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1.0 Identification of the substance/mixture and of the company

1.1 Product identifier

Trade name:Arc All Weather Sealant Clear UFI: A7X4-QWAS-9J0D-2WDW Index-No.: --EG-No.: --CAS-No.: --REACH-Registry-No. Other names:--This mixture contains nanoforms (according to REACH regulation).

1.2 Relevant identified uses of the substance or the mixture and uses advised against: Use as solvent containing Sealant by professional uses See also for this application the exposure scenario from of a supplier, bottler + *exposure scenario mineral oil distillate*

1.3 Details of the supplier of the data sheet

Manufacturer / Supplier

ARC Building Products IDA Business & Technology Park Ballynattin Arklow, Co.Wicklow Ireland. Tel: +353 (0)402 32370 Email: sales@arcbuildingproducts.ie Web: www.arcbuildingproducts.ie

1.4 Emergency Number

Tel: +353 (0)402 32370 (Office Hours Only)

2. Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation 1272/2008/EU



Warning

Flammable Fluid category 3, STOT SE 3 GHS 02, GHS 07, H 226, H 336, EUH 066



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2.2 Label elements



Warning Dangerous component contains : n-Butylacetate Flammable Fluid category 3

Regulation 1228/2008/EU

H-Phrases H226: Flammable liquid and vapour H336: May cause drowsiness and dizziness EUH-Phrases EUH066: Repeated exposure may cause skin dryness or cracking

Precautionary statements

P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking
P233: Keep container tightly closed
P403+P235: Store in a well-ventilated place. Keep cool.
P261: Avoid breathing dust/fume/ gas/mist/vapours/spray
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P305 + P351+ P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P303+P361+P353: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
P304+P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing
P312: Call a POISON CENTRE / doctor if you feel unwell
P501 Dispose contents/ container to a plant for burning waste

2.3 Other hazards

Vapours may form explosive mixture with air Components of the product may be absorbed into the body by inhalation. no endocrine disruptors.

PBT- and vPvB-Assessment: there is no substance in the mixture to be persistent, bioaccumulating nor toxix (PBT), nor very persistent nor very bioaccumulating (vPvB)

3. Composition/ information on integredients

Mixture: Synthetic rubber (Polymer mixture) and helping substances with the following hazardous Substances

Substance: Petroleum, Distillate EC-No.: 265-157-1 CAS-No. : 64742-54-7 Index-No.: REACH-Registry-Number.: 01-2119484627-25 Share : 31-35% Classification according to Regulation (EU) No. 1272/2008: GHS 8, Asp. Tox. 1 H304 Highly refined mineral oil. The highly refined mineral oil contains <3% (w/w) DMSO extract, according to IP346. It is note H, L Annex VI



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Substance: n-Butylacetate EG-No.: 204-658-1 CAS-No. : 123-86-4 Index-No.: REACH-Registry-Number.: 01-2119485493-29-0000 Share : 22-26% Classification according to Regulation (EU) Nr. 1272/2008: GHS 02 Flam. Liq. 3 H 226; GHS 07 STOT SE 3 H 336; EUH 066

Substance: Bis(2,2,6,6-tetramethyl-4-piperidyl)sebacate EG-No: 258-207-9 CAS-Nr. : 52829-07-9 Index-Nr.: REACH- Registry-Number: 01-2119537297-32-0001 Share : ca. 0,1-0,2% Classification according to Regulation (EU) No. 1272/2008: GHS 05, 08, 09, Eye Dam.1 H318, Repr. 2 H361f, Aquatic Acute 1 H400, Aquatic Chronic 2 H 411 M acute =1

Particle properties Name of the (group of) nanoform(s): Synthetic amorphous silica, nanostructured material. Number-based particle size distribution (internal structure/primary particles) D10: 7-15 nm D50: 2-30 nm D90: 10-35 nm

4. First aid measures

4.1 Description of first aid measures

Remove contaminated, soaked clothin immediately and dispose of safely. First aider need to protect himself.

After Inhalation Keep at rest. Aerate wirth fresh air. When symtoms persist or in all cases of doubt seek medical advice

Skin Wash immediately with soap and plenty of water. When symtoms persist or in all cases of doubt seek medical advice

Eyes Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses. Immediate medical attention is required.

Ingestion Call a physican immediately. Do not induce vomiting without medical advice.

4.2 Most important symtoms and effects, both acute and delayed

Cough, nausea, vomiting, headache, Lung oedema, central nervous system effects. Prolonged skin contact may defat the skin and produce dermatitits

4.3 Indication of any immediate medical attention and special treatment needed Treat symthomatically

5. <u>Fire-fighting measures</u>

5.1 Suitable extinguishing media: Alcohol-resistant foam, powder, carbon dioxide, water spray Extinuishing media which must not be used for safety reasons: Do not use a solid water stream as it may scatter and spread fire



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5.2 Special hazards arising from the substance or mixture: Can be released in case of fire: carbon monoxide and carbon dioxide

5.3 Advice for fire-fighters

Wear self-contained breathing apparatus , like EN 133

6. Accidental realease measures

6.1 Personal precautions

Avoid contact with skin and eyes. Avoid breathing vapors or mists. Keep people away from and upwind of spill/leak. Ensure adequate ventilation, especially in confined areas. Keep away from heat and sources of ignition.

For emergency responders: Personal protection see section 8.

6.2 Environmental precautions

Prevent further leakage or spillage. Do not discharge product into the aquatic environment without pretreatment (biological treatment plant).

6.3 Methods for containment

Stop the flow of material, if possible without risk. Dike spilled material, where this is possible. **Methods for cleaning up**

Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. If liquid has been spilt in

large quantities clean up promptly by scoop or vacuum. Dispose of in accordance with local regulations. Take

necessary action to avoid static electricity discharge (which might cause ignition of organic vapours).

6.4 Reference to other sections: see also section 7 and 13

7. Handling and storage

7.1 Advice on safe handling

Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product. Provide sufficient air exchange and/or exhaust in work rooms.

Advice on protection against fire and explosion

Keep away from sources of ignition - No smoking. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapours). In case of fire, emergency cooling with water spray should be available. Ground and bond containers when transferring material. Vapour is heavier than air and can travel considerable distance to a source of ignition and flashback. Vapours may form explosive mixture with air.

Advice on the protection of the environment

See Section 8: Environmental exposure controls.

Advice on general occupational hygiene

Do not eat, drink and smoke in work

7.2 Conditions for safe storage, including any incompatibilities



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Technical measures/Storage conditions

Keep containers tightly closed in a cool, well-ventilated place. Handle and open container with care. Don't store above 60 °C

Advice on common storage

Incompatible products: strong acids and strong bases strong oxidizing agents Temperature class T 2

7.3 Specific end uses: solvent containing sealant by professional use See also Exposition scenario of the supplier to the containing solvent

8. Exposure controls / personal protection

8.1 Control parameters

8.1.1 Exposure Limits EC

According to Directive (EU) 2019/1831 of the Commission according to Directive 98/24/EGChemical SubstanceTWA (mg/m³) TWA (ppm) STEL(mg/m³) STEL(ppm)n-Butylacetate CAS:123-86-424150723150

Exposure Limits UK

Component: n-Butylacetate TWA(mg/m³) TWA (ppm) STEL(mg/m³) STEL (ppm) CAS 123-86-4 150 724 966 200 Silicon dioxide CAS 7631-86-9 OEL 6mg/m³ Inhalable dust/mist OEL 2,4 mg/m³ respirable dust/mist Mineral Oil (Fog) CAS 64742-54-7 Mixture of hydrocarbons ACGIH: TWA 5 mg/m³ Note: For details and further information please refer to the original regulation.

