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

· **1.1 Product identifier**
· **Trade name: DERTOPOLINE® P 125**
· **Substance name according to REACH identification requirements:**
Resin acids and Rosin acids, polymerized, esters with pentaerythritol
· **CAS number:** 65997-12-8
· **EC number:** 613-868-6
· **REACH Registration number:** 01-2119964091-41-0000
· **UFI:** Not relevant as this product is a substance

· **1.2 Relevant identified uses of the substance or mixture and uses advised against**
Relevant identified uses : Manufacture, distribution and formulation of the substance, adhesives, coatings, intermediate, cleaning agents, rubbers production and processing, polymers production and processing, road and construction products, binders and release agents, paper and board production, lubricants, laboratory, agrochemicals, cosmetics, fuel.

· **1.3 Details of the supplier of the safety data sheet**
· **Manufacturer/Supplier:**
LES DERIVES RESINIQUES ET TERPENIQUES (DRT)
30 rue Gambetta
BP 90206
F-40105 DAX CEDEX
FRANCE
Tel: 33-(0)5 58 56 62 00
Email: fds@drt.fr

· **1.4 Emergency telephone number**
NCEC (24/24 – 7/7):
From Europe : +44 1235 239670 (involves operator intervention to identify language)
Others countries : See section 16

SECTION 2: Hazards identification

· **2.1 Classification of the substance or mixture**
· **Classification according to Regulation (EC) No 1272/2008:**
The substance is not classified according to Regulation (EC) No 1272/2008.

· **2.2 Label elements**
· **Labelling according to Regulation (EC) No 1272/2008:** Void
· **Hazard pictograms** Void
· **Signal word:** Void
· **Hazard statements:** Void

· **Information concerning to particular hazards to man and environment:**
Fine particles and powder may cause skin irritation by mechanical abrasion. However, based on available data, the classification criteria are not met.
Fine particles and powder may cause eye irritation by mechanical abrasion. However, based on available data, the classification criteria are not met.
Inhalation (dust or vapours/fumes generated by heated products) may cause respiratory irritation with throat discomfort, coughing or breathing difficulty.
Hot molten product: Burns may cause irreversible eye injury and blindness. Causes skin burns

· **2.3 Other hazards**
Resin dust may ignite on contact with electrostatic discharge or exposure to flame or other sources of ignition.
Hot molten product: may burn if ignited.

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· **Results of PBT and vPvB assessment**
· **PBT:**
According to Annex XIII of REACH Regulation, the substance is not considered to be Persistent, Bioaccumulative and Toxic.
· **vPvB:**
According to Annex XIII of REACH Regulation, the substance is not considered to be very Persistent and very Bioaccumulative.
· **Determination of endocrine-disrupting properties**
The substance is not included in the list established in accordance with Article 59(1) of REACH regulation for having endocrine disrupting properties, and is not a substance identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605.

SECTION 3: Composition/information on ingredients

· **3.1 Substances** UVCB
· **Identification number(s)**
· **CAS number:** 65997-12-8
· **EC number:** 614-523-2
· **Description:**
- Chemical description: pentaerythritol esters of polymerized rosin
- CAS Name : Resin acids and Rosin acids, polymd., esters with pentaerythritol
- EC name: Resin acids and Rosin acids, polymerized, esters with pentaerythritol

SECTION 4: First aid measures

· **4.1 Description of first aid measures**
· **After inhalation:**
Supply fresh air. If symptoms are experienced, get medical attention.
In case of unconsciousness place patient stably in side position for transportation.
· **After skin contact:**
Product at ambient temperature:
Immediately rinse with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention if irritations occurs.
Hot product:
Immediately immerse or flush the burn area with large amounts of cold water (at least 15 minutes). Do not remove solidified material from burned skin as the damaged skin can be easily torn. Transfer immediately to hospital.
· **After eye contact:**
Product at ambient temperature:
Immediately rinse with water. Remove contact lenses if present and easy to do. Hold eyelids apart and flush eyes with plenty of cool low-pressure water for several minutes. Il symptoms persist, consult a doctor.
Hot product:
Do not open eyelids if covered with resins. Immediately flush eyes with large amounts of water for at least 15 minutes. Do not remove solidified material from burned eye as the damaged tissues can be easily torn. Transfer immediately to hospital.
· **After swallowing:**
Do not induce vomiting. If the person is conscious, immediately rinse out mouth with water.
- No adverse health effects are expected from accidental ingestion of small amounts of this product. In case of lasting symptoms, consult a doctor.
- For ingestion of large amounts: do not induce vomiting and get medical attention.

