

SAFETY DATA SHEET

Preformed Road Marking

1. Identification of the substance/mixture and of the company/undertaking

1.1 Product Identifier: Preformed Road Marking

Product code: MTXFAT00

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

Supplied for use as a professional use surface coating for application to road surfaces.

1.3 Details of the supplier of the safety data sheet:

Prismo Road Markings Limited (trading as Ennis-Flint)
5 Drumhead Road
Chorley North Industrial Park
Chorley, Lancashire
PR6 7BX
United Kingdom

Telephone Number: +44 (0) 1257 225 100

Fax Number: +44 (0) 1257 224 606

E-mail Address: info@ennisflint.com

1.4 Emergency telephone number

+44 (0) 1257 225 100

Only available office hours Monday – Friday 0830 to 1700 (English language)

2. Hazards Identification

2.1 Classification of the substance or mixture

2.1.1 Classification according to Regulation (EC) No 1272/2008 [CLP]

Skin Sensitiser 1; H317 May cause an allergic skin reaction.

Eye Irritant 2; H319 Causes serious eye irritation.

2.2 Label Elements according to Regulation (EC) No 1272/2008 [CLP]

Preformed Road Marking

(Contains: Resin acids and Rosin acids, fumarated, esters with pentaerythritol E.C. 305-514-1)



Signal word: WARNING

Hazard Statements:

H317 May cause an allergic skin reaction.

H319 Causes serious eye irritation.

Precautionary Statements:

P264 Wash hands thoroughly after handling.

P261 Avoid breathing dust.

P280 Wear protective gloves.

P302 + P352 IF ON SKIN: Wash with plenty of water.

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P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P333 + P313 If skin irritation or rash occurs: Get medical advice/attention.

P337 + P313 If eye irritation persists: Get medical advice/attention.

P362 + P364 Take off contaminated clothing and wash it before reuse.

P501 Dispose of contents/container in accordance with local/ regional/national/international regulation.

2.3 Other hazards

This mixture does not contain any substances that are assessed to be PBT or vPvB.


The product may give potential for generation of respirable dust during handling and use. Dust may contain respirable crystalline silica. Prolonged and or high inhalation of respirable crystalline silica dust may cause lung fibrosis, commonly referred to as silicosis. Principal symptoms of lung fibrosis are cough and breathlessness. Occupational exposure to respirable dust and respirable crystalline silica should be monitored and controlled.

3. Composition/information on ingredients

3.1 Product Code:

3.2 Mixtures

3.3 Hazardous components

Chemical Name	CAS-No./ EINECS-No.	Annex Index or REACH number	Pictogram(s)	H-phrase(s)	Concentrations [%]
Resin acids and Rosin acids, fumarated, esters with pentaerythritol	94581-15-4/ 305-514-1	Index number: - REACH Registration number: 01-2119485895-17-0002	According to 1272/2008: GHS07 	According to 1272/2008: Eye irrit. 2 H319 Skin sens. 1 H317 Long-term aquatic hazard 4 H413	10.0 – 20.0
Titanium dioxide	13463-67-7/ 236-675-5	Index number: - REACH Registration number: 01-2119489379-17-0013	According to 1272/2008: Not classified Substance with Workplace Exposure Limit	According to 1272/2008: - -	5.0 – 10.0
Silica, respirable crystalline	-	Index number: - REACH Registration number: -	According to 1272/2008: Not classified Substance with Workplace Exposure Limit	According to 1272/2008: - -	≤ 5

The full hazard information for individual components if not displayed in section 2 or 3 are displayed in Section 16.



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4.0. First Aid Measures

4.1 Description of first aid measures

General advice

Immediate medical attention is required if in contact with hot product. Move out of dangerous area. Show this safety data sheet to the doctor in attendance.

Inhalation

Move exposed person to fresh air. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Get medical attention immediately. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Ingestion

Wash out mouth with water. Remove dentures if any. Move exposed person to fresh air. Keep person warm and at rest. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs.

Get medical attention if adverse health effects persist or are severe.

Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately.

Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact

Wash skin immediately with soap and water. Get medical attention if irritation develops and persists. If contact with hot product, cool the burn area by flushing with large amounts of water. Do not attempt to remove anything from the burn area or apply burn creams or ointments. Cover the burn area loosely with a sterile dressing, if available. Transport to the nearest medical facility for additional treatment. All burns should receive medical attention.

Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Eye contact

Cold product - Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Protect unharmed eye. Continue to rinse and get medical attention immediately. Continue to rinse during transport. If eye irritation persists, consult a specialist.

Hot product - If contact with hot product, cool the burn area by flushing with large amounts of water. Do not attempt to remove anything from the burn area or apply burn creams or ointments. Cover the burn area loosely with a sterile dressing, if available. Transport to the nearest medical facility for additional treatment. All burns should receive medical attention.

4.2 Most important symptoms and effects, both acute and delayed

Over-exposure signs/symptoms

Inhalation

No specific information.

Ingestion

No specific information.

Skin

Contact with hot product may cause burns.



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Product contains a skin sensitising substance. Prolonged or repeated exposure may cause skin sensitisation. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels. Adverse symptoms may include the following: irritation, redness.

Eyes

Contact with hot product may cause burns and severe damage to eyes. Product and dust may cause irritation to eyes.

See **SECTION 11** for more detailed information on health effects and symptoms.

4.3 Indications of any immediate medical attention and special treatment needed

Notes to physician

No specific treatment. Treat symptomatically. If removal of solidified product from skin is attempted, mineral oil (not mineral spirits) or a mineral oil based ointment may be applied to help soften the product to facilitate removal.