8.1.2 DNEL- and PNEC- Data n-Butylacetate CAS 123-86-4

Worker

DN(M)EL - long-term exposure - systemic effects - Inhalation 300*** mg/m^{3***} DN(M)EL - acute / short-term exposure - systemic effects - Inhalation 600*** mg/m^{3***} DN(M)EL - long-term exposure - local effects - Inhalation 300*** mg/m³ DN(M)EL - acute / short-term exposure - local effects - Inhalation 600*** mg/m³ DN(M)EL - long-term exposure - systemic effects - Dermal 11*** mg/kg bw/day*** DN(M)EL - acute / short-term exposure - systemic effects - Dermal 11*** mg/kg bw/day*** DN(M)EL - acute / short-term exposure - systemic effects - Dermal 11*** mg/kg bw/day*** DN(M)EL - long-term exposure - local effects - Dermal No hazard identified*** DN(M)EL - acute / short-term exposure - local effects - Dermal No hazard identified*** DN(M)EL - local effects - eyes No hazard identified*** DN(M)EL - local effects - eyes No hazard identified*** General population *** DN(M)EL - long-term exposure - systemic effects - Inhalation 35,7*** mg/m^{3**}

DN(M)EL - acute / short-term exposure - systemic effects - Inhalation 300*** mg/m^{3***}

DN(M)EL - long-term exposure - local effects - Inhalation 35,7*** mg/m³

DN(M)EL - acute / short-term exposure - local effects - Inhalation 300*** mg/m³

DN(M)EL - long-term exposure - systemic effects - Dermal 6*** mg/kg bw/day***

DN(M)EL - acute / short-term exposure - systemic effects - Dermal 6*** mg/kg bw/day*** DN(M)EL - long-term exposure - local effects - Dermal No hazard identified***



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DN(M)EL - acute / short-term exposure - local effects - Dermal No hazard identified*** DN(M)EL - long-term exposure - systemic effects - Oral 2*** mg/kg bw/day*** DN(M)EL - acute / short-term exposure - systemic effects - Oral 2*** mg/kg bw/day*** DN(M)EL - local effects - eyes No hazard identified***

Environment *** PNEC aqua - freshwater 0,18 mg/l PNEC aqua - marine water 0,018 mg/l PNEC aqua - intermittent releases 0,36 mg/l PNEC STP 35,6 mg/l PNEC sediment - freshwater 0,981 mg/kg PNEC sediment - marine water 0,0981 mg/l PNEC soil 0,0903 mg/kg Secondary poisoning No potential for bioaccumulation***

DNEL Bis(2,2,6,6-tetramethyl-4-piperidyl)sebacate CAS-Number: 52829-07-9

Worker: long-term and short-term exposure - systemic effects - Inhalation: 2,82 mg/m3 Worker: long-term exposure - systemic effects , dermal: 1,6 mg/kg General population: long-term exposure - systemic effects, Inhalation: 0,69 mg/m3 General population long-term exposure - systemic effects, dermal: 0,8 mg/kg General population: long-term exposure - systemic effects, oral: 0,4 mg/kg

PNEC Bis(2,2,6,6-tetramethyl-4-piperidyl)sebacate CAS-Number: 52829-07-9

aqua - freshwater: 0,018 mg/l marine water: 0,0018 mg/l aqua - intermittent releases: 0,007 mg/l sediment - freshwater 29 mg/kg sediment - marine water: 2,9 mg/kg Soil: 5,9 mg/kg STPe: 1 mg/l

Data by supplier **Exposure limits European Union:** for Silicon dioxide and Petroleum are no exposure limits established

8.2 Occupational exposure controls

8.2.1 Engineering measures

General or dilution ventilation is frequently insufficient as the sole means of controlling employee exposure. Local ventilation is usually preferred. Explosion-proof equipment (for example fans, switches, and grounded ducts) should be used in mechanical ventilation systems.

8.2.2. Personal protective equipment

General industrial hygiene practice

Avoid contact with skin, eyes and clothing. Do not breathe vapours or spray mist. Ensure that eyewash stations and safety showers are close to the workstation location.

Hygiene measures

When using, do not eat, drink or smoke. Take off all contaminated clothing immediately. Wash hands before breaks and immediately after handling the product.



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Respiratory protection

Respirator with A filter. Full mask with above mentioned filter according to producers using requirements or self-contained breathing apparatus. Equipment should conform to EN 136 or EN 140 and EN 143.

Hand protection

Wear protective gloves. Recommendations are listed below. Other protective material may be used, depending on the situation, if adequate degradation and permeation data is available. If other chemicals are used in conjunction with this chemical, material selection should be based on protection for all chemicals present.

Suitable material butyl-rubber Evaluation according to EN 374, level 3 Glove thickness approx 0,3 mm Break through time approx 60 min Suitable material polyvinylchloride /nitrile rubber Evaluation according to EN 374, level 2 Glove thickness approx 0,9 mm Break through time approx 30 min

Eye protection

Tightly fitting safety goggles. In addition to goggles, war a face shield if there is a reasonable chance for splash to the face. Equipment should conform to EN 166.

Skin and body protection

Impervious clothing. Wear face-shield and protective suit for abnormal processing problems. **Note:** the information to protection according to the dangerous substance n-Butylacetate

8.2.3 Environmental exposure controls If possible use in closed systems. If leakage can not be prevented, the substance needs to be suck off at the emersion point, if possible without danger. Observe the exposure limits, clean exhaust air if needed. If recycling is not practicable, dispose of in compliance with local regulations. Inform the responsible authorities in case of leakage into the atmosphere, or of entry into waterways, soil or drains

9. <u>Physical and Chemical properties</u>

9.1 Information on basic physical and chemical properties

Appearance	Liquid with high viscosity
 Aggregate state: 	polymer, containing a solvent (liquid)
- color :	transparent
Odor :	like Butylacetate
Odor threshold :	7-20 ppm (n-Butylacetate)
pH-value :	6,2 (n-Butylacetate data of supplier, pH not applicable to product)
Meltingpoint :	Not applicable
Bolingpoint and boiling range:	126 °C (solvent n-Butylacetate)
Flashpoint :	27 °C Vapor from n-Butylacetate, according to EC A.9)
Evapoating rate :	Not applicable
Flammability:	Short-term ignition (5-10 sec.) possible due to butyl acetate
Upper/lower flammability ore	1,2 % (lower limit n-Butylacetate)
explosive limits:	7,5 % (upper limit n-Butylacetate)
Vapour pressure:	15 mbar bei 20 °C (n-Butylacetate)
Vapour densitiy :	4 (air =1) bei 20 °C (n-Butylacetate)
relative density :	0,93 g/cm ³ (20 °C)

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Solubility : Partition coefficient: n-Octanol/Water : Auto-ignition temperature : Decomposition temperature: Kinemat. Viscosity Viscosity : Explosive properties : Oxidising properties : Particle properties Not soluble in water Not applicable Not applicable Not applicable Not applicable >> 20,5 mm2/s 40 °C >15.000 mPas (20 °C) Brookfield Not applicable Not applicable Particle size distribution Number-based particle size distribution (internal structure/primary particles) D10: 7-15 nm D50: 2-30 nm D90: 10-35 nm Synthetic amorphous silica exists as a nanostructured material consisting of aggregates and agglomerates made up of fused primary particles

Other information

9.2.1 Information on physical hazard classes Information not available.
9.2.2 Other safety characteristics
9.2 Evaporation rate Not determined Molecular weight g/mol Undetermined Total solids ---Explosive properties non-explosive Oxidising properties non-oxidising