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· **4.2 Most important symptoms and effects, both acute and delayed** No data available.
· **4.3 Indication of any immediate medical attention and special treatment needed**
For doctors: Mineral oil may be used to loosen and soften the material.

SECTION 5: Firefighting measures

· **5.1 Suitable extinguishing agents** CO_2, powder or water spray. Fight larger fires with water spray or foam.
· **5.2 Special hazards arising from the substance or mixture** In case of fire, may release irritant and toxic fumes.
· **5.3 Advice for firefighters**
· **Protective equipment:**
Firefighters should wear appropriate protective equipment and self-contained breathing apparatus.

SECTION 6: Accidental release measures

· **6.1 Personal precautions, protective equipment and emergency procedures**
Wear appropriate personal protective equipment. Keep unprotected persons away.
Provide adequate ventilation.
Avoid dust formation.
· **6.2 Environmental precautions**
Do not allow product to reach soil, waterways, drains and sewers.
Inform the relevant authorities if the product has caused environmental pollution (soil, waterways, drains or sewers).
· **6.3 Methods and material for containment and cleaning up**
Pick up mechanically.
Avoid as much as you can the formation of dust.
Collect and seal in an appropriate container properly labelled for disposal.
Dispose of the material collected according to regulations.
· **6.4 Reference to other sections**
See section 8 for information on personal protection equipment.
See section 13 for disposal information.

SECTION 7: Handling and storage

· **7.1 Precautions for safe handling**
Wear appropriate personal protective equipment. Provide adequate ventilation in the workplace.
Avoid as much as you can the formation of dust.
Provide suction extractors if dust is formed.
· **Information about fire - and explosion protection:**
Protect against electrostatic charges.
Use only non-sparking tools.
Protect from heat.
Keep ignition sources away.
Do not use compressed air and do not blow to remove resin dusts when cleaning the working cloths or equipments.
Local suctions extractor can be used (if an appropriate maintenance is carried out).
· **7.2 Conditions for safe storage**
Store if possible under cover in a dry, cool and well-ventilated area.
Avoid dust formation close to sources of ignition.
Provide storage areas with suitable ventilation to eliminate dust.
Protect from heat and direct sunlight.

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All equipments including ventilation systems must be equipotential and earthed.
· **Further information about storage conditions:**
· **Recommended storage temperature:** Store at a temperature between 5 and 30°C.
· **7.3 Specific end use(s)** None

SECTION 8: Exposure controls/personal protection

· **8.1 Control parameters**
· **Components with limit values that require monitoring at the workplace:**
Inhalable dust:
Austria: limit value - 8 hours = 10 mg/m³
Austria: limit value - short term = 20 mg/m³
Belgium: limit value - 8 hours = 10 mg/m³
Denmark: limit value - 8 hours = 10 mg/m³
Denmark: limit value - short term = 20 mg/m³
France: limit value - 8 hours = 10 mg/m³ (restrictive statutory limit value)
Germany (AGS): limit value - 8 hours = 10 mg/m³
Germany (AGS): limit value - short term = 20 mg/m³
Germany (DFG): limit value - 8 hours = 4 mg/m³
Hungary: limit value - 8 hours = 10 mg/m³
Ireland: limit value - 8 hours = 10 mg/m³
Spain: limit value - 8 hours = 10 mg/m³
Sweden: limit value - 8 hours = 10 mg/m³
Switzerland: limit value - 8 hours = 10 mg/m³
Respirable dust:
Austria: limit value - 8 hours = 5 mg/m³
Austria: limit value - short term = 10 mg/m³
Belgium: limit value - 8 hours = 3 mg/m³
France: limit value - 8 hours = 5 mg/m³ (restrictive statutory limit value)
Germany (AGS): limit value - 8 hours = 3 mg/m³
Germany (AGS): limit value - short term = 6 mg/m³
Germany (DFG): limit value - 8 hours = 1.5 mg/m³
Hungary: limit value - 8 hours = 6 mg/m³
Ireland: limit value - 8 hours = 4 mg/m³
Spain: limit value - 8 hours = 3 mg/m³
Sweden: limit value - 8 hours = 5 mg/m³
Switzerland: limit value - 8 hours = 3 mg/m³