Protection of first aid personnel

No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash Contaminated clothing thoroughly with water before removing it, or wear gloves.

5. Fire-Fighting measures

5.1 Extinguishing media

Suitable

Use water spray, fog or foam, carbon dioxide. Use an extinguishing agent suitable for the surrounding fire

Not suitable

Do not use water jet.

5.2 Special hazards arising from the substance or mixture

In a fire or if heated, a pressure increase may occur. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products

In combustion may emit toxic fumes.

5.3 Advice for firefighters

Special precautions for fire-fighters

Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters

Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

6.1 Personal precautions, protective equipment and emergency procedures

Avoid contact with skin, eyes and clothing. Hot product should be handled so that there is no risk of burns. No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Provide adequate ventilation.

Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see section 8).



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Avoid breathing vapour or mist.

6.2 Environmental precautions

Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

6.3 Methods and material for containment and cleaning up

Small spill :

Eliminate all ignition sources. Move containers from spill area. Dispose of via a licensed waste disposal contractor. Stop leak if without risk.

Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container.

Large spill :

Eliminate all ignition sources. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Dispose of via a licensed waste disposal contractor. Stop leak if without risk. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations . Contaminated absorbent material may pose the same hazard as the spilled product.

6.4 Reference to other sections

Note: see SECTION 1 for emergency contact information, SECTION 8 for personal protection and section 13 for waste disposal.

7. Handling and storage

7.1 Precaution for safe handling

Avoid contact with skin, eyes and clothing. Avoid generation and breathing of dusts. Hot product should be handled so that there is no risk of burns.

Put on appropriate personal protective equipment (see section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Persons with a history of skin sensitization problems should not be employed in any process in which this product is used.

Do not get in eyes or on skin or clothing. Do not ingest. Avoid breathing dust, vapour or mist. Avoid release to the environment. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

7.2 Conditions for safe storage, including any incompatibilities

Store in accordance with local regulations.

Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink. Keep container tightly closed and sealed until ready for use.

Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

7.3 Specific end use(s)

Not applicable.

8. Exposure controls/personal protection

8.1 Control Parameters

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Workplace exposure Limits as defined by UK HSE in document EH40/2005 where available:

Substance	CAS number	Workplace Exposure Limit				Comments
		Long-term exposure limit (8-hr TWA reference period)		Short-term exposure limit (15 minute reference period)		
		ppm	mg.m ⁻³	ppm	mg.m ⁻³	
Titanium dioxide – total inhalable	13463-67-7	-	10	-	-	The Carc, Sen and Sk notations are not exhaustive. Notations have been applied to the substances identified in IOELV Directives
Titanium dioxide – respirable		-	4	-	-	
Silica, respirable crystalline		-	0.1	-	-	

Titanium dioxide:

DNEL 10 mg/m³ (long-term, inhalation route, generally for nuisance dust, i.e. no specific hazard from the substance)

PNEC aqua (freshwater): 0.127 mg/l

PNEC aqua (marine water): 1 mg/l

PNEC aqua (intermittent releases): 0.61 mg/l

PNEC sediment (freshwater): 1000 mg/kg sediment dw

PNEC sediment (marine water): 100 mg/kg sediment dw

PNEC soil: 100 mg/kg soil dw

PNEC (sewage treatment plant): 100 mg/l

PNEC (oral, mammals): 1667 mg/kg food

Resin acids and Rosin acids, fumarated, esters with pentaerythritol:

DNELs:

Type	Route	Value	Form
General Population	Dermal	2.5 mg/Kg/day	Long term systemic effects
	Inhalation	9 mg/m ³	Long term systemic effects
	Oral	2.5 mg/Kg/day	Long term systemic effects
Workers	Dermal	4 mg/Kg/day	Long term systemic effects
	Inhalation	29 mg/m ³	Long term systemic effects

PNECs:

Type	Route	Value	Form
Not applicable	Fresh water	0.1 mg/l	
	Sea water	0.01 mg/l	
	Sediment	1.55 mg/Kg/dw	Fresh water
	Sediment	0.155 mg/Kg/dw	Sea water
	Sewage treatment plant	1.26 mg/l	
	Soil	0.249 mg/Kg/dw	



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8.2 Exposure controls

General

Avoid contact with skin, eyes and clothing. Hot product should be handled so that there is no risk of burns

Hygiene measures :

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location. Ensure that there is sufficient ventilation of the area.

Eye and face protection

Wear tightly fitting safety goggles and Face shield that meet EN 166 a/o ANSI Z87.1 standards

Skin protection

When handling heated product wear heat resistant gloves.

Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact.

Always seek advice from glove suppliers. Select gloves approved to EU standard EN407.

Wear impermeable protective clothing, butyl rubber apron and boots.

For normal operations with hot material wear heat resistant coveralls, (with cuffs over gloves and legs over boots), and heavy-duty boots, e.g. leather for heat resistance. The use of a neck apron is recommended.

Inhalation

Provide a good standard of general ventilation. Use outdoors or ensure not less than 3 to 5 air changes per hour. In case of dust wear respiratory protective device with dust filter. Applicable standards for continuous wear time of less than 2 hour are BS EN 140 mask and BS EN 143 Filter; BS EN 1827.

