SAFETY DATA SHEET

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

1.1. Product identifier

Name of the substance	Rosin
Trade name of the substance	SYLVAROS™ DR 22
Identification number	650-015-00-7 (Index number)
Registration number	01-2119480418-32-0008
Synonyms	None.
SDS number	8569
Product code	200000000090

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

Identified uses	Manufacture of substance. Formulation of preparations. Distribution of substance. Use as an intermediate. Uses in coatings. Use in laboratories. Polymer production. Polymer processing. Rubber production and processing. Use as a fuel. Manufacture of paper and paper products.
Uses advised against	None known.

1.3. Details of the supplier of the safety data sheet

Company name	Kraton Chemical B.V.
Address	Transistorstraat 16, 1322 CE Almere, The Netherlands
Phone	+31 36 546 2800
Email address	regulatory.eu@kraton.com

1.4. Emergency telephone number EU NCEC +44 1865 407 333

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

The substance has been assessed and/or tested for its physical, health and environmental hazards and the following classification applies.

Classification according to Regulation (EC) No 1272/2008 as amended

Health hazards

Skin sensitisation	Category 1	H317 - May cause an allergic skin reaction.

2.2. Label elements

Label according to Regulation (EC) No. 1272/2008 as amended

Contains: Rosin

Hazard pictograms

Signal word Warning

Hazard statements

H317 May cause an allergic skin reaction.

Precautionary statements

Prevention

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P280 Wear protective gloves.

Response

P302 + P352	IF ON SKIN: Wash with plenty of water.
P362 + P364	Take off contaminated clothing and wash it before reuse.
P333 + P313	If skin irritation or rash occurs: Get medical advice/attention.

Storage Not available.

Disposal

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

Supplemental label information None.

2.3. Other hazards May form explosible dust-air mixture if dispersed. This mixture does not contain substances assessed to be vPvB / PBT according to Regulation (EC) No 1907/2006, Annex XIII. The product does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

SECTION 3: Composition/information on ingredients

3.1. Substances

General information

Chemical name	%	CAS-No. / EC No.	REACH Registration No.	Index No.	Notes
Rosin	100	8050-09-7 232-475-7	01-2119480418-32-0036 01-2119480418-32-0001 01-2119480418-32-0002 01-2119480418-32-0008	650-015-00-7	

Classification: Skin Sens. 1;H317

List of abbreviations and symbols that may be used above

#: This substance has been assigned Union workplace exposure limit(s).
M: M-factor
PBT: persistent, bioaccumulative and toxic substance.
vPvB: very persistent and very bioaccumulative substance.

Composition comments The full text for all H-statements is displayed in section 16.

SECTION 4: First aid measures

General information Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Wash contaminated clothing before reuse.

4.1. Description of first aid measures

Inhalation Move to fresh air. Call a physician if symptoms develop or persist.

Skin contact Remove contaminated clothing immediately and wash skin with soap and water. In case of eczema or other skin disorders: Seek medical attention and take along these instructions.

Eye contact Do not rub eyes. Rinse with water. Get medical attention if irritation develops and persists.

Ingestion Rinse mouth. Get medical attention if symptoms occur.

4.2. Most important symptoms and effects, both acute and delayed Dusts may irritate the respiratory tract, skin and eyes. May cause an allergic skin reaction. Dermatitis. Rash.

4.3. Indication of any immediate medical attention and special treatment needed Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.

SECTION 5: Firefighting measures

General fire hazards May form explosible dust-air mixture if dispersed. May form combustible dust concentrations in air.

5.1. Extinguishing media

Suitable extinguishing media Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2). Apply extinguishing media carefully to avoid creating airborne dust.

Unsuitable extinguishing media Do not use water jet as an extinguisher, as this will spread the fire.

5.2. Special hazards arising from the substance or mixture High concentration of airborne dust may form explosive mixture with air. Static charges generated by emptying package in or near flammable vapour may cause flash fire. During fire, gases hazardous to health may be formed. Upon decomposition, this product emits carbon monoxide, carbon dioxide and/or low molecular weight hydrocarbons.

5.3. Advice for firefighters

Special protective equipment for firefighters Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Special fire fighting procedures In case of fire and/or explosion do not breathe fumes. Wear suitable protective equipment. Move containers from fire area if you can do so without risk.

Specific methods Use standard firefighting procedures and consider the hazards of other involved materials.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

For non-emergency personnel	Wear appropriate personal protective equipment.
For emergency responders	Keep unnecessary personnel away.
6.2. Environmental precautions	Avoid discharge into drains, water courses or onto the ground.
6.3. Methods and material for containment and cleaning up	Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Take precautionary measures against static discharge. Use only non-sparking tools. Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air). The product is immiscible with water and will sediment in water systems. Stop the flow of material, if this is without risk. Large Spills: Wet down with water and dike for later disposal. Shovel the material into waste container. Following product recovery, flush area with water. Small Spills: Sweep up or vacuum up spillage and collect in suitable container for disposal. Never return spills to original containers for re-use.
6.4. Reference to other sections	Not available.

SECTION 7: Handling and storage

7.1. Precautions for safe handling	Minimise dust generation and accumulation. Avoid significant deposits of material, especially on horizontal surfaces, which may become airborne and form combustible dust clouds and may contribute to secondary explosions. Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces. Dry powders can build static electricity charges when subjected to the friction of transfer and mixing operations. Provide adequate precautions, such as electrical grounding and bonding, or inert atmospheres. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Explosion-proof general and local exhaust ventilation. Avoid breathing dust/fume/gas/mist/vapours/spray. Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. Wear appropriate personal protective equipment. Avoid release to the environment. Observe good industrial hygiene practices. Follow all SDS/label precautions even after container is emptied because they may retain product residues. May ignite (with a sufficient source of heat) if spread as a thin film or absorbed onto porous or fibrous material. Porous material such as rags, paper, insulation or organic clay may spontaneously combust when wetted with this material and heated.
7.2. Conditions for safe storage, including any incompatibilities	Keep containers tightly closed in a dry, cool and well-ventilated place. Store at ambient temperature and atmospheric pressure.
7.3. Specific end use(s)	Not available.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational exposure limits

Austria. MAK List, OEL Ordinance (GwV), BGBl. II, no. 184/2001

Additional components	Type	Value	Form
Dust	MAK	5 mg/m3	Respirable fraction.
		10 mg/m3	Inhalable fraction.
	STEL	20 mg/m3	Inhalable fraction.
		10 mg/m3	Respirable fraction.

Belgium. Exposure Limit Values

Additional components	Type	Value	Form
Dust	TWA	3 mg/m3	Respirable fraction.
		10 mg/m3	Inhalable fraction.

Croatia. OELs (GVI). Regulation on Protection of Workers against Exposure to Dangerous Chemicals at Work, OELs and Biological Limit Values, Annex I (NN 91/2018), as amended

Components	Type	Value	Form
Rosin (CAS 8050-09-7)	MAC	0,05 mg/m3	Fume.
	STEL	0,15 mg/m3	Fume.

Czech Republic. OELs. Government Decree 361

Components	Type	Value	Form
Rosin (CAS 8050-09-7)	TWA	1 mg/m3	Dust, fume, inhalable aerosol fraction

Finland

Additional components	Type	Value
Dust	TWA	5 mg/m3
		10 mg/m3

France. Threshold Limit Values (VLEP) for Occupational Exposure to Chemicals in France, INRS ED 984

Components	Type	Value	
Rosin (CAS 8050-09-7)	VME	0,1 mg/m3	
Regulatory status:	Indicative limit (VL)		
Additional components	**Type**	**Value**	**Form**
Dust	VME	5 mg/m3	Respirable fraction.
Regulatory status:	Regulatory binding (VRC)		
		10 mg/m3	Inhalable fraction.
Regulatory status:	Regulatory binding (VRC)		

Germany. DFG MAK List (advisory OELs). Commission for the Investigation of Health Hazards of Chemical Compounds in the Work Area (DFG)

Additional components	Type	Value	Form
Dust	TWA	4 mg/m3	Inhalable dust.

Germany. TRGS 900, Limit Values in the Ambient Air at the Workplace

Additional components	Type	Value	Form
Dust	AGW	10 mg/m3	Inhalable fraction.
		1,25 mg/m3	Respirable fraction.

Iceland. OELs. Regulation 390/2009 on Pollution Limits and Measures to Reduce Pollution at the Workplace, as amended

Additional components	Type	Value	Form
Dust	TWA	5 mg/m3	Respirable dust.
		10 mg/m3	Total dust.

