exhaust is recommended where employee exposures are at or above Occupational Exposure Limits (OEL).

Personal protective equipment

Respiratory protection : General and local exhaust ventilation is recommended to maintain vapor exposures below recommended limits. Where concentrations are above recommended limits or are unknown, appropriate respiratory protection should be worn. Follow OSHA respirator regulations (29 CFR 1910.134) and use NIOSH/MSHA approved respirators. Protection provided by air purifying respirators against exposure to any hazardous chemical is limited. Use a positive pressure air supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circumstance where air purifying respirators may not provide adequate protection.

Hand protection
Remarks : Butyl Rubber, PVC Or Neoprene.

Eye protection : Safety glasses or chemical splash goggles.

Skin and body protection	:	Impervious protective clothing and chemically resistant footwear should be worn to minimize contact.
Protective measures	:	Observe the usual precautions for handling chemicals. Avoid prolonged or repeated contact with skin.
Hygiene measures	:	Use protective skin cream before handling the product. Clean skin thoroughly after work; apply skin cream.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	paste
Colour	:	dark red
Odour	:	odourless
Odour Threshold	:	not available
pH	:	Not applicable
Freezing point	:	not determined
Boiling point	:	not determined
Flash point	:	> 212 °F / > 100 °C Method: Expert judgement
Evaporation rate	:	not determined
Flammability (solid, gas)	:	Not applicable
Self-ignition	:	The substance or mixture is not classified as pyrophoric.
Upper explosion limit / upper flammability limit	:	Not applicable
Lower explosion limit / Lower flammability limit	:	Not applicable
Vapour pressure	:	not determined
Relative vapour density	:	not determined
Density	:	1.5 g/cm3 (77 °F / 25 °C)
Bulk density	:	Not applicable
Solubility(ies)		
Water solubility	:	insoluble, immiscible

Partition coefficient: n-octanol/water	:	not determined
Auto-ignition temperature	:	> 554 °F / 290 °C Method: VDI 2263 "Dust fires and explosions; Danger, Evaluation, Protection measures"
Decomposition temperature	:	428 °F / 220 °C Decomposition energy (mass): 300 kJ/kg Method: OECD Test Guideline 113
Viscosity		
Viscosity, dynamic	:	not determined
Viscosity, kinematic	:	not determined
Explosive properties	:	Not explosive Not explosive Method: Regulation (EC) No. 440/2008, A.14
Oxidizing properties	:	Method: Expert judgement not oxidizing Method: Expert judgement The product does not contain organic peroxide-groups which result from either the manufacturing process or from added ingredients.
Particle size	:	Not applicable

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	No dangerous reaction known under conditions of normal use.
Chemical stability	:	Stable
Possibility of hazardous reactions	:	Explosive reactions with oxidising agents such as potassium chlorate and/or peroxides. At high temperatures small amounts of hydrogen phosphide are formed with water. Not corrosive to metals The substance or mixture does not emit flammable gases in contact with water. Stable
Conditions to avoid	:	sparks Thermal decomposition ignition shock friction

Reactions with peroxides. Can cause explosive reactions with oxidizing agents such as potassium chlorate and/or peroxides. At high temperatures small amounts of hydrogen phosphide are formed with water.

Incompatible materials : oxidants

oxidants

Hazardous decomposition products : Hydrogen phosphide
White/yellow phosphorus

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Eye contact
Skin contact
Inhalation

Acute toxicity

Product:

Acute oral toxicity : Acute toxicity estimate: 4,658 mg/kg
Method: Calculation method

Acute dermal toxicity : Acute toxicity estimate: 4,762 mg/kg
Method: Calculation method

Components:

Epoxy resin, molecular weight <= 700:

Acute oral toxicity : LD50 (Rat, female): > 2,000 mg/kg
Method: OECD Test Guideline 420
GLP: yes

Acute dermal toxicity : LD50 (Rabbit, male and female): > 2,000 mg/kg
Method: OECD Test Guideline 402
GLP: yes

