



Tetramer

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

Date of issue: 23/11/2015

Revision date: 05/06/2017

Supersedes: 24/03/2017

Version: 8

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

1.1. Product identifier

Product form	: Substance (UVCB)
Trade name	: Tetramer
IUPAC name	: Alkenes, C10-14-branched and linear, C12-rich
EC no	: 298-697-1
CAS No	: 93821-12-6
REACH registration No	: 01-2119489789-08
Product group	: Trade product

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

1.2.1. Relevant identified uses

Industrial/Professional use spec	: Distribution of substance Intermediate Industrial For professional use only
Use of the substance/mixture	: Distribution Intermediate Industrial For professional use only

Title	Use descriptors
Manufacture of Substance – Industrial _x (ES Ref.: ES 1)	SU3, SU8, SU9, PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC15, ERC1, ERC4, ESVOC SPERC 1.1.v1
Distribution of substance - Industrial _x (ES Ref.: ES 2)	SU3, PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC15, ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7, ESVOC SPERC 1.1b.v1
Use as Intermediate - Industrial _x (ES Ref.: ES 3)	SU3, SU8, SU9, PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC15, ERC6a, ESVOC SPERC 6.1a.v1
Formulation - Industrial _x (ES Ref.: ES 4)	SU3, SU10, PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC14, PROC15, ERC2, ESVOC SPERC 2.2.v1
Use in Polymer production – Industrial _x (ES Ref.: ES 5)	SU10, PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC8a, PROC8b, PROC14, PROC15, ERC4, ERC6c, ESVOC SPERC 4.20.v1

Full text of use descriptors: see section 16

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

Supplier (Only Representative):
Braskem Nederland BV
Weena 238-240, 9th Floor, Tower C
NL - 3012 NJ – Rotterdam

Manufacturer:
Braskem S.A.
Av. Presidente Costa e Silva, 1178 – Capuava
09270-001 – Santo André – SP – Brasil

productsafety@braskem.com

1.4. Emergency telephone number

Emergency number : +31 10 205 2945

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

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

Flam. Liq. 3	H226
Asp. Tox. 1	H304
Aquatic Acute 1	H400
Aquatic Chronic 1	H410

Tetramer

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

Full text of hazard classes and H-statements : see section 16

Adverse physicochemical, human health and environmental effects

No additional information available

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP)



Signal word (CLP)

: Danger

Hazard statements (CLP)

: H226 - Flammable liquid and vapour
H304 - May be fatal if swallowed and enters airways
H410 - Very toxic to aquatic life with long lasting effects

Precautionary statements (CLP)

: P210 - Keep away from heat, hot surfaces, open flames, sparks. - No smoking
P273 - Avoid release to the environment
P301+P310 - IF SWALLOWED: immediately call a POISON CENTER or doctor/physician
P331 - Do NOT induce vomiting
P405 - Store locked up
P501 - Dispose of contents/container to hazardous or special waste collection point

EUH-statements

: EUH066 - Repeated exposure may cause skin dryness or cracking

2.3. Other hazards

other hazards which do not result in classification

: None known.

SECTION 3: Composition/information on ingredients

3.1. Substance

Substance type

: UVCB

Name	Product identifier	%
Alkenes, C10-14-branched and linear, C12-rich	(CAS No) 93821-12-6 (EC no) 298-697-1 (REACH-no) 01-2119489789-08	100

Full text of R- and H-statements: see section 16

Synonym: Olefins (C13+, all isomers); propylene tetramer

3.2. Mixture

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general

: Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).

First-aid measures after inhalation

: Allow breathing of fresh air. Allow the victim to rest. In case of irregular breathing or respiratory arrest provide artificial respiration. Immediately get medical attention.

First-aid measures after skin contact

: Remove/take off immediately all contaminated clothing. Rinse skin with water/shower. Seek medical attention if ill effect or irritation develops.

First-aid measures after eye contact

: Rinse immediately with plenty of water for 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Obtain medical attention if pain, blinking or redness persist.

First-aid measures after ingestion

: Do not induce vomiting. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. May result in aspiration into the lungs, causing chemical pneumonia. Rinse mouth. Immediately call a POISON CENTER or doctor/physician.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/injuries after inhalation

: Aspiration of this material may cause chemical pneumonia.

Symptoms/injuries after skin contact

: May cause slight irritation to the skin. Prolonged or repeated contact with the skin may cause dermatitis.

Symptoms/injuries after eye contact

: May cause slight temporary irritation.