· **DNEL (Derived No-Effect Level): Workers - Long-term exposure**
Systemic effects - dermal : 5.0 mg/kg bw/d
Local effects - inhalation : 10.0 mg/m³

· **DNEL (Derived No-Effect Level): General population - Long-term exposure**
Systemic effects - dermal : 2.5 mg/kg bw/d
Systemic effects - oral : 2.5 mg/kg bw/d

· **PNEC (Predicted No-Effect Concentration) aqua (freshwater):** 0.1 mg/L
· **PNEC (Predicted No-Effect Concentration) aqua (marine water):** 0.01 mg/L
· **PNEC (Predicted No-Effect Concentration) Sewage Treatment Plant:** 2.525 mg/L
· **PNEC (Predicted No-Effect Concentration) sediment (freshwater):** 2317.75 mg/kg sediment dw
· **PNEC (Predicted No-Effect Concentration) sediment (marine water):** 231.78 mg/kg sediment dw
· **PNEC (Predicted No-Effect Concentration) soil:** 426.06 mg/kg soil dw

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· **PNEC (Predicted No-Effect Concentration) aqua (intermittent releases):** 1.0 mg/L

· **Additional information:**
This sheet is based on the current valid lists for occupational exposure limit values at the time of its preparation. The DNELs and PNECs values are derived from the chemical safety assessment conducted for REACH.

· **8.2 Exposure controls**
· **General protective and hygienic measures:**
The usual precautionary measures are to be adhered to when handling chemicals. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.
Avoid contact with eyes and skin.
Provide local exhaust or general room ventilation to minimize exposure to dust.
· **Personal protective equipment**
· **Respiratory protection:**
In case of insufficient ventilation:
Avoid breathing particles by wearing a dust mask (FFP3 or FFP2 as a minimum).
Avoid breathing vapors by wearing an appropriate filter cartridge mask.
· **Hand protection**
Protective gloves resistant to chemicals (standard EN 374-1). They should be replaced regularly and if there is any indication of degradation or chemical breakthrough.
· **Eye/face protection** Safety glasses (standard EN 166)
· **Body protection:**
Protective work clothing.
Personnel exposed to HOT MOLTEN or HOT LIQUID material should wear protective clothing that provides protection against thermal burns.
· **Risk management measures**
Further information on how to manage the risks arising from dusts and from hot resins:
- HARRPA guidance - SAFE HANDLING OF HOT ROSIN/RESINS
- HARRPA guidance - RESIN DUST EXPLOSION RISKS
http://www.harrpa.eu/

SECTION 9: Physical and chemical properties

· **9.1 Information on basic physical and chemical properties**
· **General Information**

· **Physical state**	Solid
· **Colour:**	Yellow
· **Odour:**	Light
· **Odour threshold:**	Not determined
· **Change in condition**	
· **Melting/freezing point:**	Not determined
· **Boiling point or initial boiling point and boiling range**	Partial boiling (boiling of some constituents) occurs between 380 and 450 °C Method : OECD 103
· **Softening point / range:**	123 - 133 °C (Ring & Ball) Method : Like ASTM E28
· **Flammability**	Not flammable Method : A10, Reg (EC) No 440/2008

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· **Flash point:**	> 200 °C (closed cup) Method : like A9, Reg (EC) No 440/2008
· **Auto-ignition temperature:**	> 400 °C Method : A16, Reg (EC) No 440/2008
· **Decomposition temperature:**	> 300 °C
· **pH**	Not determined
· **Viscosity**	
· **Dynamic:**	Not applicable (solid)
· **Solubility**	
· **In water:**	Very slightly soluble. Loading rate of 10 g/L : measured dissolved oraganic carbon ≤ 2.1 mg/L Loading rate of 1 g/L : measured dissolved oraganic carbon ≤ 1 mg/L Method: OECD 105
· **Partition coefficient n-octanol/water (log value)**	> 6,5 (OECD 117)
· **Vapour pressure at 25 °C:**	0,00038 Pa (OECD 104)
· **Density and/or relative density**	
· **Relative density at 21,5 °C:**	1,09 (OECD 109)
· **Vapour density**	Not determined.
· **Particle characteristics**	See item 3.
· **Explosive properties:**	No chemical groups associated with explosive properties are present in the constituents of the substance.
· **Oxidising properties:**	No chemical groups associated with oxidizing properties are present in the constituents of the substance.
· **Evaporation rate:**	Not determined
· **9.2 Other information**	No other data