9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance

Physical state: powder

Colour: No data

Odour: Characteristic

Odour threshold: No data

pH: Not applicable

Melting Point: No data

Initial boiling point and boiling range: Not applicable

Flash point: No data

Evaporation rate: No data

Flammability: No data

Explosion limits

Upper: No data

Lower: No data

Vapour pressure: No data

Vapour density: No data

Relative density: No data

Solubility: Insoluble in water

Partition coefficient: n-octanol/water No data

Auto-ignition temperature: No data

Decomposition temperature: No data

Viscosity: Not applicable

Explosive properties: No data



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Oxidising properties: No data

9.2 Other Information

No other relevant information available

10. Stability and reactivity

10.1 Reactivity

Stable under normal conditions.

10.2 Chemical stability

Stable under normal conditions.

10.3 Possibility of hazardous reactions

Under normal conditions of storage and use, hazardous reactions will not occur.

10.4 Conditions to avoid

Avoid strong bases, acids and strong oxidising agents.

10.5 Incompatible materials

Do not allow molten material to contact water or liquids as this can cause violent eruptions, splatter hot material, or ignite flammable material.

10.6 Hazardous decomposition products

In combustion may emit toxic fumes.

11. Toxicological Information

11.1 Information on toxicological effects

The mixture has not been assessed for toxicological effects, the mixture classification is given in section 2 based on individual component contents. Individual component hazards are given in section 3

Toxicological information on hazardous ingredients where available:

Resin acids and Rosin acids, fumarated, esters with pentaerythritol:

Information on likely routes of exposure

Inhalation: Dust may irritate respiratory system.

Skin contact: May cause an allergic skin reaction.

Eye contact: Causes serious eye irritation.

Resin acids and Rosin acids, Irritation Corrosion - Eye, Data is for similar product.

fumarated, esters with Result: Positive

pentaerythritol . Species: New Zealand white rabbit

Organ: Eye

Test duration: 4hr

Observation Period: 72 hr

Notes: OECD 405

Ingestion: May cause discomfort if swallowed. However, ingestion is not likely to be a primary route of occupational exposure.

Symptoms: Rash. Severe eye irritation. Dusts may irritate the respiratory tract, skin and eyes. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. May cause an allergic skin reaction. Dermatitis. Rash

Acute toxicity:

Dermal LD50 Sprague-Dawley rat > 2000 mg/kg. At this does no death occurred. Data for similar product

Oral LD50 Sprague-Dawley rat > 2000 mg/kg, At this does no death occurred. Data for similar product



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Subacute:

Oral

NOAEL Wistar rat 300 mg/kg/day, 8 weeks Developmental

NOEL Wistar rat 1000 mg/kg/day, 8 weeks Reproductive

Skin corrosion/irritation Based on available data, the classification criteria are not met.

Corrosivity

Resin acids and Rosin acids, fumarated, esters with pentaerythritol

Irritation Corrosion - Skin, No skin irritation.

Result: negative

Species: New Zealand white rabbit

Organ: Skin

Test duration: 4hr

Observation Period: 72 hr

Notes OECD 404

Serious eye damage/eye irritation

Causes serious eye irritation.

Eye contact

Irritation Corrosion - Eye, Data is for similar product.

Result: Positive

Species: New Zealand white rabbit

Organ: Eye

Test duration: 4hr

Observation Period: 72 hr

Notes: OECD 405

Respiratory sensitisation

Based on available data, the classification criteria are not met.

Skin sensitisation

May cause an allergic skin reaction.

50 % w/w Local Lymph Node Assay - Lowest Concentration

Producing Reaction - OECD 429, SI=4,24 May cause sensitization by skin contact.

Result: Positive

Species: Mouse

Notes: OECD 429

Germ cell mutagenicity

No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Mutagenicity

Resin acids and Rosin acids, fumarated, esters with Pentaerythritol

Germ Cell Mutagenicity: Ames

Result: negative

Species: Salmonella typhimurium

Notes: OECD 471

Germ Cell Mutagenicity: Chromosome Abberation

Result: negative

Species: Human

Notes: OECD 473

In vitro gene mutation study in mammalian cells, No data available to indicate product or any components present at greater than 0,1% are mutagenic or genotoxic.



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Result: negative
Species: Mouse
Notes: OECD 476

Carcinogenicity Not classified.
Reproductive toxicity This product is not expected to cause reproductive or developmental effects.
Specific target organ toxicity - single exposure
Not classified..
Specific target organ toxicity - repeated exposure
Not classified
Aspiration hazard Not available.

Titanium dioxide:

a) Acute toxicity:

- oral – LD50 > 5000 mg/kg bw;
- inhalation – LC50 > 6.82 mg/l air (MMAD=1.55 µm, GSD=1.70 µm)
Based on available data, the classification criteria are not met.

b) Skin corrosion/irritation: according to test OECD Guideline 404 the substance is not irritant. Based on available data, the classification criteria are not met.

c) Serious eye damage/irritation: according to tests OECD Guideline 405, EU Method B.5 and EPA OPPTS 870.2400 the substance does not cause serious eye damage/irritation. Based on available data, the classification criteria are not met.

d) Respiratory or skin sensitisation: according to tests OECD Guidelines 406 and 429 the substance does not have skin sensitising properties; the substance does not show respiratory sensitising properties in animal studies or in exposure related observations in humans. Based on available data, the classification criteria are not met.

e) Germ cell mutagenicity: the substance was tested (bacterial reverse mutation assays, in vitro gene mutation, clastogenicity test) with a negative test result. Based on available data, the classification criteria are not met.