Symptoms/injuries after ingestion

: Ingestion may cause nausea and vomiting. May be fatal if swallowed and enters airways. Swallowing the liquid may cause aspiration into the lungs with the risk of chemical pneumonitis. Pulmonary oedema.

Tetramer

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

- Suitable extinguishing media : carbon dioxide (CO₂), dry chemical powder, foam. Water fog.
- Unsuitable extinguishing media : Do not use a water jet since it may cause the fire to spread. Do not use a heavy water stream.

5.2. Special hazards arising from the substance or mixture

- Fire hazard : Material can accumulate some static charge during transfer. Flammable liquid and vapour. Incomplete combustion releases dangerous carbon monoxide, carbon dioxide and other toxic gases.
- Explosion hazard : May form flammable/explosive vapour-air mixture. Heat may build pressure, rupturing closed containers, spreading fire and increasing risk of burns and injuries.

5.3. Advice for firefighters

- Firefighting instructions : Cool down the containers exposed to heat with a water spray. Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire. Prevent fire-fighting water from entering environment.
- Protective equipment for firefighters : For large fire : Use self-contained breathing apparatus and chemically protective clothing. For small fire : Fight fire from safe distance and protected location. Refer to section 8. Do not enter fire area without proper protective equipment, including respiratory protection.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

- General measures : Use only antistatically equipped (spark-free) tools. Remove ignition sources. Use special care to avoid static electric charges. No open flames. No smoking.

6.1.1. For non-emergency personnel

- Protective equipment : Use personal protective equipment as required. Refer to section 8.
- Emergency procedures : Use only antistatically equipped (spark-free) tools. Eliminate every possible source of ignition. Evacuate unnecessary personnel.

6.1.2. For emergency responders

- Protective equipment : Refer to section 8. Equip cleanup crew with proper protection.
- Emergency procedures : Evacuate unnecessary personnel. Spill should be handled by trained cleaning personnel properly equipped with respiratory and eye protection. Ventilate area.

6.2. Environmental precautions

Prevent contamination of soil, drains and surface waters. Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters. Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

- For containment : Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams.
- Methods for cleaning up : Take up large spills with pump or vacuum. Use only antistatically equipped (spark-free) tools. Absorb remaining liquid with sand or inert absorbent and remove to safe place. Consult the appropriate authorities about waste disposal. Soak up spills with inert solids, such as clay or diatomaceous earth as soon as possible. Collect spillage. Store away from other materials.

6.4. Reference to other sections

For further information refer to section 8: Exposure-controls/personal protection. For disposal of residues refer to section 13: Disposal considerations.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

- Additional hazards when processed : Handle empty containers with care because residual vapours are flammable.
- Precautions for safe handling : Ground/bond container and receiving equipment. Carry out operations in the open/under local exhaust/ventilation or with respiratory protection. Never use pressure to empty container. Provide good ventilation in process area to prevent formation of vapour. No open flames. No smoking. Take precautionary measures against static discharge. Use only non-sparking tools.
- Hygiene measures : Handle in accordance with good industrial hygiene and safety practices. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.

Tetramer

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

7.2. Conditions for safe storage, including any incompatibilities

Technical measures	: Ground equipment electrically. Keep away from sources of ignition - No smoking. Avoid static electricity discharges. Proper grounding procedures to avoid static electricity should be followed. Ground/bond container and receiving equipment. Use explosion-proof electrical, lighting, ventilating equipment.
Storage conditions	: Keep away from ignition sources (including static discharges). Store tightly closed in a dry, cool and well-ventilated place. Keep only in the original container in a cool well ventilated place. Keep container tightly closed.
Incompatible materials	: Strong oxidizing agents. Strong acids. Strong bases.