Red phosphorus:

Acute oral toxicity : LD50 (Rat, female): > 15,000 mg/kg
Method: OECD Test Guideline 401
GLP: no
Remarks: No significant adverse effects were reported

Acute inhalation toxicity : Remarks: no data available

Acute dermal toxicity : Remarks: no data available

Tin sulphate:

Acute oral toxicity	:	LD50 (Rat): > 2,000 mg/kg Method: OECD Test Guideline 401 Test substance: anhydrous substance
Acute inhalation toxicity	:	Assessment: The component/mixture is moderately toxic after short term inhalation. Remarks: no data available
Acute dermal toxicity	:	Remarks: This information is not available.

Skin corrosion/irritation

Product:

Remarks: no data available

Components:

Epoxy resin, molecular weight <= 700:

Species: Rabbit
Exposure time: 4 h
Method: OECD Test Guideline 404
Result: Skin irritation
GLP: yes

Red phosphorus:

Species: Rabbit
Exposure time: 24 h
Method: OECD Test Guideline 404
Result: No skin irritation
GLP: no

Tin sulphate:

Species: Rabbit
Exposure time: < 4 h
Result: Irritating to skin.

Serious eye damage/eye irritation

Product:

Remarks: no data available

Components:

Epoxy resin, molecular weight <= 700:

Species: rabbit eye
Result: Eye irritation
Method: OECD Test Guideline 405
GLP: yes

Red phosphorus:

Species: Rabbit
Result: No eye irritation
Exposure time: 24 h
Method: OECD Test Guideline 405
GLP: no

Tin sulphate:

Species: rabbit eye
Result: Risk of serious damage to eyes.

Respiratory or skin sensitisation

Product:

Remarks: not tested.

Components:

Epoxy resin, molecular weight <= 700:

Test Type: Mouse local lymphnode assay
Exposure routes: Dermal
Species: Mouse
Method: OECD Test Guideline 429
Result: Causes sensitisation.
GLP: yes

Red phosphorus:

Test Type: Buehler Test
Exposure routes: Dermal
Species: Guinea pig
Method: OECD Test Guideline 406
Result: Not a skin sensitizer.
GLP: no

Tin sulphate:

Test Type: Open epicutaneous test
Exposure routes: Skin contact
Species: Humans
Method: tests on human beings
Result: May cause sensitisation by skin contact.
GLP: No information available.

Germ cell mutagenicity

Product:

Germ cell mutagenicity - Assessment : No information available.

Components:

Epoxy resin, molecular weight <= 700:

Genotoxicity in vitro : Test Type: Mouse lymphoma assay
Test system: Mouse cells
Concentration: 0,032 - 2,4 µg/ml
Metabolic activation: with and without metabolic activation
Result: Positive only in the test without metabolic activation
GLP: yes

Test Type: Ames test
Test system: Salmonella typhimurium
Concentration: <=25 µg/plate
Metabolic activation: with and without metabolic activation
Method: OECD Guide-line 472
Result: negative
GLP: yes

Red phosphorus:

Genotoxicity in vitro : Test Type: Ames test
Test system: Salmonella typhimurium
Concentration: 3 - 5000 mg/plate
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative
GLP: yes

Test Type: In vitro mammalian cell gene mutation test
Test system: Chinese hamster lung cells
Concentration: 1,3 - 60 µg/ml
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 476
Result: negative
GLP: yes

Test Type: Chromosome aberration test in vitro
Test system: Chinese hamster lung cells
Concentration: 2,3 - 5000 µg/ml
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 473
Result: negative
GLP: yes

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

Tin sulphate:

Genotoxicity in vitro : Test Type: In vitro gene mutation study in mammalian cells
Test system: mouse lymphoma cells
Concentration: 10 - 100 µg/ml
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 476

Result: negative
Remarks: By analogy with a product of similar composition

Germ cell mutagenicity - Assessment : It is concluded that the product is not mutagenic based on evaluation of several mutagenicity tests.