VOC: approx. 24 %

Containing Solvent: approx. 24 % n-Butylacetate

10. Stability and reactivity

- 10.1 Reactivity: no data known
- 10.2 Chemical Stability Stable if used and stored according to the specifications
- 10.3 Possibility of hazardous reactions: vapors can form with air explosive mixtures
- 10.4 Conditions to be avoid : strong acids and strong bases, also strong oxidants
- 10.5 Incompatible materials: no data known

10.6 Hazardous decomposition products: see also section 5

11. Toxicological information

Acute Toxicity (all data corresponding to n-Butylacetate and Petroleum) oral: LD50 10760 mg/kg (rat) OECD 423 dermal: LD50 >14000 mg/kg (rabbit) OECD 402 inhalative: LC0 23,4 mg/l (rat) OECD 403



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Petroleum Toxicity: LD50 > 5000 mg/kg and in a matrix, no acute toxic effects Irritation and Corrosion Skin: no skin irritation (rabbit) OECD 404 Eye: no eye irritation (rabbit) OECD 405 Sensitization not sensitizing: skin, (guinea pig) OECD 406 Specific Target Organ Systemic Toxicant - Single exposure May cause drowsiness and dizziness Specific Target Organ Systemic Toxicant - Repeated exposure Repeated exposure may cause skin dryness or cracking. Danger of aspiration: no, high viscosity of the product Carcinogenicity, Mutagenicity, Reproductive toxicity (CMR): no effects, but see below Additional toxicologial notes: dizziness, narcosis, cough, nausea, vomiting, headache, unconsciousness, shortness of breath. Components (n-butylacetate) of the product may be absorbed into the body by inhalation. Data on carcinogenic, mutagenic and reproductive toxic properties (CMR properties) of the raw material Bis(2,2,6,6-tetramethyl-4-piperidyl)sebazate can probably affect fertility 11.2. Endocrine properties: currently no ingredient classified in this way

12. Ecological information

- **12.1 Toxicity** Fish toxicity LC50 18 mg/l (96h) (American Phoxinus phoxinus) OECD 203 Daphnia toxicity EC50 44 mg/l (48h) (Daphnia magna)
 - (Data from dangerous substance n-Butylacetate)
- 12.2 Persistence and degradability Biodegradation 83 % (28 d), aerobic, Readily biodegradable, OECD 301 D. (dangerous substance n-Butylacetate)
- 12.3 Bioaccumulative potential no data available
- 12.4 Mobility in soil no data available

12.5 Results of PBT and vPvB assessment

there is no substance in the mixture to be persistent, bioaccumulating nor toxix (PBT), nor very persistent nor very bioaccumulating (vPvB)

- 12.6 Endocrinous properties currently unknown
- 12.7 Other harmful effects currently unknown

13. Disposal considerations

13.1 Waste treatment methods

Disposal required in compliance with all waste management related state and local regulations. The choice of the appropriate method of disposal depends on the product composition by the time of disposal as well as the local statutes and possibilities for disposal **Uncleaned empty packaging:** Contaminated packaging should be emptied as far as possible and after appropriate cleansing may be taken for reuse. Empty plastic packaging: 150110

European Waste Catalogue (EU)

08 04 09 waste adhesives and sealants containing organic solvents or other dangerous



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substances. Extra caution: Leave waste to a dump or to a plant for burning waste Other EU or national legislation *HP 03*

14. Transport information

14.1 UN-Number 1133

14.2 Correct UN- proper shiping name: Adhesive*

14.3. Transport hazard class see

Transport by Street /Rail ADR/RID: not subjected to ADR/RID see 2.2.3.1.5. (packaging < 450 l) no dangerous good Class /Packaging group : no dangerous good Accompanying documents: Meets the chemical and physical criteria set out in 2.2.3.1.5 ADR

Sea transport

(packaging < 450 l) IMDG-Code /GGV-See: not subjected to IMDG-Code 2.3.2.5 No dangerous good Class /Packaging group: no dangerous good Accompanying documents Carriage in accordance with IMDG code 2.3.2.5

Air Transport: ICAO-TI / IATA-DGR

Class 3 Label 3 UN-Number 1133 Packaging group III Correct technical name: 1133 Adhesive*

14.4 Packaging group see 14.3

14.5 Enviromental hazards ADR/RID / IMDG-Code / ICAO-TI / IATA-DGR: no Marine Pollutant: no

14.6 Special precautions for user: no, see also section 7

14.7 Transport in bulk according to Annex II des MARPOL- 73/78 and the IBC-Code Pollution category (X, Y or Z) : no Ship type (1, 2 oder 3) : no

15. <u>Regulatory information</u>

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture According to 1907/2006/EU

The mixture is not subject to regulations 1005/2009/EU, 2019/1021/EU POP) and 649/2012/EU (PIC)

Classification according to Regulation 1272/2008/EU



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Warning Dangerous component contains : n-Butylacetate Flammable Liquid category 3

National Regulation (Germany)

Wassergefährdungsklasse 1 (Solvent n-Butylacetate) AwVS VOC: approx. 24 % Lagerklasse by TRGS 510 : LGK 3

15.2 Chemical safety Assessment not be done yet by Downstream User

Other information

16. Changes compared to the latest version: Chapter 1,3,9 Changes, adapted to new regulations and classifications. Updating of the previous version due to adaptation to the regulations and classification of a raw material by the supplier.

Note: The above mentioned dates correspond to our present state of knowledge and experience. The safety data sheet serves as description of the products in regards to necessary safety measures. The indications have not the meaning of guarantees on properties. All information (n-Butylacetate, mineral oil) is data from suppliers, also the exposure scenario Date of issue 01.09.2023 Changes cursive Department Product Safety Contact: info@baden-chemie.de

Specific hazards:

Flam. Liq. 3: Flammable liquids, Hazard Category 3 STOT SE 3: Specific target organ toxicity -Single exposure, Hazard Category 3 Asp. Tox. 1: Aspiration Toxicity 1

H-Phrases (raw materials)

H226: Flammable liquid and vapor
H304: May be fatal if swallowed and enters airways
H336: May cause drowsiness and dizziness
H 318 Causes serios eye damage
H 351 Suspected of causing cancer (inhale)
H 361f Suspected of damaging fertility
H 400 Very toxic to aquatic life
H 411 Toxic to aquatic life with long lasting effects
EUH-Phrases
EUH066: Repeated exposure may cause skin dryness or cracking

P-Phrases

P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking

P233: Keep container tightly closed

P403+P235: Store in a well-ventilated place. Keep cool.

P261: Avoid breathing dust/fume/ gas/mist/vapours/spray



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P280: Wear protective gloves/protective clothing/eye protection/face protection. P305 + P351+ P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing P303+P361+P353: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower P304+P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing P312: Call a POISON CENTRE / doctor if you feel unwell P501 Dispose contents/ container to a plant for burning waste

Global Inventory Status (GIS)

All components of the mixture are registered in or exempt from registration in the following registers EU EINCS / REACH USA TSCA active Canada DSL/NDSL Australia AICS New Zealand NZIOC

PR China IECSC Japan ENCS Philippines PICCS Switzerland

TSCA AIIC DSL ENCS	United States TSCA Inventory Australian Inventory of Industrial Chemicals Canadian Domestic Substances List (DSL) Japan. ENCS - Existing and New Chemical Substances Inventory
ISHL	Japan. ISHL - Inventory of Chemical
KECI	Korea. Korean Existing Chemicals
PICCS	Philippines Inventory of Chemicals and Chemical Substances (PICCS)
IECSC	China. Inventory of Existing Chemical
NZIoC	New Zealand. Inventory of Chemical Substances



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Abbreviations and acronyms:

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road) RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail) IMDG: International Maritime Code for Dangerous Goods IATA: International Air Transport Association IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA) ICAO: International Civil Aviation Organization ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO) **CAS: Chemical Abstract Service** EINECS: European Inventory of Existing Commercial Chemical Substance LC50: Lethal concentration, 50 percent LD50: Lethal dose, 50 percent TRGS Technische Regel Gefahrstoffe (Germany) VOC: Volatile Organic Compounds **DNEL: Derived No Effect Level** PNEC: Predicted No Effect Concentration

Annex to the extended Safety Data Sheet eSDS

For bottler ES 1 and professional Application in Coatings ES 4 an Exposure scenario (Oxea) for the dangerous substance n-Butylacetate (the product contains n-Butylacetate)

ES 1: Use for re-packing

Sector of uses [SU]

SU3: Industrial uses: Uses of substances as such or in preparations at industrial sites SU10: Formulation [mixing] of preparations and/or re-packaging (excluding alloys) Process categories [PROC] PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at nondedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC14: production of preparations or articles by tabletting, compression, extrusion, pelettisation PROC15: Use as laboratory reagent Environmental release categories [ERC] ERC2: Formulation of preparations (mixtures) **Product characteristics** Refer to attached safety data sheets Processes and activities covered by the exposure scenario



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Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage,

materials transfers, mixing, tabletting, compression, pelletisation, extrusion, large and small scale packing, sampling,

maintenanance and associated laboratory activities.***

Further explanations

Industrial use

Assumes use at not more than 20°C above ambient temperature (unless stated differently) Assumes an advanced standard of occupational Health and Safety Management System***

Number of the contributing scenario 1

Contributing	exposure scenario controlling environmental exposure fo
ERC 2	

Further specification

SpERC ESVOC 2.2.v1 (ESVOC 4), release factors for (Sp)ERC were modified, assessment tool used:, Chesar 2.3.*** **Product characteristics** Liquid, vapour pressure 0,5 - 10 kPa at STP. **Amounts used** Daily amount per site: 13.33 to Annual amount per site: 4000 to Fraction of Regional tonnage used locally: 1 **Frequency and duration of use**

Covers use up to: 300 days***

Environment factors not influenced by risk management

River flow rate: 18000 m³/d Local freshwater dilution factor: 10 Local marine water dilution factor: 100 **Technical conditions and measures at process level (source) to prevent release**

Release fraction to air from process: 2.5 %

Release fraction to wastewater from process: 0.05 %

Release fraction to soil from process: 0.01%

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

Onsite treatment wastewater. Apply acclimated biological treatment. Assumed Efficiency: 90 %*** **Conditions and measures related to municipal sewage treatment plant** Size of municipal sewage system/ treatment plant (m3/d): 2000 Estimated substance removal from wastewater via domestic sewage treatment (%): 88.9

Do not apply industrial sludge to natural soils***

Number of the contributing scenario 2 Contributing exposure scenario controlling worker exposure for PROC 1

Further specification
assessment tool used: Chesar 2.3***
Product characteristics
Covers percentage substance in the product up to 100 % (unless stated differently)
Liquid, vapour pressure 0,5 - 10 kPa at STP
Frequency and duration of use
8 h (full shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 1 hand (240 cm²)***
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker

provide a basic standard of general ventilation (1 to 3 air changes per hour).***

Number of the contributing scenario 3***



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Contributing exposure scenario controlling worker exposure for **PROC 2***** Further specification assessment tool used: Chesar 2.3*** **Product characteristics** Covers percentage substance in the product up to 100 % (unless stated differently) Liquid, vapour pressure 0,5 - 10 kPa at STP*** Frequency and duration of use 8 h (full shift)*** Human factors not influenced by risk management Area potentially exposed: corresponds to palm of 2 hands (480 cm²)*** Other given operational conditions affecting workers exposure Indoor and outdoor use*** Technical conditions and measures to control dispersion from source towards the worker provide a basic standard of general ventilation (1 to 3 air changes per hour).** Number of the contributing scenario 4*** Contributing exposure scenario controlling worker exposure for **PROC 3*** Further specification** assessment tool used: Chesar 2.3*** **Product characteristics** Covers percentage substance in the product up to 100 % (unless stated differently) Liquid, vapour pressure 0,5 - 10 kPa at STP*** Frequency and duration of use 8 h (full shift)*** Human factors not influenced by risk management Area potentially exposed: corresponds to palm of 1 hand (240 cm²)*** Other given operational conditions affecting workers exposure Indoor and outdoor use*** Technical conditions and measures to control dispersion from source towardsthe worker provide a basic standard of general ventilation (1 to 3 air changes per hour).*** Number of the contributing scenario 5*** Contributing exposure scenario controlling worker exposure for **PROC 4***** Further specification assessment tool used: Chesar 2.3*** **Product characteristics** Covers percentage substance in the product up to 100 % (unless stated differently) Liquid, vapour pressure 0,5 - 10 kPa at STP*** Frequency and duration of use 8 h (full shift)*** Human factors not influenced by risk management Area potentially exposed: corresponds to palm of 2 hands (480 cm²)*** Other given operational conditions affecting workers exposure Indoor and outdoor use*** Technical conditions and measures to control dispersion from source towards the worker provide a basic standard of general ventilation (1 to 3 air changes per hour).** Conditions and measures related to personal protection, hygiene and health evaluation Wear suitable gloves tested to EN374.* Number of the contributing scenario 6 Contributing exposure scenario controlling worker exposure for **PROC 5*****



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Further specification

assessment tool used: Chesar 2.3***

Product characteristics

Covers percentage substance in the product up to 100 % (unless stated differently)

Liquid, vapour pressure 0,5 - 10 kPa at STP**

Frequency and duration of use

8 h (full shift)***

Human factors not influenced by risk management

Area potentially exposed: corresponds to palm of 2 hands (480 cm²)***

Technical conditions and measures to control dispersion from source towards the worker

provide a basic standard of general ventilation (1 to 3 air changes per hour). Provide extract ventilation to points where

emissions occur. Effectiveness of LEV (local exhaust ventilation): 90 % (inhalative). If no adequate ventilation is available,

respiratory protection (efficiency 90 %) must be used.***

Conditions and measures related to personal protection, hygiene and health evaluation Wear suitable gloves tested to EN374.***

Number of the contributing scenario 7*** Contributing exposure scenario controlling worker exposure for PROC 8a***

Further specification

assessment tool used: Chesar 2.3***

Product characteristics

Covers percentage substance in the product up to 100 % (unless stated differently) Liquid, vapour pressure 0,5 - 10 kPa at STP***

Frequency and duration of use

8 h (full shift)**'

Human factors not influenced by risk management

Area potentially exposed: corresponds to 2 hands (960 cm²)***

Technical conditions and measures to control dispersion from source towards the worker

provide a basic standard of general ventilation (1 to 3 air changes per hour). Provide extract ventilation to points where

emissions occur. Effectiveness of LEV (local exhaust ventilation): 90 % (inhalative). If no adequate ventilation is available,

respiratory protection (efficiency 90 %) must be used.***

Conditions and measures related to personal protection, hygiene and health evaluation Wear suitable gloves tested to EN374.***

Number of the contributing scenario 8*** Contributing exposure scenario controlling worker exposure for PROC 8b***

Further specification

assessment tool used: Chesar 2.3***

Product characteristics

Covers percentage substance in the product up to 100 % (unless stated differently)

Liquid, vapour pressure 0,5 - 10 kPa at STP***

Frequency and duration of use

8 h (full shift)***

Human factors not influenced by risk management

Area potentially exposed: corresponds to 2 hands (960 cm²)***

Other given operational conditions affecting workers exposure

Indoor and outdoor use***

Technical conditions and measures to control dispersion from source towards the worker provide a basic standard of general ventilation (1 to 3 air changes per hour).***