7.3. Specific end use(s)

Refer to section 1.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

No additional information available

8.2. Exposure controls

Appropriate engineering controls	: Provide local exhaust or general room ventilation to minimize vapour concentrations. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.
Hand protection	: Impermeable protective gloves. It is recommended that the glove supplier be consulted to ensure the protective gloves are resistant to chemicals in this product
Eye protection	: Chemical goggles or face shield with safety glasses
Respiratory protection	: Where exposure through inhalation may occur from use, respiratory protection equipment is recommended
Other information	: Do not eat, drink or smoke during use.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Liquid
Colour	: colourless.
Odour	: characteristic.
Odour threshold	: No data available
pH	: Not applicable
Relative evaporation rate (butyl acetate=1)	: Not applicable
Melting point	: No data available
Freezing point	: < - 80 °C
Boiling point	: 171 - 208 °C
Flash point	: 52 °C (closed cup)
Auto-ignition temperature	: Not applicable
Decomposition temperature	: Not applicable
Flammability (solid, gas)	: Flammable Flammable liquid and vapour
Vapour pressure	: 20 mm Hg (284 hPa; at 19°C)
Relative vapour density at 20 °C	: 5.81 (Air = 1)
Relative density	: 0.77 - 0.785 @ 20°C (water=1)
Density	: No data available
Solubility	: Insoluble in water. Soluble in benzene and ethanol
Log Pow	: Not available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosive properties	: not applicable.
Oxidising properties	: not applicable.
Explosive limits	: 0.8 - 5.4 vol %

9.2. Other information

No additional information available

Tetramer

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

SECTION 10: Stability and reactivity

10.1. Reactivity

No dangerous reactions known under normal conditions of use.

10.2. Chemical stability

Stable at room temperature. Flammable liquid and vapour. May form flammable/explosive vapour-air mixture.

10.3. Possibility of hazardous reactions

No dangerous reactions known.

10.4. Conditions to avoid

Avoid ignition sources. Keep away from heat. Avoid static electricity discharges. Direct sunlight. Extremely high or low temperatures. Open flame. Overheating. Heat. Sparks.

10.5. Incompatible materials

Strong oxidizing agents. Strong acids. Strong bases.

10.6. Hazardous decomposition products

Carbon oxides (CO, CO₂). hydrocarbons. fume. Carbon monoxide. Carbon dioxide. May release flammable gases.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity	: Not classified
Skin corrosion/irritation	: Not classified Repeated exposure may cause skin dryness or cracking Repeated exposure may cause skin dryness or cracking pH: Not applicable
Serious eye damage/irritation	: Not classified Based on available data, the classification criteria are not met pH: Not applicable
Respiratory or skin sensitisation	: Not classified Based on available data, the classification criteria are not met
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified Based on available data, the classification criteria are not met
Reproductive toxicity	: Not classified
Specific target organ toxicity (single exposure)	: Not classified Based on available data, the classification criteria are not met
Specific target organ toxicity (repeated exposure)	: Not classified Based on available data, the classification criteria are not met
Aspiration hazard	: May be fatal if swallowed and enters airways. May be fatal if swallowed and enters airways

SECTION 12: Ecological information

12.1. Toxicity

Ecology - water : Very toxic to aquatic life. Very toxic to aquatic life with long lasting effects.

12.2. Persistence and degradability

Tetramer (93821-12-6)	
Persistence and degradability	This product has little potential to bioaccumulate in aquatic organisms, is expected to rapidly degrade, and is not expected to persist. Will not undergo hydrolysis. May cause long-term adverse effects in the environment.

12.3. Bioaccumulative potential

Tetramer (93821-12-6)	
Log Pow	Not available
Bioaccumulative potential	Not established.

12.4. Mobility in soil

No additional information available

Tetramer

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

12.5. Results of PBT and vPvB assessment

Tetramer (93821-12-6)	
Results of PBT assessment	This substance does not meet the criteria for classification as PBT or vPvB.

12.6. Other adverse effects

Additional information : Avoid release to the environment

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Regional legislation (waste) : Dispose of this material and its container to hazardous or special waste collection point. Disposal must be done according to official regulations.

Waste disposal recommendations : Dispose of this material and its container to hazardous or special waste collection point. Do not allow to enter into surface water or drains. Do not re-use empty containers. Dispose in a safe manner in accordance with local/national regulations.

Additional information : Handle empty containers with care because residual vapours are flammable.

Ecology - waste materials : Avoid release to the environment. Hazardous waste due to toxicity.

SECTION 14: Transport information

Classification for ROAD and RAIL transport: ADR / RID

14.1 UN Number : UN2850

14.2 Proper Shipping Name : PROPYLENE TETRAMER

14.3 Class : 3

14.4 Packing group : III

14.5 Environmental hazards : Very toxic to aquatic life

14.6 Special precautions for user : Hazard Identification Number 30

Classification for SEA transport: IMO - IMDG

14.1 UN Number : UN2850

14.2 Proper Shipping Name : PROPYLENE TETRAMER

14.3 Class : 3

14.4 Packing group : III

14.5 Environmental hazards : Very toxic to aquatic life

14.6 Special precautions for user : No data available

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

Product name : Propylene Tetramer

Classification for AIR transport: IATA - ICAO

14.1 UN Number : UN2850

14.2 Proper Shipping Name : Propylene Tetramer

14.3 Class : 3

14.4 Packing group : III

14.5 Environmental hazards : Very toxic to aquatic life

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product therefore it cannot be considered exhaustive. See guidelines of ADR, RID, IMDG and IATA regulations before transporting the product. The transportation organization is responsible for compliance with laws, regulations and rules for the transport of the material.