SECTION 10: Stability and reactivity

· **10.1 Reactivity** No data from specific reactivity tests are available for this product.
· **10.2 Chemical stability**
Product stable under storage and handling conditions according to specifications (see section 7).
· **10.3 Possibility of hazardous reactions:**
Dust may ignite on contact with electrostatic discharge or exposure to flame or other sources of ignition
· **10.4 Conditions to avoid**
Keep away from heat and sources of ignition.
Avoid dust formation when handling the product.
· **10.5 Incompatible materials** No incompatible materials known.
· **10.6 Hazardous decomposition products** No dangerous decomposition products known.
· **Additional information:**
The product is susceptible to compaction and oxidation during prolonged storage at a temperature above 30°C.

SECTION 11: Toxicological information

· **11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008**
This substance belongs to the chemical category of rosin esters (rosin; hydrogenated rosin; oligomers of rosin ; which are esterified with alcohols typically methanol, ethylene glycol, di and triethylene glycol, glycerol and pentaerythritol). Experimental data are not available for all the substances within this chemical category; informations from one or

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several other members of the category are thus presented (properties may be predicted by interpolation to structurally related substances - according to ECHA guidance R6: QSARs and grouping of chemicals).
More information on H4R consortium website: www.h4rconsortium.com

· **Acute toxicity**
Adequate information exists to characterise the acute toxicity of rosin esters category.
Acute toxicity – oral:
Information is available on the acute oral toxicity of methyl esters of hydrogenated rosin, diethylene glycol esters of rosin, glycerol esters of rosin, glycerol esters of hydrogenated rosin and pentaerythritol esters of rosin. The results demonstrate that rosin esters are not acutely hazardous after ingestion (LD50 >2000 mg/kg bw).
The physico-chemical properties of the category members indicate that they do not present a hazard with regard to aspiration (kinematic viscosity exceeds 20.5 mm2/s at 40°C).
Acute toxicity – inhalation:
No studies were available for review. The category members possess very low vapor pressure, negligible volatility and a high boiling point. Based on these physico-chemical properties, inhalation exposure is not expected to occur.
Acute toxicity – dermal:
Information is available on the acute dermal toxicity of methyl esters of hydrogenated rosin, diethylene glycol esters of rosin, glycerol esters of rosin, glycerol esters of hydrogenated rosin and pentaerythritol esters of rosin. The results demonstrate that rosin esters are not acutely hazardous after dermal exposure (LD50 >2000 mg/kg bw).
More information on the ECHA dossier webpage of this substance - section acute toxicity.
Conclusion :
Not classified for acute lethality by the oral or dermal routes of exposure under EU Classification, Labelling and Packaging of Substances and Mixtures (CLP) Regulation (EC) No. 1272/2008. For non-EU countries, the UN Globally Harmonized System of Classification and Labelling of Chemicals (GHS) defines a fifth category for acute toxicity for chemicals with oral LD50 values between 2000 and 5000 mg/kg/bw. Insufficient data were available from this study to provide a definitive classification under UN GHS.

· **Skin corrosion/irritation:**
Adequate information exists to characterise the skin irritation potential of rosin esters category. Information is available on the skin irritation potential of methyl esters of hydrogenated rosin, glycerol esters of rosin, glycerol esters of hydrogenated rosin and pentaerythritol esters of rosin. The results demonstrate that rosin esters are not irritating to the skin.
More information on the ECHA dossier webpage of this substance - section Irritation/corrosivity.
Conclusion :
Not classified for skin irritation according to EU Classification, Labelling and Packaging of Substances and Mixtures (CLP) Regulation (EC) No. 1272/2008 or UN Globally Harmonized System of Classification and Labelling of Chemicals (GHS UN).

· **Serious eye damage/irritation:**
Fine particles and powder may cause eye irritation by mechanical effect.
Adequate information exists to characterise the eye irritation potential of rosin esters category.
Information is available on the eye irritation potential of methyl esters of hydrogenated rosin, glycerol esters of rosin and pentaerythritol esters of rosin. The results demonstrate that rosin esters are not irritating to the eye. More information on the ECHA dossier webpage of this substance - section Irritation/corrosivity.
Conclusion :
Not classified for eye irritation according to EU Classification, Labelling and Packaging of Substances and Mixtures (CLP) Regulation (EC) No. 1272/2008 or UN Globally Harmonized System of Classification and Labelling of Chemicals (GHS UN).