Ireland. Occupational Exposure Limits

Components	Type	Value	
Rosin (CAS 8050-09-7)	STEL	0,15 mg/m3	
	TWA	0,05 mg/m3	
Additional components	**Type**	**Value**	**Form**
Dust	TWA	4 mg/m3	Respirable dust.
		10 mg/m3	Total inhalable dust.

Italy. Occupational Exposure Limits

Components	Type	Value	Form
Rosin (CAS 8050-09-7)	TWA	0,001 mg/m3	Inhalable fraction.

Latvia. OELs. Occupational exposure limit values of chemical substances in work environment

Components	Type	Value	
Rosin (CAS 8050-09-7)	TWA	4 mg/m3	
Additional components	**Type**	**Value**	**Form**
Dust	TWA	5 mg/m3	Dust.

Lithuania. OELs. Limit Values for Chemical Substances, General Requirements

Additional components	Type	Value	Form
Dust	TWA	5 mg/m3	Respirable fraction.
		10 mg/m3	Inhalable fraction.

Netherlands

Additional components	Type	Value	Form
Dust	TWA (MAC)	5 mg/m3	Respirable dust.
		10 mg/m3	Total dust.

Norway. Administrative Norms for Contaminants in the Workplace

Components	Type	Value
Rosin (CAS 8050-09-7)	TLV	0,1 mg/m3

Romania. OELs. Protection of workers from exposure to chemical agents at the workplace

Components	Type	Value
Rosin (CAS 8050-09-7)	TWA	0,1 mg/m3

Slovakia. OELs. Regulation No. 300/2007 concerning protection of health in work with chemical agents

Additional components	Type	Value	Form
Dust	TWA	10 mg/m3	Dust.

Slovenia. OELs. Regulations concerning protection of workers against risks due to exposure to chemicals while working (Official Gazette of the Republic of Slovenia)

Additional components	Type	Value	Form
Dust	TWA	10 mg/m3	Inhalable fraction.
		1,25 mg/m3	Respirable fraction.

Spain. Occupational Exposure Limits

Additional components	Type	Value	Form
Dust	TWA	3 mg/m3	Respirable fraction.
		10 mg/m3	Inhalable fraction.

Switzerland. SUVA Grenzwerte am Arbeitsplatz

Additional components	Type	Value	Form
Dust	TWA	3 mg/m3	Respirable dust.
		10 mg/m3	Inhalable dust.

UK. EH40 Workplace Exposure Limits (WELs)

Components	Type	Value	Form
Rosin (CAS 8050-09-7)	STEL	0,15 mg/m3	Fume.
	TWA	0,05 mg/m3	Fume.
Additional components	**Type**	**Value**	**Form**
Dust	TWA	4 mg/m3	Respirable dust.
		10 mg/m3	Inhalable dust.

Biological limit values No biological exposure limits noted for the ingredient(s).

Recommended monitoring procedures Follow standard monitoring procedures.

Derived no effect levels (DNELs)

General population

Components	Value	Assessment factor	Notes
Rosin (CAS 8050-09-7)			
Long-term, Systemic, Dermal	1,065 mg/kg bw/day	200	Repeated dose toxicity
Long-term, Systemic, Oral	1,065 mg/kg bw/day	200	Repeated dose toxicity

Workers

Components	Value	Assessment factor	Notes
Rosin (CAS 8050-09-7)			
Long-term, Local, Inhalation	10 mg/m3		
Long-term, Systemic, Dermal	2,131 mg/kg bw/day	100	Repeated dose toxicity

Predicted no effect concentrations (PNECs)

Components	Value	Assessment factor	Notes
Rosin (CAS 8050-09-7)			
Freshwater	0,002 mg/l	1000	
Marine water	0 mg/l	10000	
Sediment (freshwater)	0,007 mg/kg		
Sediment (marine water)	0,001 mg/kg		
Soil	0 mg/kg		
STP	1000 mg/l	10	

8.2. Exposure controls

Appropriate engineering controls	Explosion-proof general and local exhaust ventilation. Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Individual protection measures, such as personal protective equipment

General information	Use personal protective equipment as required. Personal protection equipment should be chosen according to the CEN standards and in discussion with the supplier of the personal protective equipment.
Eye/face protection	Face shield is recommended. Wear safety glasses with side shields (or goggles).
Skin protection	
- Hand protection	Wear appropriate chemical resistant gloves. When handling hot material, use heat resistant gloves. The choice of an appropriate glove does not only depend on its material but also on other quality features and is different from one producer to the other. The most suitable glove must be chosen in consultation with the gloves supplier, who can inform about the breakthrough time of the glove material. Wear suitable gloves tested to EN374. Recommended gloves include rubber, neoprene, nitrile or viton. For continuous contact we recommend gloves with breakthrough time of more than 240 minutes with preference for > 480 minutes. For short-term/splash protection we recommend the same, but recognize that suitable gloves offering this level of protection may not be available and in this case a lower breakthrough time maybe acceptable so long as appropriate maintenance and replacement regimes are followed. Glove thickness should be typically greater than 0.35 mm. This recommendation is advisory only. It may not be appropriate for all workplaces. It should not be construed as offering an approval for any specific use scenario. A hazard assessment should be conducted prior to use to ensure suitability of gloves for specific work environments and processes.
- Other	Wear appropriate chemical resistant clothing. Use of an impervious apron is recommended.
Respiratory protection	If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
Hygiene measures	When using, do not eat, drink or smoke. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Contaminated work clothing should not be allowed out of the workplace. Eye wash fountain and emergency showers are recommended.
Environmental exposure controls	Environmental manager must be informed of all major releases. Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. Fume scrubbers, filters or engineering modifications to the process equipment may be necessary to reduce emissions to acceptable levels.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	Solid.
Form	Solid.
Colour	Amber.
Odour	Rosin
Melting point/freezing point	62 °C (143,6 °F) Ring & Ball
Boiling point or initial boiling point and boiling range	>300 °C (>572 °F) (rosin)
Flammability	Not available.
Flash point	280,0 °C (536,0 °F) ASTM D1929
Auto-ignition temperature	360 °C (680 °F) ASTM D1929
Decomposition temperature	Not available.
pH	Not available.
Kinematic viscosity	Not available.
Solubility	
Solubility (water)	0,9 mg/l at 20°C.; Data is for similar product.
Partition coefficient (n-octanol/water) (log value)	> 1,9 - < 7,7 at 30°C.; Data is for similar product.
Vapour pressure	4 hPa estimated <0,001 mm Hg at 20°C
Density and/or relative density	
Density	1060,00 kg/m3 at 20°C

Relative density	1,05 at 25ºC/25ºC (water=1)
Vapour density	Not available.
Particle characteristics	Not available.

9.2. Other information

9.2.1. Information with regard to physical hazard classes	No relevant additional information available.

9.2.2. Other safety characteristics

Chemical family	Tall Oil Rosin
Dissociation constant	Not available
Evaporation rate	0 (n-BuAc=1) estimated
Percent volatile	0 % by weight. estimated
Softening point	62 °C (143,6 °F) Ring & Ball
Weighted solids	100 %

SECTION 10: Stability and reactivity

10.1. Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
10.2. Chemical stability	Material is stable under normal conditions.
10.3. Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
10.4. Conditions to avoid	Strong oxidising agents. Keep away from heat, sparks and open flame. Contact with incompatible materials. Minimise dust generation and accumulation.
10.5. Incompatible materials	Strong oxidising agents.
10.6. Hazardous decomposition products	Upon decomposition this product emits acrid dense smoke with carbon dioxide, carbon monoxide, water and other products of combustion.

SECTION 11: Toxicological information

General information Occupational exposure to the substance or mixture may cause adverse effects.

Information on likely routes of exposure

Inhalation	Dust may irritate respiratory system.
Skin contact	May cause an allergic skin reaction.
Eye contact	Direct contact with eyes may cause temporary irritation.
Rosin	Irritation Corrosion - Eye, No eye irritation; OECD 405 Result: negative Species: New Zealand white rabbit Organ: Eye Test Duration: 72 hr
Ingestion	May cause discomfort if swallowed. However, ingestion is not likely to be a primary route of occupational exposure.
Symptoms	Dusts may irritate the respiratory tract, skin and eyes. May cause an allergic skin reaction. Dermatitis. Rash.

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

Acute toxicity May cause an allergic skin reaction.

Components	Species	Test Results
Rosin (CAS 8050-09-7)		
Acute		
Dermal		
LD50	Rat	> 2000 mg/kg, 24 Hours
	Sprague-Dawley rat	> 2000 mg/kg, 24 hr At this dose no death occurred.; OECD 402
Oral		
LD50	Rat	1000 - 2000 mg/kg
		2800 mg/kg OECD 402
	Sprague-Dawley rat	5000 - 10000 mg/kg, 14 d Data is for similar product.;
NOEL	Sprague-Dawley rat	1000 ppm, 2 wk

* Estimates for product may be based on additional component data not shown.