SECTION 15: Regulatory information

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

15.1.1. EU-Regulations

No REACH Annex XVII restrictions

Tetramer is not on the REACH Candidate List

Tetramer is not on the REACH Annex XIV List

15.1.2. National regulations

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

Listed on the Korean ECL (Existing Chemicals List)

Listed on NZIoC (New Zealand Inventory of Chemicals)

Germany

Water hazard class (WGK) : 1 - low hazard to waters

Tetramer

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

15.2. Chemical safety assessment

No chemical safety assessment has been carried out

SECTION 16: Other information

Sources of Key data : Data arise from reference works and literature.

Other information : None.

Full text of R-, H- and EUH-statements:

Aquatic Acute 1	Hazardous to the aquatic environment — Acute Hazard, Category 1
Aquatic Chronic 1	Hazardous to the aquatic environment — Chronic Hazard, Category 1
Asp. Tox. 1	Aspiration hazard, Category 1
Flam. Liq. 3	Flammable liquids, Category 3
H226	Flammable liquid and vapour
H304	May be fatal if swallowed and enters airways
H400	Very toxic to aquatic life
H410	Very toxic to aquatic life with long lasting effects
EUH066	Repeated exposure may cause skin dryness or cracking
ERC1	Manufacture of substances
ERC2	Formulation of preparations
ERC3	Formulation in materials
ERC4	Industrial use of processing aids in processes and products, not becoming part of articles
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 thermo-plastics
ERC6d	Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers
ERC7	Industrial use of substances in closed systems
ESVOC SPERC 1.1.v1	Manufacture of substances: Industrial (SU8, SU9)
ESVOC SPERC 1.1b.v1	Distribution: Industrial (SU3)
ESVOC SPERC 2.2.v1	Formulation & packing of preparations and mixtures: Industrial (SU10)
ESVOC SPERC 4.20.v1	Polymer production: Industrial (SU10)
ESVOC SPERC 6.1a.v1	Manufacture of substances: Industrial (SU8, SU9)
PROC1	Use in closed process, no likelihood of exposure
PROC14	Production of preparations or articles by tableting, compression, extrusion, pelletisation
PROC15	Use as laboratory reagent
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)
PROC6	Calendering operations
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
PROC9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
SU10	Formulation [mixing] of preparations and/or re-packaging (excluding alloys)
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

Braskem - SDS EU

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product. It warns that the handling of any chemical substance requires the previous knowledge of its hazards for the user. It is up to the user of the product company providing this SDS to and promote the training of its employees about possible risks come upon of the product. The information contained herein is not absolute, but only general information on the use of the chemical and indication of safety and security measures.

Tetramer

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

Annex to the Safety Data Sheet

Product exposure scenario(s)

ES Type	ES title
Worker	Manufacture of Substance – Industrial
Worker	Distribution of substance - Industrial
Worker	Use as Intermediate - Industrial
Worker	Formulation - Industrial
Consumer	Use in Polymer production – Industrial

1. Exposure scenario ES 1

Manufacture of Substance – Industrial

ES Ref.: ES 1

ES Type: Worker

Use descriptors	SU3, SU8, SU9 PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC15 ERC1, ERC4 ESVOC SPERC 1.1.v1
Processes, tasks, activities covered	Manufacture of substance or use as process chemical or extracting agent. Includes recycling/recovery, material transfers, storage, maintenance and loading (including marine vessel/barge, road/rail car and bulk container), sampling and associated laboratory activities Industrial use

2. Operational conditions and risk management measures

2.1.1 Contributing scenario controlling worker exposure (PROC1) (General exposures (closed systems))

PROC1	Use in closed process, no likelihood of exposure
-------	--

Product characteristics

Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)

Operational conditions

Amounts used	Not applicable
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)
Human factors not influenced by risk management	Not applicable
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently
	Assumes a good basic standard of occupational hygiene is implemented

Risk management measures

Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance
	No other specific measures identified
Conditions and measures related to personal protection, hygiene and health evaluation	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
	No other specific measures identified