Conditions and measures related to personal protection, hygiene and health evaluation Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.***



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Number of the contributing scenario 9*** Contributing exposure scenario controlling worker exposure for
PROC 9***
Further specification
Product characteristics
Covers percentage substance in the product up to 100 % (unless stated differently)
Liquid, vapour pressure 0,5 - 10 kPa at STP*** Frequency and duration of use
8 h (full shift)***
Human factors not influenced by risk management
Technical conditions and measures to control dispersion from source towards the worker
provide a basic standard of general ventilation (1 to 3 air changes per hour). Provide extract ventilation to points
where emissions occur. Effectiveness of LEV (local exhaust entilation): 90 % (inhalative). If no adequate ventilation is available, respiratory protection (efficiency 90 %) must be used.***
Number of the contributing scenario 10
Contributing exposure scenario controlling worker exposure for PROC 14
Further specification
assessment tool used: Chesar 2.3*** Product characteristics
Covers percentage substance in the product up to 100 % (unless stated differently)
Liquid, vapour pressure 0,5 - 10 kPa at STP***
8 h (full shift)***
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 2 hands (480 cm ²)*** Technical conditions and measures to control dispersion from source towards the worker
provide a basic standard of general ventilation (1 to 3 air changes per hour). Provide extract ventilation to points
where one occur. Effectiveness of LEV (local exhaust ventilation): 90 % (inhelative). If no adequate ventilation is
available,
respiratory protection (efficiency 90 %) must be used.***
Number of the contributing scenario 11***
Contributing exposure scenario controlling worker exposure for PROC 15
Further specification
Assessment tool used: Chesar 2.3^^^
Covers percentage substance in the product up to 100 % (unless stated differently)
Liquid, vapour pressure 0,5 - 10 kPa at STP***
8 h (full shift)***
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 1 hand (240 cm ²)*** Other given operational conditions affecting workers exposure
Indoor and outdoor use***
Technical conditions and measures to control dispersion from source towards the worker
Exposure estimation and reference to its source

Environment

PEC = predicted environmental concentration (local); RCR = risk characterisation ratio

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Fresh Water (Pelagic) PEC: 0.037 mg/l; RCR: 0.208 Fresh Water (Sediment) PEC: 0.75 mg/kg dw; RCR: 0.765 Marine Water (Pelagic) PEC: 0.004 mg/l; RCR: 0.208 Marine Water (Sediment) PEC: 0.075 mg/kg dw; RCR: 0.764 Agricultural Soil PEC: 0.012 mg/kg dw; RCR: 0.129 Sewage Treatment Plant(Effluent) PEC: 0.372 mg/l; RCR: 0.01

Human exposure prediction (oral, dermal, inhalative)

Oral exposure is not expected to occur. Exposure estimates are given for either short-term or longterm exposure depending on which lead to more conservative risk characterisation ratios. The RMMs described above suffice to control risks for both local and systemic effects. EE(inhal): Estimated inhalative long-term exposure [mg/m³]; EE(derm): Estimated dermal long-term exposure [mg/kg b.w./d].***

Proc 1 EE(inhal): 0.194 ; EE(derm): 0.034*** Proc 2 EE(inhal): 96.8 ; EE(derm): 1.37*** Proc 3 EE(inhal): 193.6 ; EE(derm): 0.69*** Proc 4 EE(inhal): 387.2; EE(derm): 1.372*** Proc 5 EE(inhal): 96.8 ; EE(derm): 2.742*** Proc 8b EE(inhal): 96.8 ; EE(derm): 2.742*** Proc 9 EE(inhal): 96.8 ; EE(derm): 1.371*** Proc 9 EE(inhal): 96.8 ; EE(derm): 6.86*** Proc 14 EE(inhal): 96.8 ; EE(derm): 3.43*** Proc 15 EE(inhal): 193.6 ; EE(derm): 0.34***

Risk characterisation

RCR(inhal): inhalative risk characterisation ratio; RCR(derm): dermal risk characterisation ratio; total RCR= RCR(inhal) +RCR(derm). Where required local and systemic effects were evaluated both for short-term and long-term exposure. The RCR's given correspond in each case to the most conservative calculated values.***

Proc 1 RCR(inhal): 0.0003 ; RCR(derm): 0.003*** Proc 2 RCR(inhal): 0.161 ; RCR(derm): 0.124*** Proc 3 RCR(inhal): 0.323 ; RCR(derm): 0.063*** Proc 4 RCR(inhal): 0.645 ; RCR(derm): 0.125*** Proc 5 RCR(inhal): 0.161 ; RCR(derm): 0.249*** Proc 8a RCR(inhal): 0.161 ; RCR(derm): 0.249*** Proc 8b RCR(inhal): 0.807 ; RCR(derm): 0.125*** Proc 9 RCR(inhal): 0.161 ; RCR(derm): 0.624*** Proc 14 RCR(inhal): 0.161 ; RCR(derm): 0.312*** Proc 15 RCR(inhal): 0.323 ; RCR(derm): 0.031***

ES 4: professional Application in Coatings List of use descriptors

Sector of uses [SU]

SU22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen) **Process categories [PROC]**

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



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PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities

PROC10: Roller application or brushing

PROC11: Non industrial spraying

PROC13: Treatment of articles by dipping and pouring

PROC15: Use as laboratory reagent

PROC19: Hand-mixing with intimate contact and only PPE available

Environmental release categories [ERC]

ERC8a: Wide dispersive indoor use of processing aids in open systems

Product characteristics

Refer to attached safety data sheets

Processes and activities covered by the exposure scenario

Covers the use in coatings (paints, inks, adhesives, etc) within closed or contained systems including incidental exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application activities and film

formation) and equipment cleaning, maintenance and associated laboratory activities.

Further explanations

Professional use

Assumes use at not more than 20°C above ambient temperature (unless stated differently) Assumes a basic standard of occupational Health and Safety Management System***

Contributing Scenarios

Number of the contributing scenario 1 Contributing exposure scenario controlling environmental exposure for ERC 8a

Further specification

SpERC ESVOC 8.3b.v1 (ESVOC 6), assessment tool used:, Chesar 2.3.*** Amounts used daily wide dispersive use: 0.00055 to/d Fraction of EU tonnage used in region: 0.1 Fraction of Regional tonnage used locally: 0.0005 Amounts used (EU): 4000 to/a Environment factors not influenced by risk management River flow rate: 18000 m³/d Local freshwater dilution factor: 10 Local marine water dilution factor: 100 Other given operational conditions affecting environmental exposure Indoor/Outdoor use** Technical conditions and measures at process level (source) to prevent release Release fraction to air from wide dispersive use (regional only): 98 % Release fraction to wastewater from wide dispersive use: 1 % Release fraction to soil from wide dispersive use (regional only): 1%*** Conditions and measures related to municipal sewage treatment plant Size of municipal sewage system/ treatment plant (m3/d): 2000 The minimum grade of elimination in the sewage plant is (%): 88.9 Conditions and measures related to external treatment of waste for disposal Dispose of waste product or used containers according to local regulations**

Number of the contributing scenario 2 Contributing exposure scenario controlling worker exposure for PROC 1