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

Corrosivity

Rosin

Irritation Corrosion - Skin, Non-irritating to the skin.; OECD 404
Result: negative
Species: New Zealand white rabbit
Test Duration: 72 hr

Serious eye damage/eye irritation Based on available data, the classification criteria are not met.

Eye contact

Rosin

Irritation Corrosion - Eye, No eye irritation; OECD 405
Result: negative
Species: New Zealand white rabbit
Organ: Eye
Test Duration: 72 hr

Respiratory sensitisation Not a respiratory sensitiser.

Skin sensitisation May cause an allergic skin reaction.

Skin Sensitisation

Rosin

Buehler Test, Not a skin sensitizer.; OECD 406
Result: Negative
Species: Guinea pig
Organ: Skin
Local Lymph Node Assay - Lowest Concentration Producing Reaction, Not a skin sensitizer.; OECD 429
Result: Negative
Species: Mouse
Organ: Skin

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

Mutagenicity

Rosin

Ames test, Not mutagenic.; OECD 471;
Result: Negative
Species: Salmonella typhimurium
Chromosome aberration test in vitro, Not mutagenic.; OECD 473;
Result: Negative
Species: Human
In vitro gene mutation study in mammalian cells, Not mutagenic.; OECD 476;
Result: Negative
Species: Mammal

Carcinogenicity This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

Hungary. 26/2000 EüM Ordinance on protection against and preventing risk relating to exposure to carcinogens at work (as amended)

Not listed.

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 an aspiration hazard.

Mixture versus substance information No information available.

11.2. Information on other hazards

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

Other information Not available.

SECTION 12: Ecological information

12.1. Toxicity The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Components		Species	Test Results
Rosin (CAS 8050-09-7)			
	EC50	Activated sewage sludge	> 10000 mg/l, 3 hr OECD 209;

Components		Species	Test Results
Aquatic			
Algae	EL50	Green algae (Selenastrum capricornutum)	> 1000 mg/l, 72 hr OECD 201;
Crustacea	EL50	Water flea (Daphnia magna)	911 mg/l, 48 hr OECD 202;

* Estimates for product may be based on additional component data not shown.

12.2. Persistence and degradability The product is biodegradable.

Biodegradability

Percent Degradation (Aerobic Biodegradation)

Rosin — 64 % OECD 301B
Result: Readily biodegradable.
Species: Activated sewage sludge
Test Duration: 28 d

12.3. Bioaccumulative potential

Partition coefficient n-octanol/water (log Kow)

SYLVAROS™ DR 22 — 1,9 - 7,7, at 30°C.; Data is for similar product.

12.4. Mobility in soil No data available.

12.5. Results of PBT and vPvB assessment This mixture does not contain substances assessed to be vPvB / PBT according to Regulation (EC) No 1907/2006, Annex XIII.

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

12.7. Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Residual waste Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

EU waste code The Waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Disposal methods/information Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations.

Special precautions Dispose in accordance with all applicable regulations.

SECTION 14: Transport information

ADR

14.1. UN number Not regulated as dangerous goods.

14.2. UN proper shipping name Not regulated as dangerous goods.

14.3. Transport hazard class(es)

Class Not assigned.

Subsidiary risk -

Hazard No. (ADR) Not assigned.

Tunnel restriction code Not assigned.

14.4. Packing group Not assigned.

14.5. Environmental hazards No.

14.6. Special precautions for user Not assigned.

RID

14.1. UN number Not regulated as dangerous goods.

14.2. UN proper shipping name Not regulated as dangerous goods.

14.3. Transport hazard class(es)

Class Not assigned.

Subsidiary risk -

14.4. Packing group Not assigned.

14.5. Environmental hazards No.

14.6. Special precautions for user Not assigned.

ADN

14.1. UN number Not regulated as dangerous goods.

14.2. UN proper shipping name Not regulated as dangerous goods.

14.3. Transport hazard class(es)

Class Not assigned.

Subsidiary risk -

14.4. Packing group Not assigned.

14.5. Environmental hazards No.

14.6. Special precautions for user Not assigned.

IATA

14.1. UN number Not regulated as dangerous goods.

14.2. UN proper shipping name Not regulated as dangerous goods.

14.3. Transport hazard class(es)

Class Not assigned.

Subsidiary risk -

14.4. Packing group Not assigned.

14.5. Environmental hazards No.

14.6. Special precautions for user Not assigned.

IMDG

14.1. UN number Not regulated as dangerous goods.

14.2. UN proper shipping name Not regulated as dangerous goods.

14.3. Transport hazard class(es)

Class Not assigned.

Subsidiary risk -

14.4. Packing group Not assigned.

14.5. Environmental hazards

Marine pollutant No.

EmS Not assigned.

14.6. Special precautions for user Not assigned.

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

SECTION 15: Regulatory information

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

EU regulations

Regulation (EC) No. 1005/2009 on substances that deplete the ozone layer, Annex I and II, as amended

Not listed.

Regulation (EU) 2019/1021 On persistent organic pollutants (recast), as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 1 as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 2 as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 3 as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex V as amended

Not listed.

Regulation (EC) No. 166/2006 Annex II Pollutant Release and Transfer Registry, as amended

Not listed.

Regulation (EC) No. 1907/2006, REACH Article 59(10) Candidate List as currently published by ECHA

Not listed.

Authorisations

Regulation (EC) No. 1907/2006, REACH Annex XIV Substances subject to authorization, as amended

Not listed.

Restrictions on use

Regulation (EC) No. 1907/2006, REACH Annex XVII Substances subject to restriction on marketing and use as amended

Rosin (CAS 8050-09-7)

Directive 2004/37/EC: on the protection of workers from the risks related to exposure to carcinogens and mutagens at work, as amended.

Not listed.

Other EU regulations

Directive 2012/18/EU on major accident hazards involving dangerous substances, as amended

Not listed.

Other regulations	The product is classified and labelled in accordance with Regulation (EC) 1272/2008 (CLP Regulation) as amended. This Safety Data Sheet complies with the requirements of Regulation (EC) No 1907/2006, as amended.
National regulations	Follow national regulation for work with chemical agents. Young people under 18 years old are not allowed to work with this product according to EU Directive 94/33/EC on the protection of young people at work, as amended
15.2. Chemical safety assessment	A Chemical Safety Assessment has been carried out for this substance.
Water hazard class	
AwSV	WGK1

SECTION 16: Other information

List of abbreviations	Not available.
References	Not available.
Information on evaluation method leading to the classification of mixture	Not applicable.
Full text of any statements, which are not written out in full under sections 2 to 15	H317 May cause an allergic skin reaction.
Revision information	Product and Company Identification: Product and Company Identification SECTION 7: Handling and storage: 7,1. Precautions for safe handling SECTION 16: Other information: Disclaimer
Training information	Follow training instructions when handling this material.

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Annex to the extended Safety Data Sheet (eSDS)

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1 - Exposure Scenario Worker

1. Manufacture of substance

List of use descriptors

Sector(s) of Use	SU3: Industrial uses: Uses of substances as such or in preparations at industrial sites. SU8: Manufacture of bulk, large scale chemicals (including petroleum products) SU9: Manufacture of fine chemicals
Name of contributing environmental scenario and corresponding ERC	Manufacture of substance ERC1: Manufacture of substances .
List of names of contributing worker scenarios and corresponding PROCs	Manufacture of substance 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. 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. PROC15: Use as laboratory reagent

2.1.1. Contributing scenario controlling environmental exposure for Manufacture of substance

Product characteristics

Concentration of the substance in a mixture	Covers percentage substance in the product up to 100 % (unless stated differently).
Physical state	solid

Amounts used

Annual amount used in the EU	1,285 e5 tons/year
Regional use tonnage (tons/year):	12900 tons/year
Fraction of Regional tonnage used locally:	1
Emission days (days/year):	300

Environment factors not influenced by risk management

Local freshwater dilution factor:	10
Local marine water dilution factor:	100

Other given operational conditions affecting environmental exposure

	Emission days		Emission factors		
Type	**(days/year)**	**Air**	**Soil**	**Water**	**Remarks**
	300	0,000042	0,0001	0,000000089	

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.
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	Municipal STP. Onsite STP.
Discharge rate	2000
Sludge treatment technique	Do not use sludge as fertiliser

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment

Suitable waste treatment	Dispose of waste product or used containers according to local regulations.
Treatment effectiveness	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.