2.1.2 Contributing scenario controlling worker exposure (PROC2) (General exposures (closed systems))

PROC2	Use in closed, continuous process with occasional controlled exposure
-------	---

Product characteristics

Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)

Operational conditions

Tetramer

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently	
	Assumes a good basic standard of occupational hygiene is implemented	

Risk management measures

Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance	
	No other specific measures identified	
Conditions and measures related to personal protection, hygiene and health evaluation	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	
	No other specific measures identified	

2.1.3 Contributing scenario controlling worker exposure (PROC3) (General exposures (closed systems))

PROC3	Use in closed batch process (synthesis or formulation)
-------	--

Product characteristics

Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)

Operational conditions

Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently	
	Assumes a good basic standard of occupational hygiene is implemented	

Risk management measures

Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance	
	No other specific measures identified	
Conditions and measures related to personal protection, hygiene and health evaluation	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	
	No other specific measures identified	

2.1.4 Contributing scenario controlling worker exposure (PROC4) (General exposures (open systems))

PROC4	Use in batch and other process (synthesis) where opportunity for exposure arises
-------	--

Product characteristics

Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)

Operational conditions

Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently	
	Assumes a good basic standard of occupational hygiene is implemented	

Risk management measures

Tetramer

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance	
	No other specific measures identified	
Conditions and measures related to personal protection, hygiene and health evaluation	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	
	No other specific measures identified	

2.1.5 Contributing scenario controlling worker exposure (PROC8b) (Process sampling)

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

Product characteristics

Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)

Operational conditions

Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently	
	Assumes a good basic standard of occupational hygiene is implemented	

Risk management measures

Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance	
	No other specific measures identified	
Conditions and measures related to personal protection, hygiene and health evaluation	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	
	No other specific measures identified	

2.1.6 Contributing scenario controlling worker exposure (PROC15) (Laboratory activities)

PROC15	Use as laboratory reagent
--------	---------------------------

Product characteristics

Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)

Operational conditions

Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently	
	Assumes a good basic standard of occupational hygiene is implemented	

Risk management measures

Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance	
	No other specific measures identified	
Conditions and measures related to personal protection, hygiene and health evaluation	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	

Tetramer

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

	that may develop	
	No other specific measures identified	

2.1.7 Contributing scenario controlling worker exposure (PROC8b) (Bulk transfers)

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

Product characteristics

Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)

Operational conditions

Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently	
	Assumes a good basic standard of occupational hygiene is implemented	

Risk management measures

Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance	
	No other specific measures identified	
Conditions and measures related to personal protection, hygiene and health evaluation	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	
	No other specific measures identified	

2.1.8 Contributing scenario controlling worker exposure (PROC8b) (Bulk transfers)

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

Product characteristics

Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)

Operational conditions

Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently	
	Assumes a good basic standard of occupational hygiene is implemented	

Risk management measures

Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance	
	No other specific measures identified	
Conditions and measures related to personal protection, hygiene and health evaluation	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	
	No other specific measures identified	

2.1.9 Contributing scenario controlling worker exposure (PROC8b) (Bulk transfers)

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

Product characteristics

Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)

Operational conditions

Tetramer

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently	
	Assumes a good basic standard of occupational hygiene is implemented	
Risk management measures		
Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance	
	No other specific measures identified	
Conditions and measures related to personal protection, hygiene and health evaluation	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	
	No other specific measures identified	

2.1.10 Contributing scenario controlling worker exposure (PROC8a) (Equipment cleaning and maintenance)

PROC8a	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
--------	--

Product characteristics		
Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP	
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)	
Operational conditions		
Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently	
	Assumes a good basic standard of occupational hygiene is implemented	
Risk management measures		
Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance	
	No other specific measures identified	
Conditions and measures related to personal protection, hygiene and health evaluation	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	
	No other specific measures identified	

2.1.11 Contributing scenario controlling worker exposure (PROC1, PROC2) (Storage)

PROC1	Use in closed process, no likelihood of exposure
PROC2	Use in closed, continuous process with occasional controlled exposure

Product characteristics		
Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP	
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)	
Operational conditions		
Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently	
	Assumes a good basic standard of occupational	