Carcinogenicity

Product:

Carcinogenicity - Assessment : No information available.

Components:

Red phosphorus:

Carcinogenicity - Assessment : No information available.

Tin sulphate:

Carcinogenicity - Assessment : Not classifiable as a human carcinogen.

IARC No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

OSHA No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

NTP No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

Reproductive toxicity

Product:

Effects on fertility : Remarks: not available

Reproductive toxicity - Assessment : No information available.

No information available.

Components:

Red phosphorus:

Reproductive toxicity - Assessment : No information available.

Tin sulphate:

Effects on fertility : Remarks: This information is not available.

Effects on foetal development	:	Remarks: This information is not available.
Reproductive toxicity - Assessment	:	No reproductive toxicity to be expected. No teratogenic effects to be expected.

STOT - single exposure

Product:

Remarks: not available

Components:

Red phosphorus:

Assessment: The substance or mixture is not classified as specific target organ toxicant, single exposure.

Tin sulphate:

Assessment: May cause respiratory irritation.

STOT - repeated exposure

Product:

Remarks: not available

Components:

Red phosphorus:

Assessment: The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Tin sulphate:

Exposure routes: Oral
Target Organs: Cardiovascular
Assessment: May cause damage to organs through prolonged or repeated exposure.

Repeated dose toxicity

Product:

Remarks: This information is not available.

Components:

Epoxy resin, molecular weight <= 700:

Species: Rat, male and female
NOAEL: 50 mg/kg
Application Route: oral (gavage)
Exposure time: 14 weeks
Number of exposures: daily

Dose: 50 - 250 - 1000 mg/kg
Group: yes
Method: OECD Test Guideline 408
GLP: yes

Species: Mouse, male and female
NOAEL: 100 mg/kg
Application Route: Skin contact
Exposure time: 13 weeks
Number of exposures: 3 times/week
Dose: 1 - 10 - 100 mg/kg
Group: yes
Method: OECD Test Guideline 411
GLP: yes

Red phosphorus:

Remarks: no data available

Tin sulphate:

Remarks: This information is not available.

Aspiration toxicity

Components:

Red phosphorus:

No aspiration toxicity classification

Tin sulphate:

No aspiration toxicity classification

Experience with human exposure

Product:

General Information : The possible symptoms known are those derived from the labelling (see section 2).

Components:

Red phosphorus:

General Information : Health injuries are not known or expected under normal use.

Further information

Product:

Remarks: Frequent contact can lead to skin and eye irritation, especially if product is allowed to dry out
No data is available on the product itself.
The classification was made by the conventional (calculation) method of the CLP Regulation

(EC) No 1272/2008.

Components:

Red phosphorus:

Remarks: Frequent contact can lead to skin and eye irritation, especially if product is allowed to dry out

Remarks: Since 1997 the lung function of about 70 workers has been examined annually and documented, which showed no change of lung function associated with red phosphorus dust.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Product:

Toxicity to fish	:	Remarks: no data available
Toxicity to daphnia and other aquatic invertebrates	:	Remarks: no data available
Toxicity to algae/aquatic plants	:	Remarks: no data available
Toxicity to microorganisms	:	Remarks: no data available
Toxicity to soil dwelling organisms	:	Remarks: not available
Plant toxicity	:	Remarks: not available
Toxicity to terrestrial organisms	:	Remarks: not available

Components:

Epoxy resin, molecular weight <= 700:

Toxicity to fish	:	LC50 (Oncorhynchus mykiss (rainbow trout)): 1.2 mg/l Exposure time: 96 h Test Type: semi-static test Analytical monitoring: yes Method: EPA GLP: no
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 1.7 mg/l Exposure time: 48 h Test Type: static test Analytical monitoring: no Method: OECD Test Guideline 202 GLP: yes Remarks: The details of the toxic effect relate to the nominal

concentration.