2.2.1. Contributing scenario controlling worker exposure for Manufacture of substance

Product characteristics

Concentration of the substance in a mixture	Covers percentage substance in the product up to 100 % (unless stated differently).
Physical form of the product	solid
vapour pressure	Not available.

Amounts used

Not available.

Frequency and duration of use

Not available.

Human factors not influenced by risk management

Other given operational conditions affecting workers exposure

Not available.

Other relevant operational conditions

Not available.

Risk management measures (RMM)

Technical conditions and measures to control dispersion from source towards the worker	Assumes a good basic standard of occupational hygiene is implemented. Ensure that splashes and spills are avoided by product design. Avoid contact with contaminated tools and objects. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.
Organizational measures to prevent/limit releases, dispersion and exposure	Not available.
Conditions and measures related to personal protection, hygiene and health evaluations	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. 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.

3. Exposure Estimation

Environment

Compartment	PEC	RCR (PEC/PNEC)	Method	Remarks
Air.	4,14E-04 mg/m³	The use is assessed to be safe.	Used EUSES model.	
freshwater	1,38E-05 mg/l	0,00851	Used EUSES model.	
marine water	1,37E-06 mg/l	0,00845	Used EUSES model.	
freshwater sediment	1,53E-03 mg/kg wet weight	0,993	Used EUSES model.	
marine sediment	1,52E-04 mg/kg wet weight	0,987	Used EUSES model.	
soil	3,92E-04 mg/kg wet weight	0,987	Used EUSES model.	
STP	1,29E-04 mg/l	0,000000127	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.

2 - Exposure Scenario Worker

1. Formulation of preparations

List of use descriptors

Sector(s) of Use	SU3: Industrial uses: Uses of substances as such or in preparations at industrial sites.
Name of contributing environmental scenario and corresponding ERC	Formulation of preparations ERC2: Formulation of preparations .
List of names of contributing worker scenarios and corresponding PROCs	Formulation of preparations 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. 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. PROC15: Use as laboratory reagent

2.1.1. Contributing scenario controlling environmental exposure for Formulation of preparations

Product characteristics

Concentration of the substance in a mixture	Covers percentage substance in the product up to 100 % (unless stated differently).
Physical state	solid

Amounts used

Annual amount used in the EU	54000 tons/year
Regional use tonnage (tons/year):	5400 tons/year
Fraction of Regional tonnage used locally:	1
Emission days (days/year):	220

Environment factors not influenced by risk management

Local freshwater dilution factor:	10
Local marine water dilution factor:	100

Other given operational conditions affecting environmental exposure

	Emission days	Emission factors			
Type	**(days/year)**	**Air**	**Soil**	**Water**	**Remarks**
	220	0,0001	0,0001	0,000000157	

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.
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	Municipal STP. Onsite STP.
Discharge rate	2000
Sludge treatment technique	Do not use sludge as fertiliser

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment

Suitable waste treatment	Dispose of waste product or used containers according to local regulations.
Treatment effectiveness	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.

2.2.1. Contributing scenario controlling worker exposure for Formulation of preparations

Product characteristics

Concentration of the substance in a mixture	Covers percentage substance in the product up to 100 % (unless stated differently).
Physical form of the product	solid
vapour pressure	Not available.

Amounts used

Not available.

Frequency and duration of use

Not available.

Human factors not influenced by risk management

Other given operational conditions affecting workers exposure

Not available.

Other relevant operational conditions

Not available.

Risk management measures (RMM)

Technical conditions and measures to control dispersion from source towards the worker	Assumes a good basic standard of occupational hygiene is implemented. Ensure that splashes and spills are avoided by product design. Avoid contact with contaminated tools and objects. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.
Organizational measures to prevent/limit releases, dispersion and exposure	Not available.
Conditions and measures related to personal protection, hygiene and health evaluations	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. 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.

3. Exposure Estimation

Environment

Compartment	PEC	RCR (PEC/PNEC)	Method	Remarks
Air.	4,14E-04 mg/m³	The use is assessed to be safe.	Used EUSES model.	
freshwater	1,03E-05 mg/l	0,00646	Used EUSES model.	
marine water	1,03E-06 mg/l	0,00641	Used EUSES model.	
freshwater sediment	1,15E-03 mg/kg wet weight	0,754	Used EUSES model.	
marine sediment	1,14E-04 mg/kg wet weight	0,748	Used EUSES model.	
soil	3,92E-04 mg/kg wet weight	0,987	Used EUSES model.	
STP	9,45E-05 mg/l	0,0000000945	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.

3 - Exposure Scenario Worker

1. Distribution of substance

List of use descriptors

Sector(s) of Use	SU8: Manufacture of bulk, large scale chemicals (including petroleum products). SU9: Manufacture of fine chemicals. SU0: Other: SU3: Industrial uses: Uses of substances as such or in preparations at industrial sites.
Name of contributing environmental scenario and corresponding ERC	Distribution of substance ERC4: Industrial use of processing aids in processes and products, not becoming part of article s . ERC5: Industrial use resulting in inclusion into or onto a matrix . ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates) . ERC6b: Industrial use of reactive processing aids . ERC6c: Industrial use of monomers for manufacture of thermoplastics . ERC6d: Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers . ERC7: Industrial use of substances in closed systems .
List of names of contributing worker scenarios and corresponding PROCs	Distribution of substance 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. 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. PROC15: Use as laboratory reagent

2.1.1. Contributing scenario controlling environmental exposure for Distribution of substance

Product characteristics

Concentration of the substance in a mixture	Covers percentage substance in the product up to 100 % (unless stated differently).
Physical state	solid

Amounts used

Annual amount used in the EU	19300 tons/year
Regional use tonnage (tons/year):	1930 tons/year
Fraction of Regional tonnage used locally:	0,002
Emission days (days/year):	300

Environment factors not influenced by risk management

Local freshwater dilution factor:	10
Local marine water dilution factor:	100

Other given operational conditions affecting environmental exposure

	Emission days		Emission factors		
Type	**(days/year)**	**Air**	**Soil**	**Water**	**Remarks**
	300	0,00001	0,00001	0,00001	

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.

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	Municipal STP. Onsite STP.
Discharge rate	2000
Sludge treatment technique	Do not use sludge as fertiliser

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment

Suitable waste treatment	Dispose of waste product or used containers according to local regulations.
Treatment effectiveness	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.

2.2.1. Contributing scenario controlling worker exposure for Distribution of substance

Product characteristics

Concentration of the substance in a mixture	Covers percentage substance in the product up to 100 % (unless stated differently).
Physical form of the product	solid
vapour pressure	Not available.

Amounts used

Not available.

Frequency and duration of use

Not available.

Human factors not influenced by risk management

Other given operational conditions affecting workers exposure

Not available.

Other relevant operational conditions

Not available.

Risk management measures (RMM)

Technical conditions and measures to control dispersion from source towards the worker	Assumes a good basic standard of occupational hygiene is implemented. Ensure that splashes and spills are avoided by product design. Avoid contact with contaminated tools and objects. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.
Organizational measures to prevent/limit releases, dispersion and exposure	Not available.
Conditions and measures related to personal protection, hygiene and health evaluations	Avoid direct eye contact with product, also via contamination on hands. Use suitable eye protection. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Clear up spills immediately and dispose of waste safely. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. 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.

3. Exposure Estimation

Environment

Compartment	PEC	RCR (PEC/PNEC)	Method	Remarks
Air.	3,11E-06 mg/m³	The use is assessed to be safe.	Used EUSES model.	
freshwater	1,39E-06 mg/l	0,000869	Used EUSES model.	
marine water	1,31E-07 mg/l	0,000817	Used EUSES model.	

freshwater sediment	1,54E-04 mg/kg wet weight	0,101	Used EUSES model.
marine sediment	1,45E-05 mg/kg wet weight	0,0953	Used EUSES model.
soil	3,31E-06 mg/kg wet weight	0,00835	Used EUSES model.
STP	4,30E-06 mg/l	0,0000000043	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.