Tetramer

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

	hygiene is implemented	
Risk management measures		
Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance	
	No other specific measures identified	
Conditions and measures related to personal protection, hygiene and health evaluation	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	
	No other specific measures identified	
2.2 Contributing scenario controlling environmental exposure (ERC1, ERC4, ESVOC SPERC 1.1.v1)		
ERC1	Manufacture of substances	
ERC4	Industrial use of processing aids in processes and products, not becoming part of articles	
ESVOC SPERC 1.1.v1	Manufacture of substances: Industrial (SU8, SU9)	
Product characteristics		
Physical form of product	Substance is complex UVCB, Predominantly hydrophobic, Readily biodegradable	
Operational conditions		
Amounts used	Fraction of EU tonnage used in region:	1
	Regional use tonnage (tons/year):	1000
	Fraction of Regional tonnage used locally:	1
	Annual site tonnage (tons/year):	1000
	Maximum daily site tonnage (kg/day):	50000
Frequency and duration of use	Continuous release	
	Emission days (days/year):	20
Environmental factors not influenced by risk management	Local freshwater dilution factor:	10
	Local marine water dilution factor:	100
Other given operational conditions affecting environmental exposure	Release fraction to air from process (initial release prior to RMM):	0.01
	Release fraction to wastewater from process (initial release prior to RMM):	0.00001
	Release fraction to soil from process (initial release prior to RMM):	0.0001
Risk management measures		
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	Risk from environmental exposure is driven by freshwater sediment	
	Treat air emission to provide a typical removal efficiency of (%):	90
	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of ... ³ (%):	>= 48.7
	If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%):	>= 0
Organisational measures to prevent/limit release from site	Prevent discharge of undissolved substance to or recover from onsite wastewater	
	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 wastewater via domestic sewage treatment (%):	97.2
	Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):	97.2
	Maximum allowable site tonnage (MSafe) (kg/d):	920000 (based on domestic sewage treatment release)
	Assumed domestic sewage treatment plant flow (m3/d):	10000
Conditions and measures related to external treatment of waste for disposal	Sludge should be incinerated, contained or reclaimed	
Conditions and measures related to external recovery	External treatment and disposal of waste should	

Tetramer

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

of waste	comply with applicable local and/or national regulations	
----------	--	--

3. Exposure estimation and reference to its source

3.1. Health

Information for contributing exposure scenario		
2.1	A quantitative risk assessment is not required for human health	

3.2. Environment

Information for contributing exposure scenario		
2.2	The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model	

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

4.1. Health

Guidance - Health	A quantitative risk assessment is not required for human health
-------------------	---

4.2. Environment

Guidance - 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)
------------------------	--

Tetramer

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

1. Exposure scenario ES 2

Distribution of substance - Industrial

ES Ref.: ES 2
ES Type: Worker

Use descriptors	SU3 PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC15 ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7 ESVOC SPERC 1.1b.v1
Processes, tasks, activities covered	Bulk loading (including marine vessel/barge, rail/road car and IBC loading) and repacking (including drums and small packs) of substance, including its sampling, storage, unloading, distribution and associated laboratory activities. Excludes emissions during transport. Industrial use

2. Operational conditions and risk management measures

2.1.1 Contributing scenario controlling worker exposure (PROC1) (General exposures (closed systems))

PROC1	Use in closed process, no likelihood of exposure	
Product characteristics		
Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP	
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)	
Operational conditions		
Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently	
	Assumes a good basic standard of occupational hygiene is implemented	
Risk management measures		
Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance	
	No other specific measures identified	
Conditions and measures related to personal protection, hygiene and health evaluation	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	
	No other specific measures identified	

2.1.2 Contributing scenario controlling worker exposure (PROC2) (General exposures (closed systems))

PROC2	Use in closed, continuous process with occasional controlled exposure	
Product characteristics		
Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP	
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)	
Operational conditions		
Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently	
	Assumes a good basic standard of occupational hygiene is implemented	
Risk management measures		
Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance	
	No other specific measures identified	
Conditions and measures related to personal	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves	

Tetramer

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

protection, hygiene and health evaluation	(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	
	No other specific measures identified	

2.1.3 Contributing scenario controlling worker exposure (PROC3) (General exposures (closed systems))

PROC3	Use in closed batch process (synthesis or formulation)	
Product characteristics		
Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP	
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)	
Operational conditions		
Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently	
	Assumes a good basic standard of occupational hygiene is implemented	
Risk management measures		
Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance	
	No other specific measures identified	
Conditions and measures related to personal protection, hygiene and health evaluation	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	
	No other specific measures identified	