· **Skin sensitisation:**
Adequate information exists to characterise the skin sensitisation potential of rosin esters category. Information is available on the sensitisation potential of methyl esters of hydrogenated rosin, triethylene glycol esters of rosin, glycerol esters of rosin, glycerol esters of hydrogenated rosin, pentaerythritol esters of hydrogenated rosin and pentaerythritol esters of rosin. The results demonstrate that rosin esters are not sensitising in humans, mouse (Local Lymph Node Assay
(LLNA) – OECD guideline 429) or guinea pig (Maximization Test – OECD guideline 406). More information on the

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ECHA dossier webpage of this substance - section sensitisation.
Conclusion :
Not classified for skin sensitization according to EU Classification, Labelling and Packaging of Substances and Mixtures (CLP) Regulation (EC) No. 1272/2008 or UN Globally Harmonized System of Classification and Labelling of Chemicals (GHS UN).

· **Mutagenicity/genotoxicity:**
Adequate information exists to characterise the genetic toxicity of the rosin esters category (bacterial mutation in vitro, mammalian mutagenicity in vitro, mammalian cytogenicity in vitro).
Information is available on the genotoxic potential of rosin esters when tested :
- in bacterial (methyl esters of hydrogenated rosin, diethylene glycol esters of rosin, pentaerythritol esters of rosin) and,
- in mammalian (methyl esters of hydrogenated rosin, and pentaerythritol esters of rosin) systems.
The results demonstrate that rosin esters are not mutagenic or clastogenic in vitro. Study results demonstrates that rosin esters were not mutagenic or clastogenic in bacterial and/or mammalian cells in vitro. More information on the ECHA dossier webpage of this substance - section genetic toxicity
Conclusion :
Not classified mutagen according to EU Classification, Labelling and Packaging of Substances and Mixtures (CLP) Regulation (EC) No. 1272/2008 or UN Globally Harmonized System of Classification and Labelling of Chemicals (GHS UN).

· **Carcinogenicity:**
The substance is not expected to be carcinogenic based on available data on structurally related substances: no mutagenic effects observed and no hyperplasia or pre-neoplastic lesions noted in repeated dose toxicity studies.

· **Reproductive toxicity:**
Effects on fertility:
Six key reproductive/developmental toxicity screening studies (5 x OECD 422 and 1 x OECD 421) are available to evaluate the reproductive toxicity potential of rosin esters. Available data indicates that oral administration of these substances does not adversely impact reproduction in rats. Additionally, results from oral repeated dose toxicity tests conducted using members of the category have revealed no gross or microscopic changes in any reproductive organ at necropsy. More information on the ECHA dossier webpage of this substance - section toxicity to reproduction
Effects on developmental toxicity:
Five key guideline (OECD 414) pre-natal toxicity studies and two combined reproductive/developmental toxicity screening tests (OECD 421 and OECD 422) are available to evaluate the developmental toxicity potential of rosin esters. Glycerol esters of rosin, triethylene glycol esters of rosin, et pentaerythritol esters of rosin did not impact development in rats following oral exposure. However, methyl esters of rosin; ethylene glycol esters of rosin, methyl esters of hydrogenated rosin have demonstrated adverse effects on development post oral exposure in rats , however, these studies demonstrated clear NOAEL's (No Observed Adverse Effect Levels), and subsequently the derived-DNEL take these effects into account and are suitably protective for human health. More information on the ECHA dossier webpage of this substance - section toxicity to reproduction
Conclusion :
All member of Category 2 with the exception of Resin acids and rosin acids, esters with ethylene glycol (CAS RN 68512-65-2) are not classified for reproductive or developmental toxicity according to EU Classification, Labelling and Packaging of Substances and Mixtures (CLP) Regulation (EC) No. 1272/2008 or UN Globally Harmonized System of Classification and Labelling of Chemicals (GHS UN).

· **Specific target organ toxicity - single exposure:**
No specific target organ toxicity was observed in the LD_{50} determination studies.