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Further specification assessment tool used: Chesar 2.3*** **Product characteristics** Liquid, vapour pressure 0.5 - 10 kPa at STP Covers percentage substance in the product up to 100 % (unless stated differently) Frequency and duration of use 8 h (full shift) Human factors not influenced by risk management Area potentially exposed: corresponds to palm of 1 hand (240 cm²)*** Other given operational conditions affecting workers exposure Indoor and outdoor use Technical conditions and measures to control dispersion from source towards the worker provide a basic standard of general ventilation (1 to 3 air changes per hour).*** Number of the contributing scenario 3 Contributing exposure scenario controlling worker exposure for PROC 2 **Further specification** assessment tool used: Chesar 2.3*** **Product characteristics** Liquid, vapour pressure 0,5 - 10 kPa at STP Covers percentage substance in the product up to 100 % (unless stated differently)*** Frequency and duration of use 8 h (full shift) Human factors not influenced by risk management Area potentially exposed: corresponds to palm of 2 hands (480 cm²)*** Other given operational conditions affecting workers exposure Indoor and outdoor use Technical conditions and measures to control dispersion from source towards the worker provide a basic standard of general ventilation (1 to 3 air changes per hour).*** Number of the contributing scenario 4 Contributing exposure scenario controlling worker exposure for PROC 3 **Further specification** assessment tool used: Chesar 2.3*** **Product characteristics** Liquid, vapour pressure 0,5 - 10 kPa at STP Covers percentage substance in the product up to 100 % (unless stated differently) Frequency and duration of use 8 h (full shift) Human factors not influenced by risk management Area potentially exposed: corresponds to palm of 1 hand (240 cm²)*** Other given operational conditions affecting workers exposure Indoor and outdoor use Technical conditions and measures to control dispersion from source towards the worker provide a basic standard of general ventilation (1 to 3 air changes per hour).** Number of the contributing scenario 5*** Contributing exposure scenario controlling worker exposure for PROC 4 **Further specification** assessment tool used: Chesar 2.3*** **Product characteristics** Liquid, vapour pressure 0,5 - 10 kPa at STP Covers percentage substance in the product up to 100 % (unless stated differently)*** Frequency and duration of use 8 h (full shift)** Human factors not influenced by risk management Area potentially exposed: corresponds to palm of 2 hands (480 cm²)*** Technical conditions and measures to control dispersion from source towards the worker



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provide a basic standard of general ventilation (1 to 3 air changes per hour). Provide extract ventilation to points where emissions occur. Effectiveness of LEV (local exhaust ventilation): 80 % (inhalative). If no adequate ventilation is available, respiratory protection (efficiency 90 %) must be used.***

Number of the contributing scenario 6*** Contributing exposure scenario controlling worker exposure for PROC 5

Further specification assessment tool used: Chesar 2.3*** **Product characteristics** Liquid, vapour pressure 0,5 - 10 kPa at STP Covers percentage substance in the product up to 100 % (unless stated differently)*** Frequency and duration of use 8 h (full shift)*** Human factors not influenced by risk management Area potentially exposed: corresponds to palm of 2 hands (480 cm²)*** Technical conditions and measures to control dispersion from source towards the worker provide a basic standard of general ventilation (1 to 3 air changes per hour). Provide extract ventilation to points where emissions occur. Effectiveness of LEV (local exhaust ventilation): 80 % (inhalative). If no adequate ventilation is available, respiratory protection (efficiency 90 %) must be used.* Conditions and measures related to personal protection, hygiene and health evaluation Wear suitable gloves tested to EN374.** Number of the contributing scenario 7*** Contributing exposure scenario controlling worker exposure for PROC 8a Further specification assessment tool used: Chesar 2.3*** **Product characteristics** Liquid, vapour pressure 0,5 - 10 kPa at STP Covers percentage substance in the product up to 100 % (unless stated differently)*** Frequency and duration of use 8 h (full shift)*** Human factors not influenced by risk management Area potentially exposed: corresponds to 2 hands (960 cm²)*** Technical conditions and measures to control dispersion from source towards the worker provide a basic standard of general ventilation (1 to 3 air changes per hour). Provide extract ventilation to points where emissions occur. Effectiveness of LEV (local exhaust ventilation): 80 % (inhalative). If no adequate ventilation is available, respiratory protection (efficiency 90 %) must be used.* Conditions and measures related to personal protection, hygiene and health evaluation Wear suitable gloves tested to EN374.* Number of the contributing scenario 8*** Contributing exposure scenario controlling worker exposure for PROC 8b **Further specification** assessment tool used: Chesar 2.3*** **Product characteristics** Liquid, vapour pressure 0,5 - 10 kPa at STP Covers percentage substance in the product up to 100 % (unless stated differently)*** Frequency and duration of use 8 h (full shift)*** Human factors not influenced by risk management Area potentially exposed: corresponds to 2 hands (960 cm²)*** Technical conditions and measures to control dispersion from source towards the worker provide a basic standard of general ventilation (1 to 3 air changes per hour). Provide extract ventilation to points where emissions occur. Effectiveness of LEV (local exhaust ventilation): 80 % (inhalative). If no adequate ventilation is available, respiratory protection (efficiency 90 %) must be used.* Conditions and measures related to personal protection, hygiene and health evaluation Page: 21 / 30



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Wear suitable gloves tested to EN374.***

Number of the contributing scenario 9*** Contributing exposure scenario controlling worker exposure for PROC 10 **Further specification** assessment tool used: Chesar 2.3*** **Product characteristics** Liquid, vapour pressure 0,5 - 10 kPa at STP Covers percentage substance in the product up to 100 % (unless stated differently)*** Frequency and duration of use 8 h (full shift)*** Human factors not influenced by risk management Area potentially exposed: corresponds to 2 hands (960 cm²)*** Technical conditions and measures to control dispersion from source towards the worker Provide extract ventilation to points where emissions occur. provide a basic standard of general ventilation (1 to 3 air changes per hour). Effectiveness of LEV (local exhaust ventilation): 80 % (inhalative). If no adequate ventilation is available, respiratory protection (efficiency 90 %) must be used.*** Conditions and measures related to personal protection, hygiene and health evaluation Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.*** Number of the contributing scenario 10 Contributing exposure scenario controlling worker exposure for PROC 11 **Further specification** assessment tool used: Chesar 2.3*** **Product characteristics** Liquid, vapour pressure 0,5 - 10 kPa at STP Covers percentage substance in the product up to 25 %*** Frequency and duration of use 8 h (full shift)** Human factors not influenced by risk management Area potentially exposed: corresponds to hands and lower arms (1500 cm²)*** Other given operational conditions affecting workers exposure Indoor and outdoor use*** Conditions and measures related to personal protection, hygiene and health evaluation Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Wear respiratory protection(Efficiency: 95 %).*** Number of the contributing scenario 11*** Contributing exposure scenario controlling worker exposure for PROC 11 Further specification assessment tool used: Chesar 2.3*** **Product characteristics** Covers percentage substance in the product up to 100 % (unless stated differently) Liquid, vapour pressure 0,5 - 10 kPa at STP** Frequency and duration of use Avoid carrying out activities involving exposure for more than 4 hours*** Human factors not influenced by risk management Area potentially exposed: corresponds to hands and lower arms (1500 cm²)*** Other given operational conditions affecting workers exposure Indoor use*** Technical conditions and measures to control dispersion from source towards the worker provide a basic standard of general ventilation (1 to 3 air changes per hour). Provide extract ventilation to points where emissions occur. Effectiveness of LEV (local exhaust ventilation): 80 % (inhalative).** Conditions and measures related to personal protection, hygiene and health evaluation Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Wear respiratory protection(Efficiency: 90 %).***