Toxicity to algae/aquatic plants : EC50 (Scenedesmus capricornutum (fresh water algae)): > 11 mg/l
End point: Growth rate
Exposure time: 72 h
Test Type: static test
Analytical monitoring: yes
Method: EPA
GLP: no

NOEC (Scenedesmus capricornutum (fresh water algae)): 4.2 mg/l
End point: Growth rate
Exposure time: 72 h
Test Type: static test
Analytical monitoring: yes
Method: EPA
GLP: no

Red phosphorus:

Toxicity to fish : LC50 (Danio rerio (zebra fish)): 33.2 mg/l
Exposure time: 96 h
Test Type: static test
Analytical monitoring: no
Method: OECD Test Guideline 203
GLP: yes
Remarks: The details of the toxic effect relate to the nominal concentration.

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 10.5 mg/l
End point: Immobilization
Exposure time: 48 h
Test Type: static test
Analytical monitoring: no
Method: OECD Test Guideline 202
GLP: yes
Remarks: The details of the toxic effect relate to the nominal concentration.

Toxicity to algae/aquatic plants : ErC50 (Desmodesmus subspicatus (green algae)): 18.3 mg/l
End point: Growth rate
Exposure time: 72 h
Test Type: static test
Analytical monitoring: yes
Method: OECD Test Guideline 201
GLP: yes
Remarks: The details of the toxic effect relate to the nominal concentration.

NOEC (Desmodesmus subspicatus (green algae)): 5 mg/l
End point: Growth rate
Exposure time: 72 h

Test Type: static test
Analytical monitoring: yes
Method: OECD Test Guideline 201
GLP: yes
Remarks: The details of the toxic effect relate to the nominal concentration.

ErC10 (Desmodesmus subspicatus (green algae)): 6.6 mg/l
End point: Growth rate
Exposure time: 72 h
Test Type: static test
Analytical monitoring: yes
Method: OECD Test Guideline 201
GLP: yes
Remarks: The details of the toxic effect relate to the nominal concentration.

Toxicity to fish (Chronic toxicity) : Remarks: no data available

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : Remarks: no data available

Toxicity to microorganisms : EC50 (activated sludge): > 1,000 mg/l
End point: Bacteria toxicity (respiration inhibition)
Exposure time: 3 h
Test Type: Respiration inhibition
Analytical monitoring: no
Method: OECD Test Guideline 209
GLP: yes

NOEC: 1,000 mg/l
Exposure time: 28 d
Test Type: Other
Analytical monitoring: no
Method: OECD 216
GLP: yes

Toxicity to soil dwelling organisms : Test Type: artificial soil
EC50 (Eisenia fetida (earthworms)): 428 mg/kg
Exposure time: 56 d
End point: Reproduction
Method: OECD Test Guideline 222
GLP: yes

Test Type: artificial soil
NOEC (Nematode Caenorhabditis elegans): 1,000 mg/kg
Exposure time: 96 h
End point: mortality
Method: Other
GLP: yes

Sediment toxicity	:	NOEC (Lumbriculus variegatus (Worm)): 1000 mg/kg Duration: 28 d Sediment: artificial soil Exposure duration: 28 d Method: OECD 225 GLP: yes

Ecotoxicology Assessment

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

Tin sulphate:

Toxicity to fish	:	LC50 (Fish): 9 - 50 mg/l saltwater Exposure time: 96 h Test Type: static test Method: Other GLP: No information available. Remarks: The details of the toxic effect relate to the nominal concentration.
Toxicity to daphnia and other aquatic invertebrates	:	LC50 (Daphnia magna (Water flea)): 55 mg/l dissolved Sn Exposure time: 48 h Test Type: static test Analytical monitoring: yes Method: OECD Test Guideline 202 GLP: no Remarks: By analogy with a product of similar composition
Toxicity to algae/aquatic plants	:	EC50 (Scenedesmus quadricauda (Green algae)): 50 mg/l dissolved Sn Exposure time: 72 h Test Type: static test Analytical monitoring: yes Method: Other GLP: no Remarks: By analogy with a product of similar composition NOEC (Scenedesmus quadricauda (Green algae)): 14 mg/l dissolved Sn Exposure time: 8 d Test Type: static test Analytical monitoring: yes Method: Other GLP: no Remarks: By analogy with a product of similar composition
M-Factor (Acute aquatic toxicity)	:	1
Toxicity to fish (Chronic toxicity)	:	NOEC (Danio rerio (zebra fish)): ca. 3 mg/l dissolved Sn Exposure time: 120 h