4 - Exposure Scenario Worker

1. Intermediate

List of use descriptors

Sector(s) of Use	SU8: Manufacture of bulk, large scale chemicals (including petroleum products). SU9: Manufacture of fine chemicals. SU0: Other: SU3: Industrial uses: Uses of substances as such or in preparations at industrial sites.
Name of contributing environmental scenario and corresponding ERC	Intermediate ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates) .
List of names of contributing worker scenarios and corresponding PROCs	Intermediate 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. 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. PROC15: Use as laboratory reagent

2.1.1. Contributing scenario controlling environmental exposure for Intermediate

Product characteristics

Concentration of the substance in a mixture	Covers percentage substance in the product up to 100 % (unless stated differently).
Physical state	solid

Amounts used

Annual amount used in the EU	83500 tons/year
Regional use tonnage (tons/year):	8350 tons/year
Fraction of Regional tonnage used locally:	1
Emission days (days/year):	300

Environment factors not influenced by risk management

Local freshwater dilution factor:	10
Local marine water dilution factor:	100

Other given operational conditions affecting environmental exposure

	Emission days		Emission factors		
Type	**(days/year)**	**Air**	**Soil**	**Water**	**Remarks**
	300	0,00002	0,001	0,00000013	

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.
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	Municipal STP. Onsite STP.
Discharge rate	2000
Sludge treatment technique	Do not use sludge as fertiliser

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment

Suitable waste treatment	Dispose of waste product or used containers according to local regulations.

Treatment effectiveness 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.

2.2.1. Contributing scenario controlling worker exposure for Intermediate

Product characteristics

Concentration of the substance in a mixture Covers percentage substance in the product up to 100 % (unless stated differently).

Physical form of the product solid

vapour pressure Not available.

Amounts used

Not available.

Frequency and duration of use

Not available.

Human factors not influenced by risk management

Other given operational conditions affecting workers exposure

Not available.

Other relevant operational conditions

Not available.

Risk management measures (RMM)

Technical conditions and measures to control dispersion from source towards the worker Assumes a good basic standard of occupational hygiene is implemented. Ensure that splashes and spills are avoided by product design. Avoid contact with contaminated tools and objects. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.

Organizational measures to prevent/limit releases, dispersion and exposure Not available.

Conditions and measures related to personal protection, hygiene and health evaluations 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. 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.

3. Exposure Estimation

Environment

Compartment	PEC	RCR (PEC/PNEC)	Method	Remarks
Air.	1,30E-04 mg/m³	The use is assessed to be safe.	Used EUSES model.	
freshwater	1,30E-05 mg/l	0,00811	Used EUSES model.	
marine water	1,29E-06 mg/l	0,00806	Used EUSES model.	
freshwater sediment	1,44E-03 mg/kg wet weight	0,946	Used EUSES model.	
marine sediment	1,43E-04 mg/kg wet weight	0,94	Used EUSES model.	
soil	1,24E-04 mg/kg wet weight	0,312	Used EUSES model.	
STP	1,21E-04 mg/l	0,000000121	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.

5 - Exposure Scenario Worker

1. Coating.

List of use descriptors

Sector(s) of Use	SU0: Other: SU3: Industrial uses: Uses of substances as such or in preparations at industrial sites.
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. 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. PROC15: Use as laboratory reagent

2.1.1. Contributing scenario controlling environmental exposure for Coating.

Product characteristics

Concentration of the substance in a mixture	Covers percentage substance in the product up to 100 % (unless stated differently).
Physical state	solid

Amounts used

Annual amount used in the EU	6000 tons/year
Regional use tonnage (tons/year):	600 tons/year
Fraction of Regional tonnage used locally:	1
Emission days (days/year):	220

Environment factors not influenced by risk management

Local freshwater dilution factor:	10
Local marine water dilution factor:	100

Other given operational conditions affecting environmental exposure

	Emission days		Emission factors		
Type	**(days/year)**	**Air**	**Soil**	**Water**	**Remarks**
	220	0,0009	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.
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	Municipal STP. Onsite STP.
Discharge rate	2000
Sludge treatment technique	Do not use sludge as fertiliser

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment

Suitable waste treatment	Dispose of waste product or used containers according to local regulations.

Treatment effectiveness 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.

2.2.1. Contributing scenario controlling worker exposure for Coating.

Product characteristics

Concentration of the substance in a mixture Covers percentage substance in the product up to 100 % (unless stated differently).

Physical form of the product solid

vapour pressure Not available.

Amounts used

Not available.

Frequency and duration of use

Not available.

Human factors not influenced by risk management

Other given operational conditions affecting workers exposure

Not available.

Other relevant operational conditions

Not available.

Risk management measures (RMM)

Technical conditions and measures to control dispersion from source towards the worker Assumes a good basic standard of occupational hygiene is implemented. Ensure that splashes and spills are avoided by product design. Avoid contact with contaminated tools and objects. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.

Organizational measures to prevent/limit releases, dispersion and exposure Not available.

Conditions and measures related to personal protection, hygiene and health evaluations 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. 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.

3. Exposure Estimation

Environment

Compartment	PEC	RCR (PEC/PNEC)	Method	Remarks
Air.	4,14E-04 mg/m³	The use is assessed to be safe.	Used EUSES model.	
freshwater	9,63E-07 mg/l	0,000602	Used EUSES model.	
marine water	8,81E-08 mg/l	0,00055	Used EUSES model.	
freshwater sediment	1,07E-04 mg/kg wet weight	0,0703	Used EUSES model.	
marine sediment	9,77E-06 mg/kg wet weight	0,0642	Used EUSES model.	
soil	3,92E-04 mg/kg wet weight	0,987	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.

6 - Exposure Scenario Worker

1. Laboratory use

List of use descriptors

Sector(s) of Use	SU0: Other: SU3: Industrial uses: Uses of substances as such or in preparations at industrial sites.
Name of contributing environmental scenario and corresponding ERC	Laboratory use ERC4: Industrial use of processing aids in processes and products, not becoming part of article s .
List of names of contributing worker scenarios and corresponding PROCs	Laboratory use 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. 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. PROC15: Use as laboratory reagent

2.1.1. Contributing scenario controlling environmental exposure for Laboratory use

Product characteristics

Concentration of the substance in a mixture	Covers percentage substance in the product up to 100 % (unless stated differently).
Physical state	solid

Amounts used

Annual amount used in the EU	0,0103 tons/year
Regional use tonnage (tons/year):	0,00103 tons/year
Fraction of Regional tonnage used locally:	0,1
Emission days (days/year):	20

Environment factors not influenced by risk management

Local freshwater dilution factor:	10
Local marine water dilution factor:	100

Other given operational conditions affecting environmental exposure

	Emission days		Emission factors		
Type	**(days/year)**	**Air**	**Soil**	**Water**	**Remarks**
	20	0,025	0,0001	0,02	

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.
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	Municipal STP. Onsite STP.
Discharge rate	2000
Sludge treatment technique	Do not use sludge as fertiliser

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment

Suitable waste treatment	Dispose of waste product or used containers according to local regulations.

Treatment effectiveness 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.

2.2.1. Contributing scenario controlling worker exposure for Laboratory use

Product characteristics

Concentration of the substance in a mixture Covers percentage substance in the product up to 100 % (unless stated differently).

Physical form of the product solid

vapour pressure Not available.

Amounts used

Not available.

Frequency and duration of use

Not available.

Human factors not influenced by risk management

Other given operational conditions affecting workers exposure

Not available.

Other relevant operational conditions

Not available.

Risk management measures (RMM)

Technical conditions and measures to control dispersion from source towards the worker Assumes a good basic standard of occupational hygiene is implemented. Ensure that splashes and spills are avoided by product design. Avoid contact with contaminated tools and objects. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.

Organizational measures to prevent/limit releases, dispersion and exposure Not available.

Conditions and measures related to personal protection, hygiene and health evaluations 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. 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.

3. Exposure Estimation

Environment

Compartment	PEC	RCR (PEC/PNEC)	Method	Remarks
Air.	3,08E-06 mg/m³	The use is assessed to be safe.	Used EUSES model.	
freshwater	1,30E-06 mg/l	0,000815	Used EUSES model.	
marine water	5,98E-07 mg/l	0,00374	Used EUSES model.	
freshwater sediment	1,45E-04 mg/kg wet weight	0,0951	Used EUSES model.	
marine sediment	6,64E-05 mg/kg wet weight	0,436	Used EUSES model.	
soil	6,05E-05 mg/kg wet weight	0,191	Used EUSES model.	
STP	3,44E-06 mg/l	0,00000000344	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.