· **Specific target organ toxicity - repeated exposure:**
Information is available on the oral repeated dose toxicity of rosin esters category (simple, linear, and bulky). No treatment-related or biologically relevant findings were apparent in rats following oral sub-chronic dietary exposure to glycerol esters of rosin, ethylene glycol esters of rosin, triethylene glycol esters of rosin, glycerol esters of hydrogenated rosin andpentaerythritol esters of hydrogenated rosin. Due to the large number of toxicological studies available, it has not been possible to summarize all the information in the SDS. More information on the ECHA dossier webpage of this substance - section Repeated dose toxicity.
Conclusion :

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Not classified for specific target organ toxicity – repeated exposure according to EU Classification, Labelling and Packaging of Substances and Mixtures (CLP) Regulation (EC) No. 1272/2008 or UN Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

· **Aspiration hazard:** Not applicable (solid).

· **Additional toxicological information:**
Prolonged or repeated exposure to vapours/fumes generated by heating this product may cause respiratory irritation with throat discomfort, coughing or breathing difficulty.

· **CMR effects (carcinogenity, mutagenicity and toxicity for reproduction):**
According to Regulation (EC) No 1272/2008, the substance is not considered to be CMR.

· **11.2 Information on other hazards**

· **Endocrine disrupting properties**
The substance is not included in the list established in accordance with Article 59(1) of REACH regulation for having endocrine disrupting properties, and is not a substance identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/210056 or Commission Regulation (EU) 2018/605.

SECTION 12: Ecological information

· **12.1 Aquatic toxicity**
This substance belongs to the chemical category of rosin esters (rosin; hydrogenated rosin; oligomers of rosin ; which are esterified with alcohols typically methanol, ethylene glycol, di and triethylene glycol, glycerol and pentaerythritol).
Experimental data are not available for all the substances within this chemical category; informations from one or several other members of the category are thus presented (properties may be predicted by interpolation to structurally related substances - according to ECHA guidance R6: QSARs and grouping of chemicals).
More information on H4R consortium website: www.h4rconsortium.com
Reliable studies on Daphnia, fish and algae are available for pentaerythritol esters of rosin, glycerol esters of rosin, methyl esters of hydrogenated rosin and ethylene glycol esters of rosin.
The substances with the lowest molecular weights in the category are Resin acids and rosin acids, methyl esters and Resin acids and rosin acids, hydrogenated, methyl esters. The lowest EC50 available for these substances is 27 mg/L, from a Daphnia study with the test material methyl esters of hydrogenated rosin. This result is read across to Resin acids and rosin acids, methyl esters for classification purposes. As this EC50 is > 1 mg/L an acute environmental classification is not appropriate. Neither methyl esters of rosin or methyl esters of hydrogenated rosin are readily biodegradable therefore as the lowest EC50 is >10 <100 mg/L a chronic classification of Chronic Category 3 is applied for both substances in accordance with the CLP regulation.
Based on the available ecotoxicity data, substances in the Rosin esters category with lower molecular weights are more toxic to aquatic organisms than those with higher molecular weights. This is likely to be due to the lower molecular weight substances being more soluble, whereas higher molecular weight substances are poorly soluble and less bioavailable. For higher molecular weight esters (with molecular weights higher than for the Methyl esters), no effects were seen at the limit of solubility in the available acute ecotoxicity studies and thus no environmental classification has been applied.
Short-term aquatic toxicity values were determined in tests conducted with Water Accomodated Fractions (WAF). Loading rates of the tested item are well higher than the water solubility. LL50 and EL50 similar to LC50 and EC50 are obtained by this method.
For all esters (except for methyl esters) :
LL_{50} (96 h), fish (Pimephales promelas): > 100 mg/L (nominal concentration – OECD 203)
EL_{50} (48 h), daphnia (Daphnia magna): > 100 mg/L (nominal concentration - OECD 202)
EL_{50} (72 h), alga (Pseudokirchneriella subcapitata) : > 100 mg/L (based on growth rate – OCDE 201)
The EL50 value was greater than the highest loading rate for all category members tested.
More information on the ECHA dossier webpage of this substance - section ecotoxicologial summary.

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· **Toxicity to aquatic microorganisms:**
Results are available from the toxicity controls carried out as part of OECD 301B Modified sturm tests. Results are available for methyl esters of rosin, diethylene glycol esters of rosin, glycerol esters of rosin, glycerol esters of hydrogenated rosin, pentaerythritol esters of rosin and pentaerythritol esters of hydrogenated rosin (Inveresk, 2002a). All substances showed no inhibition of sewage sludge microorganisms at 20 mg DOC/L. As no toxicity to microorganisms was observed at the concentrations used for the toxicity controls in any of the biodegradation studies, rosin ester substances are not considered to be toxic to microorganisms.
More information on the ECHA dossier webpage of this substance - section ecotoxicologial summary.