f) Carcinogenicity: Although carcinogenity studies observed formation of lung tumours under condition of lung particle overload, similar pathological changes are not observed in other experimental species. Detailed epidemiological investigations have shown no causative link between titanium dioxide exposure and cancer risk in humans. At workplace exposure concentrations, no lung cancer hazard has been observed. Based on available data, the classification criteria are not met. Nevertheless, the product is indicated by the IARC Monograph as possibly carcinogenic to humans (group 2B) based on insufficient evidence in humans and on sufficient evidence in experimental animals (IARC Monographs on the Evaluation of Carcinogenic Risks to Humans, Volume 93, 2010).

g) Reproductive toxicity: based on the weight of evidence from the available long-term toxicity/carcinogenicity studies in rodents and the relevant information on the toxicokinetic behaviour in rats it is concluded that the substance does not present a reproductive toxicity hazard. Based on available data, the classification criteria are not met.

h) STOT–single exposure: no reversible or irreversible adverse health effects through oral exposure were observed immediately or delayed after exposure. Based on available data, the classification criteria are not met.

i) STOT–repeated exposure: the substance does not show any adverse effects whatsoever in a chronic oral repeated dose toxicity study in rats with a NOAEL of 3500 mg/kg bw/day; the substance is not absorbed to any relevant extent through human skin, thus no toxic



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effects can be expected via the dermal route of exposure; regarding inhalation route of exposure the following observations have been made in experimental animals and in human epidemiological studies: (i) No systemic toxicity was shown to result from chronic inhalation exposure in rats to high concentrations of pigment grade titanium dioxide, (ii) Particle overload is observed for insoluble particles such as titanium dioxide, whereby the rat is the most sensitive species studied, and species-specific differences are demonstrated in various mechanistic animal studies. It has been demonstrated with reasonable certainty that lung overload conditions are not relevant for human health and, therefore, results based on these data do not justify classification. (iii) It has also been clearly demonstrated through epidemiological studies of titanium dioxide-exposed workers that there is no causal link. Based on available data, the classification criteria are not met.

j) Aspiration hazard: Based on available data, the classification criteria are not met.

12. Ecological Information

12.1 Toxicity

Mixture not classified as harmful to aquatic life.

Toxicity of ingredients where available:

Resin acids and Rosin acids, fumarated, esters with pentaerythritol

Algae	EC0	Algae	> 1000 mg/l, 72 hr Data is for similar product.; OECD 201
Crustacea	EL50	Daphnia	< 100 mg/l, 48 hr OECD 202
	NOEL	Daphnia	56 mg/l, 48 hr >> Water solubility; OECD 202
Fish	LC0	Danio (Danio)	> 400 mg/l, 96 hr Data is for similar product.; OECD 203

Persistence and degradability: Not readily degradable.

12.2 Persistence and degradability

Information not available.

12.3 Bioaccumulative potential

No information.

12.4 Mobility in soil

No information.

12.5 Results of PBT and vPvB assessment

This mixture does not contain any substances that are assessed to be PBT or vPvB.

12.6 Other adverse effects

No information.

13. Disposal considerations

13.1 Waste Treatment Methods

Methods of disposal:

The generation of waste should be avoided or minimized wherever possible.

Empty containers or liners may retain some product residues.

This material and its container must be disposed of in a safe way.

Dispose of surplus and non-recyclable products via a licensed waste disposal contractor.

Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and

waste disposal legislation and any regional local authority requirements.



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Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Hazardous waste:

The classification of the product may meet the criteria for a hazardous waste.

14. Transport Information

14.1 UN number: Not applicable

14.2 UN proper shipping name: Not applicable

14.3 Transport hazard: Not applicable

14.4 Packing group: Not applicable

14.5 Environmental hazards: Product is not classified as harmful to the environment.

14.6 Special precautions for user: No information available

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC code

Applicable for Maritime bulk transport only. Check with carrier.

15. Regulatory information

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

This substance is classified and labelled in accordance with regulation 1272/2008 and Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC, including amendments.

15.2 Chemical Safety Assessment

CSA not undertaken for this substance

16. Other Information

Other Hazard Information assigned to individual ingredients, but not carried to final classification:

H413: May cause long lasting harmful effects to aquatic life.

SDS information:

This safety data sheet is compiled using data submitted for raw materials and practical experience.

This product is intended for professional users only.

This Safety Data Sheet is prepared in compliance with regulation 1272/2008 and Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC, including amendments.

THE INFORMATION GIVEN HEREIN IS, TO THE BEST OF OUR KNOWLEDGE, CORRECT AND IS

PRESENTED IN GOOD FAITH BUT NO WARRANTY, EXPRESSED OR IMPLIED IS GIVEN.

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Annex to the extended Safety Data Sheet (eSDS)

Name of the substance Resin acids and Rosin acids, fumarated, esters with pentaerythritol

1 - Exposure Scenario Worker

1. Adhesives, sealants

List of use descriptors

Sector(s) of Use	SU3: Industrial uses: Uses of substances as such or in preparations at industrial sites. SU0: Other.
Product categories [PC]:	Not available.
Name of contributing environmental scenario and corresponding ERC	Adhesives, sealants ERC5: Industrial use resulting in inclusion into or onto a matrix.
List of names of contributing worker scenarios and corresponding PROCs	Adhesives, sealants PROC1: Use in closed process, no likelihood of exposure. PROC2: Use in closed, continuous process with occasional controlled exposure. PROC3: Use in closed batch process (synthesis or formulation). PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises. PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). PROC7: Industrial spraying. PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities. PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. PROC10: Roller application or brushing of adhesive and other coating. PROC13: Treatment of articles by dipping and pouring. PROC15: Use as laboratory reagent.