7 - Exposure Scenario Worker

1. Polymerization (Bulk and batch)

List of use descriptors

Sector(s) of Use	SU10: Formulation [mixing] of preparations and/or re-packaging. SU0: Other: SU3: Industrial uses: Uses of substances as such or in preparations at industrial sites.
Name of contributing environmental scenario and corresponding ERC	Polymerization (Bulk and batch) ERC4: Industrial use of processing aids in processes and products, not becoming part of article s .
List of names of contributing worker scenarios and corresponding PROCs	Polymerization (Bulk and batch) 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. 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. PROC15: Use as laboratory reagent

2.1.1. Contributing scenario controlling environmental exposure for Polymerization (Bulk and batch)

Product characteristics

Concentration of the substance in a mixture	Covers percentage substance in the product up to 100 % (unless stated differently).
Physical state	solid

Amounts used

Annual amount used in the EU	120 tons/year
Regional use tonnage (tons/year):	12 tons/year
Fraction of Regional tonnage used locally:	1
Emission days (days/year):	300

Environment factors not influenced by risk management

Local freshwater dilution factor:	10
Local marine water dilution factor:	100

Other given operational conditions affecting environmental exposure

	Emission days	Emission factors			
Type	**(days/year)**	**Air**	**Soil**	**Water**	**Remarks**
	300	0,002	0,0001	0,000095	

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.
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	Municipal STP. Onsite STP.
Discharge rate	2000
Sludge treatment technique	Do not use sludge as fertiliser

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment

Suitable waste treatment	Dispose of waste product or used containers according to local regulations.

Treatment effectiveness 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.

2.2.1. Contributing scenario controlling worker exposure for Polymerization (Bulk and batch)

Product characteristics

Concentration of the substance in a mixture Covers percentage substance in the product up to 100 % (unless stated differently).

Physical form of the product solid

vapour pressure Not available.

Amounts used

Not available.

Frequency and duration of use

Not available.

Human factors not influenced by risk management

Other given operational conditions affecting workers exposure

Not available.

Other relevant operational conditions

Not available.

Risk management measures (RMM)

Technical conditions and measures to control dispersion from source towards the worker Assumes a good basic standard of occupational hygiene is implemented. Ensure that splashes and spills are avoided by product design. Avoid contact with contaminated tools and objects. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.

Organizational measures to prevent/limit releases, dispersion and exposure Not available.

Conditions and measures related to personal protection, hygiene and health evaluations 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. 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.

3. Exposure Estimation

Environment

Compartment	PEC	RCR (PEC/PNEC)	Method	Remarks
Air.	2,14E-05 mg/m³	The use is assessed to be safe.	Used EUSES model.	
freshwater	1,36E-05 mg/l	0,00852	Used EUSES model.	
marine water	1,35E-06 mg/l	0,00846	Used EUSES model.	
freshwater sediment	1,51E-03 mg/kg wet weight	0,994	Used EUSES model.	
marine sediment	1,50E-04 mg/kg wet weight	0,988	Used EUSES model.	
soil	2,08E-05 mg/kg wet weight	0,0523	Used EUSES model.	
STP	1,28E-04 mg/l	0,000000128	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.

8 - Exposure Scenario Worker

1. Polymer preparations and compounds

List of use descriptors

Sector(s) of Use	SU10: Formulation [mixing] of preparations and/or re-packaging. SU0: Other: SU3: Industrial uses: Uses of substances as such or in preparations at industrial sites.
Name of contributing environmental scenario and corresponding ERC	Polymer preparations and compounds ERC4: Industrial use of processing aids in processes and products, not becoming part of article s .
List of names of contributing worker scenarios and corresponding PROCs	Polymer preparations and compounds 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. 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. PROC15: Use as laboratory reagent

2.1.1. Contributing scenario controlling environmental exposure for Polymer preparations and compounds

Product characteristics

Concentration of the substance in a mixture	Covers percentage substance in the product up to 100 % (unless stated differently).
Physical state	solid

Amounts used

Annual amount used in the EU	120 tons/year
Regional use tonnage (tons/year):	12 tons/year
Fraction of Regional tonnage used locally:	1
Emission days (days/year):	300

Environment factors not influenced by risk management

Local freshwater dilution factor:	10
Local marine water dilution factor:	100

Other given operational conditions affecting environmental exposure

	Emission days	Emission factors			
Type	**(days/year)**	**Air**	**Soil**	**Water**	**Remarks**
	300	0,02	0,00001	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.
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	Municipal STP. Onsite STP.
Discharge rate	2000
Sludge treatment technique	Do not use sludge as fertiliser

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment

Suitable waste treatment	Dispose of waste product or used containers according to local regulations.
Treatment effectiveness	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.

2.2.1. Contributing scenario controlling worker exposure for Polymer preparations and compounds

Product characteristics

Concentration of the substance in a mixture	Covers percentage substance in the product up to 100 % (unless stated differently).
Physical form of the product	solid
vapour pressure	Not available.

Amounts used

Not available.

Frequency and duration of use

Not available.

Human factors not influenced by risk management

Other given operational conditions affecting workers exposure

Not available.

Other relevant operational conditions

Not available.

Risk management measures (RMM)

Technical conditions and measures to control dispersion from source towards the worker	Assumes a good basic standard of occupational hygiene is implemented. Ensure that splashes and spills are avoided by product design. Avoid contact with contaminated tools and objects. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.
Organizational measures to prevent/limit releases, dispersion and exposure	Not available.
Conditions and measures related to personal protection, hygiene and health evaluations	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. 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.

3. Exposure Estimation

Environment

Compartment	PEC	RCR (PEC/PNEC)	Method	Remarks
Air.	1,86E-04 mg/m³	The use is assessed to be safe.	Used EUSES model.	
freshwater	9,63E-07 mg/l	0,000602	Used EUSES model.	
marine water	8,81E-08 mg/l	0,00055	Used EUSES model.	
freshwater sediment	1,07E-04 mg/kg wet weight	0,0703	Used EUSES model.	
marine sediment	9,77E-06 mg/kg wet weight	0,0642	Used EUSES model.	
soil	1,77E-04 mg/kg wet weight	0,445	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.

9 - Exposure Scenario Worker

1. Rubber production and processing

List of use descriptors

Sector(s) of Use	SU10: Formulation [mixing] of preparations and/or re-packaging. SU0: Other: SU3: Industrial uses: Uses of substances as such or in preparations at industrial sites.
Name of contributing environmental scenario and corresponding ERC	Rubber production and processing ERC4: Industrial use of processing aids in processes and products, not becoming part of article s .
List of names of contributing worker scenarios and corresponding PROCs	Rubber production and processing 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. 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. PROC15: Use as laboratory reagent

2.1.1. Contributing scenario controlling environmental exposure for Rubber production and processing

Product characteristics

Concentration of the substance in a mixture	Covers percentage substance in the product up to 100 % (unless stated differently).
Physical state	solid

Amounts used

Annual amount used in the EU	400 tons/year
Regional use tonnage (tons/year):	40 tons/year
Fraction of Regional tonnage used locally:	1
Emission days (days/year):	300

Environment factors not influenced by risk management

Local freshwater dilution factor:	10
Local marine water dilution factor:	100

Other given operational conditions affecting environmental exposure

	Emission days	Emission factors			
Type	**(days/year)**	**Air**	**Soil**	**Water**	**Remarks**
	300	0,01	0,0001	0,000028	

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.
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	Municipal STP. Onsite STP.
Discharge rate	2000
Sludge treatment technique	Do not use sludge as fertiliser

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment

Suitable waste treatment	Dispose of waste product or used containers according to local regulations.
Treatment effectiveness	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.

2.2.1. Contributing scenario controlling worker exposure for Rubber production and processing

Product characteristics

Concentration of the substance in a mixture	Covers percentage substance in the product up to 100 % (unless stated differently).
Physical form of the product	solid
vapour pressure	Not available.

Amounts used

Not available.

Frequency and duration of use

Not available.

Human factors not influenced by risk management

Other given operational conditions affecting workers exposure

Not available.

Other relevant operational conditions

Not available.

Risk management measures (RMM)

Technical conditions and measures to control dispersion from source towards the worker	Assumes a good basic standard of occupational hygiene is implemented. Ensure that splashes and spills are avoided by product design. Avoid contact with contaminated tools and objects. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.
Organizational measures to prevent/limit releases, dispersion and exposure	Not available.
Conditions and measures related to personal protection, hygiene and health evaluations	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. 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.

3. Exposure Estimation

Environment

Compartment	PEC	RCR (PEC/PNEC)	Method	Remarks
Air.	3,07E-04 mg/m³	The use is assessed to be safe.	Used EUSES model.	
freshwater	1,33E-05 mg/l	0,00834	Used EUSES model.	
marine water	1,33E-06 mg/l	0,00829	Used EUSES model.	
freshwater sediment	1,48E-03 mg/kg wet weight	0,973	Used EUSES model.	
marine sediment	1,47E-04 mg/kg wet weight	0,967	Used EUSES model.	
soil	2,91E-04 mg/kg wet weight	0,733	Used EUSES model.	
STP	1,25E-04 mg/l	0,000000125	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.