Test Type: static test
Analytical monitoring: yes
Method: OECD Test Guideline 212
GLP: No information available.
Remarks: By analogy with a product of similar composition

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : Remarks: not required

M-Factor (Chronic aquatic toxicity) : 1

Toxicity to microorganisms : EC50 (activated sludge): 1,194 mg/l
substance
End point: Bacteria toxicity (respiration inhibition)
Exposure time: 3 h
Test Type: aquatic
Analytical monitoring: no
Method: OECD Test Guideline 209
GLP: yes
Remarks: The details of the toxic effect relate to the nominal concentration.

Ecotoxicology Assessment

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

Persistence and degradability

Product:

Biodegradability : Remarks: This property is substance-specific and therefore cannot be given for the preparation.

Components:

Epoxy resin, molecular weight <= 700:

Biodegradability : aerobic
Inoculum: activated sludge
Concentration: 20 mg/l
Biochemical Oxygen Demand (BOD)
Result: Not readily biodegradable.
Biodegradation: 5 %
Exposure time: 28 d
Method: OECD Test Guideline 301F
GLP: yes

Red phosphorus:

Biodegradability : Primary biodegradation
Remarks: Not applicable for inorganic compound.

Stability in water : Test Type: abiotic

Method: OECD Test Guideline 111
GLP: yes
Remarks: Hydrolyses slowly on contact with water.

Tin sulphate:

Biodegradability : Remarks: Not applicable

Bioaccumulative potential

Product:

Bioaccumulation : Remarks: not available

Components:

Epoxy resin, molecular weight <= 700:

Bioaccumulation : Remarks: Does not bioaccumulate.

Red phosphorus:

Bioaccumulation : Remarks: Bioaccumulation is unlikely.

Partition coefficient: n-octanol/water : Remarks: inorganic

Tin sulphate:

Bioaccumulation : Remarks: Not applicable

Mobility in soil

Product:

Distribution among environmental compartments : Remarks: not available

Components:

Epoxy resin, molecular weight <= 700:

Distribution among environmental compartments : Adsorption/Soil
log Koc: 2.65
Method: calculated

Tin sulphate:

Distribution among environmental compartments : Remarks: no data available

Other adverse effects

Product:

Environmental fate and pathways : Remarks: no data available

Additional ecological information	:	no data available

Components:

Epoxy resin, molecular weight <= 700:

Environmental fate and pathways	:	not available
Results of PBT and vPvB assessment	:	The substance is not identified as a PBT or as a vPvB substance.
Additional ecological information	:	Do not allow to enter ground water, waterways or waste water.

Red phosphorus:

Results of PBT and vPvB assessment	:	The substance is not identified as a PBT or as a vPvB substance.
Additional ecological information	:	The product should not be allowed to enter drains, water courses or the soil. Since Red phosphorus is an amorphous polymeric form of elemental phosphorus, it is insoluble in water and organic solvents. However, slow disproportionating and oxidizing reactions produce traces of phosphine (strong smell and is toxic), but mainly phosphorus acids (H3PO4, H3PO3, H3PO2) as well as traces of unknown phosphorus compounds. These reaction products (particularly phosphine) are the cause of the toxic effects to organisms of red phosphorus. These reactions are increased by high temperatures and moisture.