2.1. Contributing scenario controlling environmental exposure for Adhesives, sealants

Product characteristics

Physical state	solid
Kinematic viscosity	Not available.
Dynamic viscosity	Not available.
Amounts used	
Annual amount used in the EU	12500 tons/year
Regional use tonnage (tons/year):	1250 tons/year
Fraction of Regional tonnage used locally:	1
Emission days (days/year):	220
Frequency and duration of use	
Batch process	Not available.
Continuous process	Not available.
Environment factors not influenced by risk management	
Local freshwater dilution factor:	10
Local freshwater dilution factor:	100

Other given operational conditions affecting environmental exposure

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Emission days			Emission factors		
Type	(days/year)	Air	Soil	Water	Remarks
Emission days (days/year)	220	0.017	0	0	

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release	Common practices vary across sites thus conservative process release estimates used.
---------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil

Air	Not available.
Soil	Not available.
Water	Not available.
Sediment	Not available.
Remarks	Not available.
Organisational measures to prevent/limit release from site	Do not apply industrial sludge to natural soils. Prevent discharge of undissolved substance to or recover from onsite wastewater.

Conditions and measures related to municipal sewage treatment plant

Size of municipal sewage system/treatment plant (m³/d)

Type	Not available
Discharge rate	2000
Treatment effectiveness	Not available
Sludge treatment technique	Not available
Measures to limit air emissions	Not available

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment

Suitable waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Disposal methods	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Treatment effectiveness	Not available.
Remarks	Not available.

Conditions and measures related to external recovery of waste

Fraction of used amount transferred to external waste treatment

Suitable recover operations	External recovery and recycling of waste should comply with applicable local and/or national regulations.
Treatment effectiveness	Not available.
Remarks	Not available.
Additional good practice advice beyond the REACH CSA	Not available.

2.2. Contributing scenario controlling worker exposure for Adhesives, sealants

Process categories beyond the REACH CSA	Use in closed process, no likelihood of exposure. Use in closed, continuous process with occasional controlled exposure. Use in closed batch process (synthesis or formulation). Use in batch and other process (synthesis) where opportunity for
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	<p>exposure arises. Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). Industrial spraying. Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities. Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. Roller application or brushing of adhesive and other coating. Treatment of articles by dipping and pouring. Use as laboratory reagent.</p>
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Product characteristics

Physical form of the product solid
Vapour pressure Not available.
Process temperature Assumes activities are at ambient temperature (unless stated differently).

Amounts used Not available.
Frequency and duration of use Not available.
Human factors not influenced by risk management

Exposed skin areas	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. wash off any skin contamination immediately. provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.
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Other given operational conditions affecting workers exposure

Not available.

Other relevant operational conditions

Not available.

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release	Not available.
Technical conditions and measures to control dispersion from source towards the worker	Provide extract ventilation to points where emissions occur.
Organizational measures to prevent/limit releases, dispersion and exposure	Ensure operatives are trained to minimise exposures. Regular inspection and maintenance of equipment and machines Supervision in place to check that the RMMs in place are being used correctly and OCs followed.
Conditions and measures related to personal protection, hygiene and health evaluations	Avoid direct eye contact with product, also via contamination on hands. Avoid contact with skin. Wear suitable gloves (tested to EN374) and eye protection. Clear up spills immediately and dispose of waste safely. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. If on skin: Wash with plenty of water. Flush contaminated area with plenty of water. Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying. When handling hot material, use heat resistant gloves.

3. Exposure Estimation

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Environment

Compartment	PEC	RCR (PEC/PNEC)	Method	Remarks
Air	1,75E-02 mg/m ³	The use is assessed to be safe.	Used EUSES model.	
Freshwater	8,88E-05 mg/l	0,000888	Used EUSES model.	
Marine water	1,40E-05 mg/l	0.0014	Used EUSES model.	
Freshwater sediment	1,08E-02 mg/kg wet weight	0.0321	Used EUSES model.	
Marine sediment	1,71E-03 mg/kg wet weight	0.0506	Used EUSES model.	
Soil	1,76E-01 mg/kg wet weight	0.788	Used EUSES model.	
STP	0 mg/l	0	Used EUSES model.	

Health

Not available.

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

The immediate downstream user is required to evaluate whether the risk management measures and operational conditions described in the ES fits to his use. Where other RMM / OC are adopted, user should then ensure that risks are managed to at least equivalent levels. This may be based on a set of determinants (and a suitable algorithm) which together ensure control of risk. Where relevant DU can use other methods, such as scaling, he needs to check whether he acts within the boundaries set by the information provided in the exposure scenario. Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

2. Exposure Scenario Worker

1. Adhesives, sealants

List of use descriptors

Sector(s) of Use	SU22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen). SU0: Other.
Product categories [PC]:	PC1: Adhesives, sealants. PC4: Anti-freeze and de-icing products. PC8: Biocidal products. PC9a: Coatings and paints, thinners, paint removers. PC9b: Fillers, putties, plasters, modelling clay. PC9c: Finger paints. PC15: Non-metal-surface treatment products. PC18: Ink and toners. PC23: Leather tanning, dye, finishing, impregnation and care products. PC24: Lubricants, greases, release products. PC31: Polishes and wax blends. PC34: Textile dyes, finishing and impregnating products; including bleaches and other processing aids.