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Number of the contributing scenario 12*** Contributing exposure scenario controlling worker exposure for PROC 11 Further specification assessment tool used: Chesar 2.3*** **Product characteristics** Liquid, vapour pressure 0,5 - 10 kPa at STP Covers percentage substance in the product up to 25 %*** Frequency and duration of use Avoid carrying out activities involving exposure for more than 4 hours*** Human factors not influenced by risk management Area potentially exposed: corresponds to hands and lower arms (1500 cm²)*** Other given operational conditions affecting workers exposure Indoor and outdoor use*** Conditions and measures related to personal protection, hygiene and health evaluation Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Wear respiratory protection (Efficiency: 95 %).** Number of the contributing scenario 13*** Contributing exposure scenario controlling worker exposure for PROC 13 **Further specification** assessment tool used: Chesar 2.3*** **Product characteristics** Liquid, vapour pressure 0,5 - 10 kPa at STP Covers percentage substance in the product up to 25 %*** Frequency and duration of use 8 h (full shift)** Human factors not influenced by risk management Area potentially exposed: corresponds to palm of 2 hands (480 cm²)*** Other given operational conditions affecting workers exposure Indoor use** Technical conditions and measures to control dispersion from source towards the worker provide a basic standard of general ventilation (1 to 3 air changes per hour). Provide extract ventilation to points where emissions occur. Effectiveness of LEV (local exhaust ventilation): 80 % (inhalative).*** Conditions and measures related to personal protection, hygiene and health evaluation Wear suitable gloves tested to EN374.*** Number of the contributing scenario 14*** Contributing exposure scenario controlling worker exposure for 15 **Further specification** assessment tool used: Chesar 2.3*** **Product characteristics** Liquid, vapour pressure 0,5 - 10 kPa at STP Covers percentage substance in the product up to 100 % (unless stated differently)*** Frequency and duration of use 8 h (full shift)** Human factors not influenced by risk management Area potentially exposed: corresponds to palm of 1 hand (240 cm²)*** Other given operational conditions affecting workers exposure Indoor and outdoor use** Technical conditions and measures to control dispersion from source towards the worker provide a basic standard of general ventilation (1 to 3 air changes per hour).*** Number of the contributing scenario 15*** Contributing exposure scenario controlling worker exposure for PROC 19 **Further specification** assessment tool used: Chesar 2.3*** Product characteristics



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Liquid, vapour pressure 0,5 - 10 kPa at STP Covers percentage substance in the product up to 100 % (unless stated differently)*** Frequency and duration of use Avoid carrying out activities involving exposure for more than 4 hours*** Human factors not influenced by risk management Area potentially exposed: corresponds to 1980 cm^{2***} Other given operational conditions affecting workers exposure Indoor and outdoor use*** Technical conditions and measures to control dispersion from source towards the worker provide a basic standard of general ventilation (1 to 3 air changes per hour).*** Conditions and measures related to personal protection, hygiene and health evaluation Wear chemically resistant

Exposure estimation and reference to its source

Environment

PEC = predicted environmental concentration (local); RCR = risk characterisation ratio Fresh Water (Pelagic) PEC: 0.0003 mg/l; RCR: 0.002 Fresh Water (Sediment) PEC: 0.006 mg/kg dw; RCR: 0.006 Marine Water (Pelagic) PEC: 0.0000 mg/l; RCR: 0.0002 Marine Water (Sediment) PEC: 0.0006 mg/kg dw; RCR: 0.006 Agricultural Soil PEC: 0.0001 mg/kg dw; RCR: 0.002 Sewage Treatment Plant(Effluent) PEC: 0.0003 mg/l; RCR: 0.0000

Human exposure prediction (oral, dermal, inhalative)

Oral exposure is not expected to occur. EE(inhal): Estimated inhalative long-term exposure [mg/m³]; EE(derm):

Estimated dermal long-term exposure [mg/kg b.w./d]. Exposure estimates are given for either shortterm or long-term exposure depending on which lead to more conservative risk characterisation ratios. The RMMs described above suffice to control risks for both local and systemic effects.***

Proc 1 EE(inhal): 0.194; EE(derm): 0.034*** Proc 2 EE(inhal): 387.2; EE(derm): 1.37*** Proc 3 EE(inhal): 484; EE(derm): 0.69*** Proc 4 EE(inhal): 193.6; EE(derm): 6.86*** Proc 5 EE(inhal): 387.2; EE(derm): 2.742*** Proc 8a EE(inhal): 387.2; EE(derm): 2.742*** Proc 8b EE(inhal): 387.2; EE(derm): 2.742*** Proc 10 EE(inhal): 387.2; EE(derm): 2.743*** Proc 10 EE(inhal): 203.3; EE(derm): 6.428 - Contributing Scenarios 10 EE(inhal): 193.6; EE(derm): 6.428 - Contributing Scenarios 11 EE(inhal): 290.4; EE(derm): 3.857 - Contributing Scenarios 12*** Proc 13 EE(inhal): 232.3; EE(derm): 1.645*** Proc 15 EE(inhal): 193.6; EE(derm): 0.34*** Proc 19 EE(inhal): 135.5; EE(derm): 8.486***

Risk characterisation

RCR(inhal): inhalative risk characterisation ratio; RCR(derm): dermal risk characterisation ratio; total RCR= RCR(inhal) +RCR(derm). Where required local and systemic effects were evaluated both for short-term and long-term exposure. The RCR's given correspond in each case to the most conservative calculated values.***

Proc 1 RCR(inhal): 0.0003; RCR(derm): 0.003*** Proc 2 RCR(inhal): 0.645; RCR(derm): 0.124*** Proc 3 RCR(inhal): 0.807; RCR(derm): 0.063*** Proc 4 RCR(inhal): 0.323; RCR(derm): 0.624***



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Proc 5 RCR(inhal): 0.645; RCR(derm): 0.249*** Proc 8a RCR(inhal): 0.645; RCR(derm): 0.249*** Proc 8b RCR(inhal): 0.161; RCR(derm): 0.249*** Proc 10 RCR(inhal): 0.645; RCR(derm): 0.249*** Proc 11 RCR(inhal): 0.339; RCR(derm): 0.584 - Contributing Scenarios 10 RCR(inhal): 0.323; RCR(derm): 0.584 - Contributing Scenarios 11 RCR(inhal): 0.484; RCR(derm): 0.351 - Contributing Scenarios 12*** Proc 13 RCR(inhal): 0.387; RCR(derm): 0.149*** Proc 15 RCR(inhal): 0.323; RCR(derm): 0.031*** Proc 19 RCR(inhal): 0.226; RCR(derm): 0.772***

Exposure Scenario mineral oil distillate Shell

Exposure Scenario – worker	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Formulation & (re)packing of substances and
	mixtures- Industrial
Use Descriptor	Sector of Use: SU 10
	Process Categories: PROC 1, PROC 2, PROC
	FRUC 9, FRUC 14, FRUC 15 Environmental Pelease Categories: EPC2
	ESVOC SpERC 2.2 v1
Scope of process	Formulation, packing and re-packing of the
	substance and its mixtures in batch or
	continuous operations, including storage,
	materials transfers, mixing, tabletting,
	compression, pelletisation, extrusion, large and
	small scale packing, sampling, maintenance
	and associated laboratory activities.
SECTION 2	OPERATIONAL CONDITIONS AND RISK
	MANAGEMENT MEASURES
Section 2.1	Control of Worker Exposure
Physical form of product	Liquid, vapour pressure < 0.5 kPa
	with potential for aerosol generation
Concentration of the Substance in	Covers use of substance/product up to 100%
Mixture/Article	(unless stated differently).,
Frequency and Duration of Use	
Covers daily exposures up to 8 nours (unless st	ated differently).
Operation is carried out at elevated temperature	sure
Assumes a good basic standard of occupationa	l hygiene is implemented
Contributing Scenarios	Risk Management Measures
General measures (Aspiration)	Do not ingest. If swallowed then seek
	Immediate medical assistance
	RISK Management measures are based on
General exposures (closed systems)	No other specific measures identified
General exposures (open systems)	No other specific measures identified.
Batch processes at elevated temperaturesUse	No other specific measures identified.
in contained batch processes	,



Bulk transfersDedicated facility

Mixing operations (open systems)

ManualTransfer from/pouring from

Production or preparation or articles by

tabletting, compression, extrusion or

Equipment cleaning and maintenance

containersNon-dedicated facility Drum/batch transfersDedicated facility

Drum and small package filling

Process sampling Laboratory activities

pelletisation

Storage.