Tin sulphate:

Environmental fate and pathways	:	no data available
Results of PBT and vPvB assessment	:	Remarks: Not applicable
Additional ecological information	:	The product should not be allowed to enter drains, water courses or the soil.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

RCRA - Resource Conservation and Recovery Authorization Act	:	Yes -- If it becomes a waste as sold.

Waste Code	:	D001
Waste from residues	:	Small quantities may be treated in aerobic wastewater treatment systems. Larger quantities may be incinerated or landfilled after solidification in permitted systems. Contain and dispose of waste according to local regulations. Incineration in an approved, controlled furnace with combustion gas scrubbing and emission gas control.
Contaminated packaging	:	Packaging that cannot be cleaned should be disposed of as product waste

SECTION 14. TRANSPORT INFORMATION

DOT Regulation:

Proper shipping name:	Environmentally hazardous substances, liquid, n.o.s.
Hazard class:	9
Packing group:	III
UN/NA-number:	UN 3082
Primary hazard class:	9
Technical Name:	Phosphorus red
Emergency Response Guide:	171
Reportable Quantity:	1.000 kg Phosphorus red

IATA

Proper shipping name:	Environmentally hazardous substance, liquid, n.o.s.
Class:	9
Packing group:	III
UN/ID number:	UN 3082
Primary risk:	9
Remarks:	Shipment permitted
Hazard inducer(s):	Epoxy resin

IMDG

Proper shipping name:	Environmentally hazardous substance, liquid, n.o.s.
Class:	9
Packing group:	III
UN no.:	UN 3082
Primary risk:	9
Hazard inducer(s):	Epoxy resin
Marine pollutant:	Marine Pollutant
EmS:	F-A S-F

Further information:

Non-dangerous good of class 9 for packagings <= 5 L / 5 kg

SECTION 15. REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know Act

CERCLA Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
Red phosphorus	7723-14-0	1	2

A characteristic waste RQ of 100 lbs applies to this product in a waste form: D001

SARA 304 Extremely Hazardous Substances Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
Red phosphorus	7723-14-0	1	2

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

Components	CAS-No.	Component TPQ (lbs)
Red phosphorus	7723-14-0	100

SARA 311/312 Hazards : Skin corrosion or irritation
Serious eye damage or eye irritation
Respiratory or skin sensitisation
Specific target organ toxicity (single or repeated exposure)

SARA 313 : The following components are subject to reporting levels established by SARA Title III, Section 313:

Red phosphorus 7723-14-0 30 - 50 %

Clean Water Act

This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

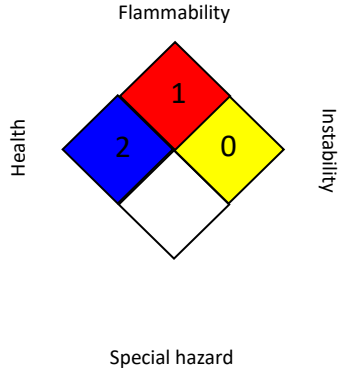
The components of this product are reported in the following inventories:

TSCA : On TSCA Inventory, All components are compliant with the TSCA Inventory Notification (Active) rule.

SECTION 16. OTHER INFORMATION

Further information

NFPA 704:



Full text of other abbreviations

ACGIH	:	USA. ACGIH Threshold Limit Values (TLV)
NIOSH REL	:	USA. NIOSH Recommended Exposure Limits
OSHA P0	:	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
OSHA Z-1	:	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
ACGIH / TWA	:	8-hour, time-weighted average
NIOSH REL / TWA	:	Time-weighted average concentration for up to a 10-hour workday during a 40-hour workweek
OSHA P0 / TWA	:	8-hour time weighted average
OSHA Z-1 / TWA	:	8-hour time weighted average

AICS - Australian Inventory of Chemical Substances; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; 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; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; 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; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect

Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; 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; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance 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

This substance may be toxic to fish or aquatic organisms.
Do not allow to enter drains or waterways
Dispose of waste product or used containers according to local regulations.
Observe national and local legal requirements

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