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Name of contributing environmental scenario and corresponding ERC	Adhesives, sealants ERC8c: Wide dispersive indoor use resulting in inclusion into or onto a matrix.
List of names of contributing worker scenarios and corresponding PROCs	Adhesives, sealants PROC1: Use in closed process, no likelihood of exposure. PROC2: Use in closed, continuous process with occasional controlled exposure. PROC3: Use in closed batch process (synthesis or formulation). PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises. PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities. PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. PROC10: Roller application or brushing of adhesive and other coating. PROC11: Non industrial spraying. PROC13: Treatment of articles by dipping and pouring. PROC15: Use as laboratory reagent. PROC19: Hand-mixing with intimate contact and only PPE available

2.1. Contributing scenario controlling environmental exposure for Adhesives, sealants

Product characteristics

Physical state	solid
Kinematic viscosity	Not available.
Dynamic viscosity	Not available.
Amounts used	
Annual amount used in the EU	5000 tons/year
Regional use tonnage (tons/year):	500 tons/year
Fraction of Regional tonnage used locally:	0.002
Emission days (days/year):	365
Frequency and duration of use	
Batch process	Not available.
Continuous process	Not available.
Environment factors not influenced by risk management	
Local freshwater dilution factor:	10
Local freshwater dilution factor:	100

Other given operational conditions affecting environmental exposure

Emission days			Emission factors		
Type	(days/year)	Air	Soil	Water	Remarks
Emission days (days/year):	365	0	0	0.015	

Risk management measures (RMM)

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Technical conditions and measures at process level (source) to prevent release	Common practices vary across sites thus conservative process release estimates used.
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Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil

Air	Not available.
Soil	Not available.
Water	Not available.
Sediment	Not available.
Remarks	Not available.
Organisational measures to prevent/limit release from site	Do not apply industrial sludge to natural soils. Prevent discharge of undissolved substance to or recover from onsite wastewater.

Conditions and measures related to municipal sewage treatment plant

Size of municipal sewage system/treatment plant (m³/d)

Type	Not available
Discharge rate	2000
Treatment effectiveness	Not available
Sludge treatment technique	Not available
Measures to limit air emissions	Not available

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment

Suitable waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Disposal methods	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Treatment effectiveness	Not available.
Remarks	Not available.

Conditions and measures related to external recovery of waste

Fraction of used amount transferred to external waste treatment

Suitable recover operations	External recovery and recycling of waste should comply with applicable local and/or national regulations.
Treatment effectiveness	Not available.
Remarks	Not available.
Additional good practice advice beyond the REACH CSA	Not available.

2.2. Contributing scenario controlling worker exposure for Adhesives, sealants

Process categories beyond the REACH CSA	Use in closed process, no likelihood of exposure. Use in closed, continuous process with occasional controlled exposure. Use in closed batch process (synthesis or formulation). Use in batch and other process (synthesis) where opportunity for exposure arises. Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities. Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. Roller application or brushing of adhesive
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	and other coating. Non industrial spraying. Treatment of articles by dipping and pouring. Use as laboratory reagent. Hand-mixing with intimate contact and only PPE available.
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Product characteristics

Physical form of the product solid
Vapour pressure Not available.
Process temperature Assumes activities are at ambient temperature (unless stated differently).

Amounts used Not available.
Frequency and duration of use Not available.

Human factors not influenced by risk management

Exposed skin areas	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. wash off any skin contamination immediately. provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.
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Other given operational conditions affecting workers exposure

Not available.

Other relevant operational conditions

Not available.

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release	Not available.
Technical conditions and measures to control dispersion from source towards the worker	Provide extract ventilation to points where emissions occur.
Organizational measures to prevent/limit releases, dispersion and exposure	Ensure operatives are trained to minimise exposures. Regular inspection and maintenance of equipment and machines Supervision in place to check that the RMMs in place are being used correctly and OCs followed.
Conditions and measures related to personal protection, hygiene and health evaluations	Avoid direct eye contact with product, also via contamination on hands. Avoid contact with skin. Wear suitable gloves (tested to EN374) and eye protection. Clear up spills immediately and dispose of waste safely. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. If on skin: Wash with plenty of water. Flush contaminated area with plenty of water. Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying. When handling hot material, use heat resistant gloves.

3. Exposure Estimation

Environment

Compartment	PEC	RCR (PEC/PNEC)	Method	Remarks
Air	1,35E-03 mg/m ³	The use is assessed to be safe.	Used EUSES model.	

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Freshwater	2,71E-04 mg/l	0.00271	Used EUSES model.	
Marine water	2,18E-04 mg/l	0.0218	Used EUSES model.	
Freshwater sediment	3,30E-02 mg/kg wet weight	0.0981	Used EUSES model.	
Marine sediment	2,65E-02 mg/kg wet weight	0.787	Used EUSES model.	
Soil	2,13E-01 mg/kg wet weight	0.975	Used EUSES model.	
STP	1,84E-03 mg/l	0.00146	Used EUSES model.	

Health

Not available.

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

The immediate downstream user is required to evaluate whether the risk management measures and operational conditions described in the ES fits to his use. Where other RMM / OC are adopted, user should then ensure that risks are managed to at least equivalent levels. This may be based on a set of determinants (and a suitable algorithm) which together ensure control of risk. Where relevant DU can use other methods, such as scaling, he needs to check whether he acts within the boundaries set by the information provided in the exposure scenario. Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

3. Exposure Scenario Worker

1. Coating

List of use descriptors

Sector(s) of Use	SU3: Industrial uses: Uses of substances as such or in preparations at industrial sites. SU0: Other.
Product categories [PC]:	Not available.
Name of contributing environmental scenario and corresponding ERC	Coating. ERC5: Industrial use resulting in inclusion into or onto a matrix.
List of names of contributing worker scenarios and corresponding PROCs	Coating. PROC1: Use in closed process, no likelihood of exposure. PROC2: Use in closed, continuous process with occasional controlled exposure. PROC3: Use in closed batch process (synthesis or formulation). PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises. PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). PROC7: Industrial spraying. PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities. PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. PROC10: Roller application or brushing of adhesive and other coating. PROC13: Treatment of articles by dipping and pouring. PROC15: Use as laboratory reagent.