2.1.4 Contributing scenario controlling worker exposure (PROC4) (General exposures (open systems))

PROC4	Use in batch and other process (synthesis) where opportunity for exposure arises	
Product characteristics		
Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP	
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)	
Operational conditions		
Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently	
	Assumes a good basic standard of occupational hygiene is implemented	
Risk management measures		
Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance	
	No other specific measures identified	
Conditions and measures related to personal protection, hygiene and health evaluation	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	
	No other specific measures identified	

2.1.5 Contributing scenario controlling worker exposure (PROC3) (Process sampling)

PROC3	Use in closed batch process (synthesis or formulation)	
-------	--	--

Tetramer

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

Product characteristics		
Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP	
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)	
Operational conditions		
Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently	
	Assumes a good basic standard of occupational hygiene is implemented	
Risk management measures		
Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance	
	No other specific measures identified	
Conditions and measures related to personal protection, hygiene and health evaluation	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	
	No other specific measures identified	

2.1.6 Contributing scenario controlling worker exposure (PROC15) (Laboratory activities)

PROC15	Use as laboratory reagent	
Product characteristics		
Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP	
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)	
Operational conditions		
Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently	
	Assumes a good basic standard of occupational hygiene is implemented	
Risk management measures		
Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance	
	No other specific measures identified	
Conditions and measures related to personal protection, hygiene and health evaluation	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	
	No other specific measures identified	

2.1.7 Contributing scenario controlling worker exposure (PROC8b) (Bulk transfers)

PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities		
Product characteristics			
Physical form of product		Liquid, vapour pressure < 0,5 kPa at STP	
Concentration of substance in product		Covers percentage substance in the product up to 100 % (unless stated differently)	
Operational conditions			
Amounts used		Not applicable	
Frequency and duration of use		Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management		Not applicable	

Tetramer

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently Assumes a good basic standard of occupational hygiene is implemented	
Risk management measures		
Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance No other specific measures identified	
Conditions and measures related to personal protection, hygiene and health evaluation	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 No other specific measures identified	

2.1.8 Contributing scenario controlling worker exposure (PROC8b) (Bulk transfers)

PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	
Product characteristics		
Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP	
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)	
Operational conditions		
Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently	
	Assumes a good basic standard of occupational hygiene is implemented	
Risk management measures		
Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance	
	No other specific measures identified	
Conditions and measures related to personal protection, hygiene and health evaluation	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	
	No other specific measures identified	

2.1.9 Contributing scenario controlling worker exposure (PROC9) (Drum and small package filling)

PROC9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	
Product characteristics		
Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP	
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)	
Operational conditions		
Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently	
	Assumes a good basic standard of occupational hygiene is implemented	
Risk management measures		
Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance	
	No other specific measures identified	
Conditions and measures related to personal	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves	

Tetramer

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

protection, hygiene and health evaluation	(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	
	No other specific measures identified	

2.1.10 Contributing scenario controlling worker exposure (PROC8a) (Equipment cleaning and maintenance)

PROC8a	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
--------	--

Product characteristics

Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)

Operational conditions

Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently	
	Assumes a good basic standard of occupational hygiene is implemented	

Risk management measures

Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance	
	No other specific measures identified	
Conditions and measures related to personal protection, hygiene and health evaluation	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	
	No other specific measures identified	

2.1.11 Contributing scenario controlling worker exposure (PROC1, PROC2) (Storage)

PROC1	Use in closed process, no likelihood of exposure
PROC2	Use in closed, continuous process with occasional controlled exposure

Product characteristics

Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)

Operational conditions

Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently	
	Assumes a good basic standard of occupational hygiene is implemented	

Risk management measures

Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance	
	No other specific measures identified	
Conditions and measures related to personal protection, hygiene and health evaluation	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	
	No other specific measures identified	

Tetramer

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

2.2 Contributing scenario controlling environmental exposure (ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7, ESVOC SPERC 1.1b.v1)

ERC1	Manufacture of substances
ERC2	Formulation of preparations
ERC3	Formulation in materials
ERC4	Industrial use of processing aids in processes and products, not becoming part of articles
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 thermo-plastics
ERC6d	Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers
ERC7	Industrial use of substances in closed systems
ESVOC SPERC 1.1b.v1	Distribution: Industrial (SU3)

Product characteristics

Physical form of product	Substance is complex UVCB, Predominantly hydrophobic, Readily biodegradable
--------------------------	---