· **12.2 Persistence and degradability**
Biodegradation studies are available for the following category members: methyl esters of rosin, pentaerythritol esters of rosin, glycerol esters of rosin, glycerol esters of hydrogenated rosin; with pentaerythritol esters of hydrogenated rosin, and diethylene glycol esters of rosin. All studies are GLP-compliant and follow standard guidelines. They are considered acceptable for use and have been given Klimisch scores of 1. Results of testing of representative members of the category of rosins esters have failed to demonstrate ready biodegradation in OECD 301B, 28 day ready biodegradation screening studies.
The maximum percent of biodegradation across 7 reliable studies was 50.7% after 28 days. Therefore, rosin esters are not considered to be readily biodegradable. However, biodegradation studies conducted with UVCB substances are not always relevant, as individual constituents within a UVCB will have different biodegradation potential.
More information on the ECHA dossier webpage of this substance - section Environmental fate & Pathways

· **12.3 Bioaccumulative potential**
Calculated BCF values for rosin esters range from 554.8 to 8053 L/kg for mono-esters and 3.82 to 137.2 L/kg for di-esters; the BCF for tri-esters and tetra-esters is 3.162. Measured BCF values for resin acids range from <25 to 130.
More information on the ECHA dossier webpage of this substance - section Environmental fate & Pathways

· **12.4 Mobility in soil**
Adsorption/desorption :
Calculated log Koc values for rosin esters range from 2.86 to 3.94 for mono-esters, 6.79 to 8.8 for di-esters, 11.94 to 13.93 for tri-esters and 17.20 to 18.98 for tetra-esters.
More information on the ECHA dossier webpage of this substance - section Environmental fate & Pathways

· **12.5 Results of PBT and vPvB assessment**

· **PBT:**
According to Annex XIII of REACH Regulation, the substance is not considered to be Persistent, Bioaccumulative and Toxic.

· **vPvB:**
According to Annex XIII of REACH Regulation, the substance is not considered to be very Persistent and very Bioaccumulative.

· **12.6 Endocrine disrupting properties**
The substance is not included in the list established in accordance with Article 59(1) of REACH regulation for having endocrine disrupting properties, and is not a substance identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/210056 or Commission Regulation (EU) 2018/605.

· **12.7 Other adverse effects** No data available.

SECTION 13: Disposal considerations

· **13.1 Waste treatment methods**

· **Recommendation:** The product has to be disposed of in an authorised incinerator, according to regulation.

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· **Uncleaned packaging**
· **Recommendation:** Packaging has to be sent to an authorised waste treatment facility, for recycling or disposal.

SECTION 14: Transport information

· **14.1 UN number or ID number**	Not classified as a dangerous good under transport regulation.
· **14.2 UN proper shipping name**	Not classified as a dangerous good under transport regulation.
· **ADR**	Void
· **14.3 Transport hazard class(es)**	Not applicable.
· **14.4 Packing group**	Not applicable.
· **14.5 Environmental hazards**	Not classified as a dangerous good under transport regulation.
· **14.6 Special precautions for user**	Not applicable.
· **14.7 Maritime transport in bulk according to IMO instruments**	Not applicable.
· **UN "Model Regulation"**	Void

SECTION 15: Regulatory information

· **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**
Regulation (EC) No 1907/2006 (REACH):
The product does not contain any of the substances included in the following lists
- Annex XIV (authorisation) / substances of very high concern (SVHC)
- Annex XVII (restrictions)
Directive 2012/18/EU:
The product does not fulfill the criteria for the categories of Annex I part 2.

· **Directive 2012/18/EU**
· **Named dangerous substances - ANNEX I** Substance is not listed.
· **DIRECTIVE 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment – Annex II**
Substance is not listed.
· **REGULATION (EU) 2019/1148**
· **Annex I - RESTRICTED EXPLOSIVES PRECURSORS (Upper limit value for the purpose of licensing under Article 5(3))**
Substance is not listed.
· **Annex II - REPORTABLE EXPLOSIVES PRECURSORS** Substance is not listed.
· **Regulation (EC) No 273/2004 on drug precursors** Substance is not listed.
· **Regulation (EC) No 111/2005 laying down rules for the monitoring of trade between the Community and third countries in drug precursors**
Substance is not listed.