10 - Exposure Scenario Worker

1. Fuels

List of use descriptors

Sector(s) of Use	SU0: Other: SU3: Industrial uses: Uses of substances as such or in preparations at industrial sites.
Name of contributing environmental scenario and corresponding ERC	Fuels ERC7: Industrial use of substances in closed systems .
List of names of contributing worker scenarios and corresponding PROCs	Fuels 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. 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. PROC15: Use as laboratory reagent

2.1.1. Contributing scenario controlling environmental exposure for Fuels

Product characteristics

Concentration of the substance in a mixture	Covers percentage substance in the product up to 100 % (unless stated differently).
Physical state	solid

Amounts used

Annual amount used in the EU	1 tons/year
Regional use tonnage (tons/year):	0,1 tons/year
Fraction of Regional tonnage used locally:	1
Emission days (days/year):	300

Environment factors not influenced by risk management

Local freshwater dilution factor:	10
Local marine water dilution factor:	100

Other given operational conditions affecting environmental exposure

	Emission days		Emission factors		
Type	**(days/year)**	**Air**	**Soil**	**Water**	**Remarks**
	300	0,00025	0	0,00001	

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.
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	Municipal STP. Onsite STP.
Discharge rate	2000
Sludge treatment technique	Do not use sludge as fertiliser

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment

Suitable waste treatment	Dispose of waste product or used containers according to local regulations.

Treatment effectiveness 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.

2.2.1. Contributing scenario controlling worker exposure for Fuels

Product characteristics

Concentration of the substance in a mixture Covers percentage substance in the product up to 100 % (unless stated differently).

Physical form of the product solid

vapour pressure Not available.

Amounts used

Not available.

Frequency and duration of use

Not available.

Human factors not influenced by risk management

Other given operational conditions affecting workers exposure

Not available.

Other relevant operational conditions

Not available.

Risk management measures (RMM)

Technical conditions and measures to control dispersion from source towards the worker Assumes a good basic standard of occupational hygiene is implemented. Ensure that splashes and spills are avoided by product design. Avoid contact with contaminated tools and objects. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.

Organizational measures to prevent/limit releases, dispersion and exposure Not available.

Conditions and measures related to personal protection, hygiene and health evaluations 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. 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.

3. Exposure Estimation

Environment

Compartment	PEC	RCR (PEC/PNEC)	Method	Remarks
Air.	3,09E-06 mg/m³	The use is assessed to be safe.	Used EUSES model.	
freshwater	9,75E-07 mg/l	0,000609	Used EUSES model.	
marine water	1,05E-07 mg/l	0,000654	Used EUSES model.	
freshwater sediment	1,08E-04 mg/kg wet weight	0,0711	Used EUSES model.	
marine sediment	1,16E-05 mg/kg wet weight	0,0763	Used EUSES model.	
soil	5,16E-06 mg/kg wet weight	0,0142	Used EUSES model.	
STP	1,12E-07 mg/l	0,000000000112	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.

11 - Exposure Scenario Worker

1. Paper articles

List of use descriptors

Sector(s) of Use	SU6b: Manufacture of pulp, paper and paper products. SU10: Formulation [mixing] of preparations and/or re-packaging
Name of contributing environmental scenario and corresponding ERC	Paper articles ERC5: Industrial use resulting in inclusion into or onto a matrix .
List of names of contributing worker scenarios and corresponding PROCs	Paper articles 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. 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. PROC15: Use as laboratory reagent

2.1.1. Contributing scenario controlling environmental exposure for Paper articles

Product characteristics

Concentration of the substance in a mixture	Covers percentage substance in the product up to 100 % (unless stated differently).
Physical state	solid

Amounts used

Annual amount used in the EU	1 tons/year
Regional use tonnage (tons/year):	0,1 tons/year
Fraction of Regional tonnage used locally:	1
Emission days (days/year):	220

Environment factors not influenced by risk management

Local freshwater dilution factor:	10
Local marine water dilution factor:	100

Other given operational conditions affecting environmental exposure

	Emission days		Emission factors		
Type	**(days/year)**	**Air**	**Soil**	**Water**	**Remarks**
	220	0,009	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.
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	Municipal STP. Onsite STP.
Discharge rate	2000
Sludge treatment technique	Do not use sludge as fertiliser

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment

Suitable waste treatment	Dispose of waste product or used containers according to local regulations.

Treatment effectiveness 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.

2.2.1. Contributing scenario controlling worker exposure for Paper articles

Product characteristics

Concentration of the substance in a mixture Covers percentage substance in the product up to 100 % (unless stated differently).

Physical form of the product solid

vapour pressure Not available.

Amounts used

Not available.

Frequency and duration of use

Not available.

Human factors not influenced by risk management

Other given operational conditions affecting workers exposure

Not available.

Other relevant operational conditions

Not available.

Risk management measures (RMM)

Technical conditions and measures to control dispersion from source towards the worker Assumes a good basic standard of occupational hygiene is implemented. Ensure that splashes and spills are avoided by product design. Avoid contact with contaminated tools and objects. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.

Organizational measures to prevent/limit releases, dispersion and exposure Not available.

Conditions and measures related to personal protection, hygiene and health evaluations 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. 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.

3. Exposure Estimation

Environment

Compartment	PEC	RCR (PEC/PNEC)	Method	Remarks
Air.	3,77E-06 mg/m³	The use is assessed to be safe.	Used EUSES model.	
freshwater	9,63E-07 mg/l	0,000602	Used EUSES model.	
marine water	8,81E-08 mg/l	0,000515	Used EUSES model.	
freshwater sediment	1,07E-04 mg/kg wet weight	0,0702	Used EUSES model.	
marine sediment	9,78E-06 mg/kg wet weight	0,0642	Used EUSES model.	
soil	3,93E-06 mg/kg wet weight	0,0099	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.

12 - Exposure Scenario Worker

1. Coating.

List of use descriptors

Sector(s) of Use	SU0: Other: SU22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen). SU21: Consumer uses
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. 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. PROC15: Use as laboratory reagent

2.1.1. Contributing scenario controlling environmental exposure for Coating.

Product characteristics

Concentration of the substance in a mixture	Covers percentage substance in the product up to 100 % (unless stated differently).
Physical state	solid

Amounts used

Annual amount used in the EU	4000 tons/year
Regional use tonnage (tons/year):	400 tons/year
Fraction of Regional tonnage used locally:	0,002
Emission days (days/year):	365

Environment factors not influenced by risk management

Local freshwater dilution factor:	10
Local marine water dilution factor:	100

Other given operational conditions affecting environmental exposure

	Emission days		Emission factors		
Type	**(days/year)**	**Air**	**Soil**	**Water**	**Remarks**
	365	0	0	0,00011	

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.
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	Municipal STP. Onsite STP.

Discharge rate	2000
Sludge treatment technique	Do not use sludge as fertiliser

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment

Suitable waste treatment	Dispose of waste product or used containers according to local regulations.
Treatment effectiveness	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.

2.2.1. Contributing scenario controlling worker exposure for Coating.

Product characteristics

Concentration of the substance in a mixture	Covers percentage substance in the product up to 100 % (unless stated differently).
Physical form of the product	solid
vapour pressure	Not available.

Amounts used

Not available.

Frequency and duration of use

Not available.

Human factors not influenced by risk management

Other given operational conditions affecting workers exposure

Not available.

Other relevant operational conditions

Not available.

Risk management measures (RMM)

Technical conditions and measures to control dispersion from source towards the worker	Assumes a good basic standard of occupational hygiene is implemented. Ensure that splashes and spills are avoided by product design. Avoid contact with contaminated tools and objects. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.
Organizational measures to prevent/limit releases, dispersion and exposure	Not available.
Conditions and measures related to personal protection, hygiene and health evaluations	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. 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.

3. Exposure Estimation

Environment

Compartment	PEC	RCR (PEC/PNEC)	Method	Remarks
Air.	3,09E-06 mg/m³	The use is assessed to be safe.	Used EUSES model.	
freshwater	1,76E-06 mg/l	0,0011	Used EUSES model.	
marine water	1,28E-06 mg/l	0,00802	Used EUSES model.	
freshwater sediment	1,96E-04 mg/kg wet weight	0,129	Used EUSES model.	
marine sediment	1,42E-04 mg/kg wet weight	0,936	Used EUSES model.	
soil	1,37E-04 mg/kg wet weight	0,436	Used EUSES model.	

STP	8,06E-06 mg/l	0,00000000806	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.