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2.1. Contributing scenario controlling environmental exposure for Coating

Product characteristics

Physical state	solid
Kinematic viscosity	Not available.
Dynamic viscosity	Not available.
Amounts used	
Annual amount used in the EU	12500 tons/year
Regional use tonnage (tons/year):	1250 tons/year
Fraction of Regional tonnage used locally:	1
Emission days (days/year):	220
Frequency and duration of use	
Batch process	Not available.
Continuous process	Not available.
Environment factors not influenced by risk management	
Local freshwater dilution factor:	10
Local freshwater dilution factor:	100

Other given operational conditions affecting environmental exposure

Type	Emission days		Emission factors		
	(days/year)	Air	Soil	Water	Remarks
Emission days (days/year):	220	0.021	0	0	

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release	Common practices vary across sites thus conservative process release estimates used.
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Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil

Air	Not available.
Soil	Not available.
Water	Not available.
Sediment	Not available.
Remarks	Not available.
Organisational measures to prevent/limit release from site	Do not apply industrial sludge to natural soils. Prevent discharge of undissolved substance to or recover from onsite wastewater.

Conditions and measures related to municipal sewage treatment plant

Size of municipal sewage system/treatment plant (m³/d)

Type	Not available
Discharge rate	2000
Treatment effectiveness	Not available
Sludge treatment technique	Not available
Measures to limit air emissions	Not available

Conditions and measures related to external treatment of waste for disposal

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Fraction of used amount transferred to external waste treatment

Suitable waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Disposal methods	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Treatment effectiveness	Not available.
Remarks	Not available.

Conditions and measures related to external recovery of waste

Fraction of used amount transferred to external waste treatment

Suitable recover operations	External recovery and recycling of waste should comply with applicable local and/or national regulations.
Treatment effectiveness	Not available.
Remarks	Not available.
Additional good practice advice beyond the REACH CSA	Not available.

2.2. Contributing scenario controlling worker exposure for Coating

Process categories beyond the REACH CSA	Use in closed process, no likelihood of exposure. Use in closed, continuous process with occasional controlled exposure. Use in closed batch process (synthesis or formulation). Use in batch and other process (synthesis) where opportunity for exposure arises. Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). Industrial spraying. Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities. Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. Roller application or brushing of adhesive and other coating. Treatment of articles by dipping and pouring. Use as laboratory reagent.
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Product characteristics

Physical form of the product	solid
Vapour pressure	Not available.
Process temperature	Assumes activities are at ambient temperature (unless stated differently).

Amounts used Not available.

Frequency and duration of use Not available.

Human factors not influenced by risk management

Exposed skin areas	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. wash off any skin contamination immediately. provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.
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Other given operational conditions affecting workers exposure

Not available.

Other relevant operational conditions

Not available.

Risk management measures (RMM)

Technical conditions and	Not available.
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measures at process level (source) to prevent release	
Technical conditions and measures to control dispersion from source towards the worker	Provide extract ventilation to points where emissions occur.
Organizational measures to prevent/limit releases, dispersion and exposure	Ensure operatives are trained to minimise exposures. Regular inspection and maintenance of equipment and machines Supervision in place to check that the RMMs in place are being used correctly and OCs followed.
Conditions and measures related to personal protection, hygiene and health evaluations	Avoid direct eye contact with product, also via contamination on hands. Avoid contact with skin. Wear suitable gloves (tested to EN374) and eye protection. Clear up spills immediately and dispose of waste safely. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. If on skin: Wash with plenty of water. Flush contaminated area with plenty of water. Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying. When handling hot material, use heat resistant gloves.

3. Exposure Estimation Environment

Compartment	PEC	RCR (PEC/PNEC)	Method	Remarks
Air	2.13E-02 mg/m ³	The use is assessed to be safe.	Used EUSES model.	
Freshwater	8,88E-05 mg/l	0.000888	Used EUSES model.	
Marine water	1,40E-05 mg/l	0.0014	Used EUSES model.	
Freshwater sediment	1,08E-02 mg/kg wet weight	0.0321	Used EUSES model.	
Marine sediment	1,71E-03 mg/kg wet weight	0.0506	Used EUSES model.	
Soil	2,18E-01 mg/kg wet weight	0.972	Used EUSES model.	
STP	0 mg/l	0	Used EUSES model.	

Health

Not available.

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

The immediate downstream user is required to evaluate whether the risk management measures and operational conditions described in the ES fits to his use. Where other RMM / OC are adopted, user should then ensure that risks are managed to at least equivalent levels. This may be based on a set of determinants (and a suitable algorithm) which together ensure control of risk. Where relevant DU can use other methods, such as scaling, he needs to check whether he acts within the boundaries set by the information provided in the exposure scenario. Guidance is based on assumed operating

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conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