· **15.2 Chemical safety assessment**
A Chemical Safety Assessment has been carried out.
As the substance does not meet the criteria for classification as dangerous and is not considered to be a PBT or vPvB, exposure assessment and risk characterisation were not required. Therefore, there is no annex to this safety data sheet.

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SECTION 16: Other information

Information provided in this safety data sheet is based on our experience and present knowledge. It is a description of safety requirements and data given on the product and cannot be considered as specifications. They shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship. This safety datasheet is provided only for information as it is not required according to article 31 of REACH regulation.

· **Emergency telephone numbers (other countries):**
NCEC In-Country Numbers (24/24 - 7/7):
Global / English speaking countries : +44 1865 407333
Middle East/Africa : +44 1235 239671* (English, Arabic, French, Portuguese, Farsi)
Americas : +1 215 207 0061* (English, Spanish, French, Portuguese)
East/South East Asia : +65 3158 1074* (English, Bengali, Cantonese, Indonesian, Hindi, Japanese, Korean, Malay, Mandarin, Sinhalese, Urdu, Tagalog, Thai, Vietnamese)
Europe : +44 1235 239670*
*(involves operator intervention to identify language)

· **Version number of previous version:** 11.1

· **Abbreviations and acronyms:**
CLP: Regulation (EC) No 1272/2008 on Classification, Labelling and Packaging
H4R : Hydrocarbon Resins & Rosin Resins REACH Consortium - https://h4rconsortium.com
ECHA: European CHemicals Agency
EC: European Commission
ISO : International Organization for Standardization
Directive 2012/18/EU: Directive of the European Parliament and of the Council of 4 July, on the control of major-accident hazards involving dangerous substances
IFRA : International Fragrance Association
OECD: Organisation for Economic Co-operation and Development
ECVAM : European Centre for the Validation of Alternative Methods
QSAR: Quantitative Structure Activity Relationship
DNA: DeoxyriboNucleic Acid
PBT: Persistent, Bioaccumulative and Toxic substance.
vPvB: very Persistent and very Bioaccumulative substance.
UVCB: Substances of unknown or variable composition, complex reaction products or biological materials
SVHC: Substances of Very High Concern
BCF: Bioconcentration Factor
CMR: Substance classified as Carcinogenic, Mutagenic or Toxic for Reproduction
Koc: Organic carbon/water partition coefficient. It represents the potential of retention of the substance on soil organic matter
NOEL: No Observed Effect Level
NOELr: Initial loading rate of the substance without observed effect
NOAEL: No Observed Adverse Effect Level
NOEC: No Observed Effect Concentration
NOAEC: No Observed Adverse Effect Concentration
LOEC: Lowest Observed Effect Concentration
LOAEC: Lowest Observed Adverse Effect Concentration
LOAEL: Lowest Observed Adverse Effect Level
EC_{10}: Concentration which leads to a 10% reduction in treated organism responses compared to untreated organism responses (algae) or concentration which causes effects to 10 % of the tested organisms (daphnids)
EC_{50}: Concentration which leads to a 50% reduction in treated organism responses compared to untreated organism responses (algae) or concentration which causes effects to 50 % of the tested organisms (daphnids)
EL_{50} : Loading rate which leads to a 50 % reduction in treated organisms responses compared to untreated organism responses (algae) or loading rate which causes effects to 50 % of the tested organisms (daphnids)
LC_{50}: Lethal concentration for 50% of exposed animals
LD_{50}: Lethal dose for 50% of animals exposed by oral or dermal route
LL_{50}: Median lethal loading rate (lethal level for 50 % of fish exposed)
LC100 : Lethal concentration for 100% of exposed animals
GPMT: Guinea Maximisation Test - Magnusson and Kligman test
LLNA: Local Lymph Node Assay
CO_2: Carbon dioxide
NLP: No Longer Polymer
bw: body weight
dw: dry weight

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ww : wet weight
ppm : parts per million

· **Sources:**
Literature and company data
REACH dossier data

· **Modified data compared to the previous version:**
The SDS has been updated according to Regulation (EU) 2020/878 , amending Annex II of Regulation (EC) No 1907/2006 (change of sections: 1, 2, 3, 9, 11, 12, 14).
Change of emergency response service