13 - Exposure Scenario Worker

1. Polymer preparations and compounds

List of use descriptors

Sector(s) of Use	SU0: Other: SU22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Name of contributing environmental scenario and corresponding ERC	Polymer preparations and compounds ERC8a: Wide dispersive indoor use of processing aids in open systems .
List of names of contributing worker scenarios and corresponding PROCs	Polymer preparations and compounds 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. 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. PROC15: Use as laboratory reagent

2.1.1. Contributing scenario controlling environmental exposure for Polymer preparations and compounds

Product characteristics

Concentration of the substance in a mixture	Covers percentage substance in the product up to 100 % (unless stated differently).
Physical state	solid

Amounts used

Annual amount used in the EU	120 tons/year
Regional use tonnage (tons/year):	12 tons/year
Fraction of Regional tonnage used locally:	0,0005
Emission days (days/year):	365

Environment factors not influenced by risk management

Local freshwater dilution factor:	10
Local marine water dilution factor:	100

Other given operational conditions affecting environmental exposure

	Emission days		Emission factors		
Type	**(days/year)**	**Air**	**Soil**	**Water**	**Remarks**
	365	0,98	0,01	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.

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.
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	Municipal STP. Onsite STP.
Discharge rate	2000
Sludge treatment technique	Do not use sludge as fertiliser

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment

Suitable waste treatment	Dispose of waste product or used containers according to local regulations.
Treatment effectiveness	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.

2.2.1. Contributing scenario controlling worker exposure for Polymer preparations and compounds

Product characteristics

Concentration of the substance in a mixture	Covers percentage substance in the product up to 100 % (unless stated differently).
Physical form of the product	solid
vapour pressure	Not available.

Amounts used

Not available.

Frequency and duration of use

Not available.

Human factors not influenced by risk management

Other given operational conditions affecting workers exposure

Not available.

Other relevant operational conditions

Not available.

Risk management measures (RMM)

Technical conditions and measures to control dispersion from source towards the worker	Assumes a good basic standard of occupational hygiene is implemented. Ensure that splashes and spills are avoided by product design. Avoid contact with contaminated tools and objects. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.
Organizational measures to prevent/limit releases, dispersion and exposure	Not available.
Conditions and measures related to personal protection, hygiene and health evaluations	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. 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.

3. Exposure Estimation

Environment

Compartment	PEC	RCR (PEC/PNEC)	Method	Remarks
Air.	7,57E-06 mg/m³	The use is assessed to be safe.	Used EUSES model.	
freshwater	1,51E-06 mg/l	0,000944	Used EUSES model.	
marine water	9,07E-07 mg/l	0,00567	Used EUSES model.	
freshwater sediment	1,68E-04 mg/kg wet weight	0,11	Used EUSES model.	
marine sediment	1,01E-04 mg/kg wet weight	0,661	Used EUSES model.	
soil	9,93E-05 mg/kg wet weight	0,312	Used EUSES model.	
STP	5,52E-06 mg/l	0,00000000552	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.

14 - Exposure Scenario Worker

1. Fuels

List of use descriptors

Sector(s) of Use	SU0: Other: SU22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen). SU21: Consumer uses
Name of contributing environmental scenario and corresponding ERC	Fuels ERC9a: Wide dispersive indoor use of substances in closed systems . ERC9b: Wide dispersive outdoor use of substances in closed systems .
List of names of contributing worker scenarios and corresponding PROCs	Fuels 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. 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. PROC15: Use as laboratory reagent

2.1.1. Contributing scenario controlling environmental exposure for Fuels

Product characteristics

Concentration of the substance in a mixture	Covers percentage substance in the product up to 100 % (unless stated differently).
Physical state	solid

Amounts used

Annual amount used in the EU	1 tons/year
Regional use tonnage (tons/year):	0,1 tons/year
Fraction of Regional tonnage used locally:	0,0005
Emission days (days/year):	365

Environment factors not influenced by risk management

Local freshwater dilution factor:	10
Local marine water dilution factor:	100

Other given operational conditions affecting environmental exposure

	Emission days		Emission factors		
Type	**(days/year)**	**Air**	**Soil**	**Water**	**Remarks**
	365	0,0001	0,00001	0,00001	

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.
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	Municipal STP. Onsite STP.
Discharge rate	2000
Sludge treatment technique	Do not use sludge as fertiliser

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment

Suitable waste treatment	Dispose of waste product or used containers according to local regulations.
Treatment effectiveness	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.

2.2.1. Contributing scenario controlling worker exposure for Fuels

Product characteristics

Concentration of the substance in a mixture	Covers percentage substance in the product up to 100 % (unless stated differently).
Physical form of the product	solid
vapour pressure	Not available.

Amounts used

Not available.

Frequency and duration of use

Not available.

Human factors not influenced by risk management

Other given operational conditions affecting workers exposure

Not available.

Other relevant operational conditions

Not available.

Risk management measures (RMM)

Technical conditions and measures to control dispersion from source towards the worker	Assumes a good basic standard of occupational hygiene is implemented. Ensure that splashes and spills are avoided by product design. Avoid contact with contaminated tools and objects. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.
Organizational measures to prevent/limit releases, dispersion and exposure	Not available.
Conditions and measures related to personal protection, hygiene and health evaluations	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. 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.

3. Exposure Estimation

Environment

Compartment	PEC	RCR (PEC/PNEC)	Method	Remarks
Air.	3,08E-06 mg/m³	The use is assessed to be safe.	Used EUSES model.	
freshwater	9,63E-07 mg/l	0,000602	Used EUSES model.	
marine water	8,81E-08 mg/l	0,00055	Used EUSES model.	
freshwater sediment	1,07E-04 mg/kg wet weight	0,0703	Used EUSES model.	
marine sediment	9,77E-06 mg/kg wet weight	0,0642	Used EUSES model.	
soil	3,28E-06 mg/kg wet weight	0,00827	Used EUSES model.	
STP	4,60E-11 mg/l	0,00000000000004	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.

15 - Exposure Scenario Worker

1. Laboratory use

List of use descriptors

Sector(s) of Use	SU0: Other: SU22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Name of contributing environmental scenario and corresponding ERC	Laboratory use ERC8d: Wide dispersive outdoor use of processing aids in open systems .
List of names of contributing worker scenarios and corresponding PROCs	Laboratory use 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. 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. PROC15: Use as laboratory reagent

2.1.1. Contributing scenario controlling environmental exposure for Laboratory use

Product characteristics

Concentration of the substance in a mixture	Covers percentage substance in the product up to 100 % (unless stated differently).
Physical state	solid

Amounts used

Annual amount used in the EU	1 tons/year
Regional use tonnage (tons/year):	0,1 tons/year
Fraction of Regional tonnage used locally:	0,0005
Emission days (days/year):	365

Environment factors not influenced by risk management

Local freshwater dilution factor:	10
Local marine water dilution factor:	100

Other given operational conditions affecting environmental exposure

	Emission days		Emission factors		
Type	**(days/year)**	**Air**	**Soil**	**Water**	**Remarks**
	365	0,5	0	0,5	

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.
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	Municipal STP. Onsite STP.
Discharge rate	2000
Sludge treatment technique	Do not use sludge as fertiliser

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment

Suitable waste treatment	Dispose of waste product or used containers according to local regulations.

Treatment effectiveness 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.

2.2.1. Contributing scenario controlling worker exposure for Laboratory use

Product characteristics

Concentration of the substance in a mixture Covers percentage substance in the product up to 100 % (unless stated differently).

Physical form of the product solid

vapour pressure Not available.

Amounts used

Not available.

Frequency and duration of use

Not available.

Human factors not influenced by risk management

Other given operational conditions affecting workers exposure

Not available.

Other relevant operational conditions

Not available.

Risk management measures (RMM)

Technical conditions and measures to control dispersion from source towards the worker Assumes a good basic standard of occupational hygiene is implemented. Ensure that splashes and spills are avoided by product design. Avoid contact with contaminated tools and objects. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.

Organizational measures to prevent/limit releases, dispersion and exposure Not available.

Conditions and measures related to personal protection, hygiene and health evaluations 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. 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.

3. Exposure Estimation

Environment

Compartment	PEC	RCR (PEC/PNEC)	Method	Remarks
Air.	3,10E-06 mg/m³	The use is assessed to be safe.	Used EUSES model.	
freshwater	1,19E-06 mg/l	0,000744	Used EUSES model.	
marine water	4,29E-07 mg/l	0,00268	Used EUSES model.	
freshwater sediment	1,32E-04 mg/kg wet weight	0,0868	Used EUSES model.	
marine sediment	4,76E-05 mg/kg wet weight	0,313	Used EUSES model.	
soil	4,15E-05 mg/kg wet weight	0,13	Used EUSES model.	
STP	2,30E-06 mg/l	0,0000000023	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.