4. Exposure Scenario Worker

1. Coating.

List of use descriptors

Sector(s) of Use	SU22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen). SU0: Other.
Product categories [PC]:	PC1: Adhesives, sealants. PC4: Anti-freeze and de-icing products. PC8: Biocidal products. PC9a: Coatings and paints, thinners, paint removers. PC9b: Fillers, putties, plasters, modelling clay. PC9c: Finger paints. PC15: Non-metal-surface treatment products. PC18: Ink and toners. PC23: Leather tanning, dye, finishing, impregnation and care products. PC24: Lubricants, greases, release products. PC31: Polishes and wax blends. PC34: Textile dyes, finishing and impregnating products; including bleaches and other processing aids.
Name of contributing environmental scenario and corresponding ERC	Coating. ERC8c: Wide dispersive indoor use resulting in inclusion into or onto a matrix. ERC8f: Wide dispersive outdoor use resulting in inclusion into or onto a matrix.
List of names of contributing worker scenarios and corresponding PROCs	Coating. PROC1: Use in closed process, no likelihood of exposure. PROC2: Use in closed, continuous process with occasional controlled exposure. PROC3: Use in closed batch process (synthesis or formulation). PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises. PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities. PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. PROC10: Roller application or brushing of adhesive and other coating. PROC11: Non industrial spraying. PROC13: Treatment of articles by dipping and pouring. PROC15: Use as laboratory reagent. PROC19: Hand-mixing with intimate contact and only PPE available.

2.1. Contributing scenario controlling environmental exposure for Coating

Product characteristics

Physical state	solid
Kinematic viscosity	Not available.
Dynamic viscosity	Not available.
Amounts used	
Annual amount used in the EU	7500 tons/year
Regional use tonnage (tons/year):	750 tons/year
Fraction of Regional tonnage used locally:	0.002
Emission days (days/year):	365

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Frequency and duration of use	
Batch process	Not available.
Continuous process	Not available.
Environment factors not influenced by risk management	
Local freshwater dilution factor:	10
Local freshwater dilution factor:	100

Other given operational conditions affecting environmental exposure

Emission days			Emission factors		
Type	(days/year)	Air	Soil	Water	Remarks
Emission days (days/year):	365	0	0.005	0.01	

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release	Common practices vary across sites thus conservative process release estimates used.
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Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil

Air	Not available.
Soil	Not available.
Water	Not available.
Sediment	Not available.
Remarks	Not available.
Organisational measures to prevent/limit release from site	Do not apply industrial sludge to natural soils. Prevent discharge of undissolved substance to or recover from onsite wastewater.

Conditions and measures related to municipal sewage treatment plant

Size of municipal sewage system/treatment plant (m³/d)

Type	Not available
Discharge rate	2000
Treatment effectiveness	Not available
Sludge treatment technique	Not available
Measures to limit air emissions	Not available

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment

Suitable waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Disposal methods	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Treatment effectiveness	Not available.
Remarks	Not available.

Conditions and measures related to external recovery of waste

Fraction of used amount transferred to external waste treatment

Suitable recover operations	External recovery and recycling of waste should comply with applicable local and/or national regulations.
Treatment effectiveness	Not available.



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Remarks	Not available.
Additional good practice advice beyond the REACH CSA	Not available.

2.2. Contributing scenario controlling worker exposure for Coating

Process categories beyond the REACH CSA	Use in closed process, no likelihood of exposure. Use in closed, continuous process with occasional controlled exposure. Use in closed batch process (synthesis or formulation). Use in batch and other process (synthesis) where opportunity for exposure arises. Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities. Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. Roller application or brushing of adhesive and other coating. Non industrial spraying. Treatment of articles by dipping and pouring. Use as laboratory reagent. Hand-mixing with intimate contact and only PPE available.
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Product characteristics

Physical form of the product solid
Vapour pressure Not available.
Process temperature Assumes activities are at ambient temperature (unless stated differently).

Amounts used Not available.
Frequency and duration of use Not available.

Human factors not influenced by risk management

Exposed skin areas	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. wash off any skin contamination immediately. provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.
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Other given operational conditions affecting workers exposure

Not available.

Other relevant operational conditions

Not available.

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release	Not available.
Technical conditions and measures to control dispersion from source towards the worker	Provide extract ventilation to points where emissions occur.
Organizational measures to prevent/limit releases, dispersion and exposure	Ensure operatives are trained to minimise exposures. Regular inspection and maintenance of equipment and machines Supervision in place to check that the RMMs in place are being used correctly and OCs followed.
Conditions and measures related to personal	Avoid direct eye contact with product, also via contamination on hands. Avoid contact with skin.

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protection, hygiene and health evaluations	Wear suitable gloves (tested to EN374) and eye protection. Clear up spills immediately and dispose of waste safely. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. If on skin: Wash with plenty of water. Flush contaminated area with plenty of water. Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying. When handling hot material, use heat resistant gloves.
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3. Exposure Estimation Environment

Compartment	PEC	RCR (PEC/PNEC)	Method	Remarks
Air	1.35E-03 mg/m ³	The use is assessed to be safe.	Used EUSES model.	
Freshwater	2,71E-04 mg/l	0.00271	Used EUSES model.	
Marine water	2,18E-04 mg/l	0.0218	Used EUSES model.	
Freshwater sediment	3,30E-02 mg/kg wet weight	0.0981	Used EUSES model.	
Marine sediment	2,65E-02 mg/kg wet weight	0.787	Used EUSES model.	
Soil	2,13E-01 mg/kg wet weight	0.975	Used EUSES model.	
STP	1,84E-03 mg/l	0.00146	Used EUSES model.	

Health

Not available.

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

The immediate downstream user is required to evaluate whether the risk management measures and operational conditions described in the ES fits to his use. Where other RMM / OC are adopted, user should then ensure that risks are managed to at least equivalent levels. This may be based on a set of determinants (and a suitable algorithm) which together ensure control of risk. Where relevant DU can use other methods, such as scaling, he needs to check whether he acts within the boundaries set by the information provided in the exposure scenario. Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.