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No other specific measures identified No other specific measures identified. No other specific measures identified. No other specific measures identified. No other specific measures identified.

No other specific measures identified. No other specific measures identified.

No other specific measures identified. Drain down system prior to equipment opening or maintenance. Store substance within a closed system.

- _

Section 2.2 Substance is complex UVCB. Predominantly hydrophobic	Control of Environmental Exposure			
Amounts Used				
Fraction of EU tonnage used in region:	0.1			
Regional use tonnage (tonnes/year):	8.5E+05			
Fraction of Regional tonnage used locally:	1			
Annual site tonnage (tonnes/year):	3.0E+04			
Maximum daily site tonnage (kg/day):	1.0E+05			
Frequency and Duration of Use				
Continuous release.				
Emission Days (days/year):	300			
Environmental factors not influenced by risk management				
Local freshwater dilution factor:	10			
Local marine water dilution factor:	100			
Other Operational Conditions affecting En	vironmental Exposure			
Release fraction to air from process (initial	2.5E-03			
release prior to RMM):				
Release fraction to wastewater from	5.0E-06			
process (initial release prior to RMM):				
Release fraction to soil from process	0.0001			
(initial release prior to RMM):				
Technical conditions and measures at pro-	cess level (source) to prevent release			
Common practices vary across sites thus con	servative process release estimates used.			
Technical onsite conditions and measures	to reduce or limit discharges, air			
emissions and releases to soil				
Risk from environmental exposure is driven b	y freshwater sediment.			
Prevent discharge of undissolved substance t	o or recover from onsite wastewater.			
If discharging to domestic sewage treatment p	Diant, no onsite wastewater treatment			
required.	0			
tupical removal officiancy of (%)	0			
Tract apoito westowater (prior to	60 F			
reaciving water discharge) to	09.5			
receiving water discharge) to				
officiency of $z = \frac{9}{2}$				
If discharging to domestic sewage treatment r	lant provide the required onsite wastewater			
removal efficiency of (%)				
	0,0			



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Organisational measures to prevent/limit release from site Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

Conditions and Measures related to municipal sewage treatment plant Estimated substance removal from 94.7 wastewater via domestic sewage treatment (%) Total efficiency of removal from 94.7 wastewater after onsite and offsite (domestic treatment plant) RMMs (%) Maximum allowable site tonnage 5.7E+05 (MSafe) based on release following total wastewater treatment removal (kg/d)Assumed domestic sewage treatment 2,000 plant flow (m3/d)

Conditions and Measures related to external treatment of waste for disposal External treatment and disposal of waste should comply with applicable local and/or regional regulations.

Conditions and measures related to external recovery of waste

External recovery and recycling of waste should comply with applicable local and/or regional regulations

SECTION 3

EXPOSURE ESTIMATION

Section 3.1 - Health

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. **Section 3.2 -Environment**

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

SECTION 4

GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO

Section 4.1 - Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Section 4.2 - Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.

Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.

Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).

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EXPOSURE SCENARIO TITLE

Use as binders and release agents-Professional

SECTION 1 Title

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Use Descriptor

Scope of process

SECTION 2

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Sector of Use: SU 22 Process Categories: PROC 1, PROC 2, PROC 3, PROC 4, PROC 6, PROC 8a, PROC 8b, PROC10, PROC11, PROC14 Environmental Release Categories: ERC8a, ERC8d, ESVOC SpERC 8.10b.v1 Covers the use as binders and release agents including material transfers, mixing, application by spraying, brushing, and handling of waste.

OPERATIONAL CONDITIONS AND RISK

Section 2.1 **Product Characteristics** Physical form of product

Concentration of the Substance in Mixture/Article

MANAGEMENT MEASURES **Control of Worker Exposure**

Liquid, vapour pressure < 0.5 kPa with potential for aerosol generation. Covers use of substance/product up to 100% (unless stated differently).,

Frequency and Duration of	Use
Covers daily exposures up to	8 hours (unless stated differently).
Other Operational Conditions	affecting Exposure
Operation is carried out at ele	vated temperature (> 20°C above ambient temperature).
Assumes a good basic standa	ard of occupational hygiene is implemented
Contributing Scenarios	Risk Management Measures
General measures	Do not ingest. If swallowed then seek immediate medical
(Aspiration)	assistance
Material transfers(closed systems)	No other specific measures identified.
Drum/batch	No other specific measures identified.
transfersDedicated facility	
Drum/batch transfersNon-	Avoid carrying out activities involving exposure for more than 1
dedicated facility	hour.
Mixing operations (closed systems)	No other specific measures identified.
Mixing operations (open systems)	No other specific measures identified.
Mold forming	No other specific measures identified.
Casting operations(open	Provide extraction ventilation at points where emissions
systems)elevated	occur.
temperature	
SprayingMachine	Carry out in a vented booth or extracted enclosure.
	Avoid carrying out activities involving exposure for more than 4 hours
SprayingManual	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
	Avoid carrying out activities involving exposure for more than 1 hour.
	Wear a respirator conforming to EN140 with Type A filter or better.
ManualRolling, Brushing	No other specific measures identified.
Equipment cleaning and maintenance	Drain down system prior to equipment opening or maintenance.



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Storage.	Store substance	e within a closed sy	stem.
Section 2.2 Substance is complex UVCB. Predominantly hydrophobic.		Control of Envir	onmental Exposure
Fraction of EU tonnage used	in region:	0.1	
Regional use tonnage (tonnes/year): Fraction of Regional tonnage used locally:		1	
Annual site tonnage (tonnes/y Maximum daily site tonnage (/ear): kg/day):	1.3E+00 3.7E+00	
Frequency and Duration of	Use 🤺		
Emission Days (days/year):		365	
Environmental factors not in	nfluenced by ris	sk management	
Local freshwater dilution facto	or:	10	
factor:		100	
Other Operational Condition	ns affecting Env	vironmental Expos	sure
dispersive use (regional only)	ide (0.95	
Release fraction to wastewate	er (0.025	
from wide dispersive use:	vido (0.025	
dispersive use (regional only)		0.025	
Technical conditions and m	easures at proc	cess level (source)	to prevent
release Common practices vary acros	s sites thus cons	servative process re	lease estimates
used.			
Technical onsite conditions ar emissions and releases to soi	nd measures to r I	educe or limit disch	arges, air
Risk from environmental expo	sure is driven by	/ freshwater sedime	ent.
I reat air emission to provide a	a %)	0	
Treat onsite wastewater (prior	to	65.5	
receiving water discharge) to			
efficiency of $>=$ (%)			
If discharging to domestic sev	vage	0	
treatment plant, provide the	movel officianay	of(0/)	
Organisational measures to	prevent/limit re	elease from site	
Do not apply industrial sludge	to natural soils.		
Sludge should be incinerated,	contained or rec	claimed.	nlant
Estimated substance removal	from	94.7	plant
wastewater via domestic sewa	age		
treatment (%)	m	04.7	
wastewater after onsite and o	ffsite	54.7	
(domestic treatment plant) RM	/Ms (%)	a	
Maximum allowable site tonna (MSafe) based on release foll	age owing	2.4E+(JI



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total wastewater treatment removal (kg/d) Assumed domestic sewage treatment

2,000

plant flow (m3/d) **Conditions and Measures related to external treatment of waste for disposal** External treatment and disposal of waste should comply with applicable local and/or regional regulations.

Conditions and measures related to external recovery of waste

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