Operational conditions

Amounts used	Fraction of EU tonnage used in region:	1
	Regional use tonnage (tons/year):	1000
	Fraction of Regional tonnage used locally:	1
	Annual site tonnage (tons/year):	1000
	Maximum daily site tonnage (kg/day):	50000
Frequency and duration of use	Continuous release	
	Emission days (days/year):	20
Environmental factors not influenced by risk management	Local freshwater dilution factor:	10
	Local marine water dilution factor:	100
Other given operational conditions affecting environmental exposure	Release fraction to air from process (initial release prior to RMM):	0.001
	Release fraction to wastewater from process (initial release prior to RMM):	0.0000001
	Release fraction to soil from process (initial release prior to RMM):	0.00001

Risk management measures

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	Risk from environmental exposure is driven by freshwater sediment. No wastewater treatment required	
	Treat air emission to provide a typical removal efficiency of (%):	90
	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of ... ³ (%):	>= 0
	If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%):	>= 0
Organisational measures to prevent/limit release from site	Prevent discharge of undissolved substance to or recover from onsite wastewater	
	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 wastewater via domestic sewage treatment (%):	97.2
	Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):	97.2
	Maximum allowable site tonnage (MSafe) (kg/d):	18000000 (based on domestic sewage treatment release)
	Assumed domestic sewage treatment plant flow (m3/d):	2000
Conditions and measures related to external treatment of waste for disposal	Sludge should be incinerated, contained or reclaimed	
Conditions and measures related to external recovery of waste	External treatment and disposal of waste should comply with applicable local and/or national regulations	

Tetramer

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

3. Exposure estimation and reference to its source

3.1. Health

Information for contributing exposure scenario	
2.1	A quantitative risk assessment is not required for human health

3.2. Environment

Information for contributing exposure scenario	
2.2	The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model

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

4.1. Health

Guidance - Health	A quantitative risk assessment is not required for human health
-------------------	---

4.2. Environment

Guidance - 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)
------------------------	--

Tetramer

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

1. Exposure scenario ES 3

Use as Intermediate - Industrial

ES Ref.: ES 3
ES Type: Worker

Use descriptors	SU3, SU8, SU9 PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC15 ERC6a ESVOC SPERC 6.1a.v1
Processes, tasks, activities covered	Use as an intermediate within closed or contained systems (not related to Strictly Controlled Conditions). Includes incidental exposures during recycling/ recovery, material transfers, storage, sampling, associated laboratory activities, maintenance and loading (including marine vessel/barge, road/rail car and bulk container) Industrial use

2. Operational conditions and risk management measures

2.1.1 Contributing scenario controlling worker exposure (PROC1) (General exposures (closed systems))

PROC1	Use in closed process, no likelihood of exposure	
Product characteristics		
Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP	
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)	
Operational conditions		
Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently	
	Assumes a good basic standard of occupational hygiene is implemented	
Risk management measures		
Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance	
	No other specific measures identified	
Conditions and measures related to personal protection, hygiene and health evaluation	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	
	No other specific measures identified	

2.1.2 Contributing scenario controlling worker exposure (PROC2) (General exposures (closed systems))

PROC2	Use in closed, continuous process with occasional controlled exposure	
Product characteristics		
Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP	
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)	
Operational conditions		
Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently	
	Assumes a good basic standard of occupational hygiene is implemented	
Risk management measures		
Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance	
	No other specific measures identified	
Conditions and measures related to personal	Avoid direct skin contact with product. Identify	

Tetramer

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

protection, hygiene and health evaluation	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	
	No other specific measures identified	

2.1.3 Contributing scenario controlling worker exposure (PROC3) (General exposures (closed systems))

PROC3	Use in closed batch process (synthesis or formulation)	
Product characteristics		
Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP	
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)	
Operational conditions		
Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently	
	Assumes a good basic standard of occupational hygiene is implemented	
Risk management measures		
Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance	
	No other specific measures identified	
Conditions and measures related to personal protection, hygiene and health evaluation	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	
	No other specific measures identified	

2.1.4 Contributing scenario controlling worker exposure (PROC4) (General exposures (open systems))

PROC4	Use in batch and other process (synthesis) where opportunity for exposure arises	
Product characteristics		
Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP	
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)	
Operational conditions		
Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently	
	Assumes a good basic standard of occupational hygiene is implemented	
Risk management measures		
Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance	
	No other specific measures identified	
Conditions and measures related to personal protection, hygiene and health evaluation	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	
	No other specific measures identified	

Tetramer

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

2.1.5 Contributing scenario controlling worker exposure (PROC8b) (Process sampling)

PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	
Product characteristics		
Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP	
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)	
Operational conditions		
Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently	
	Assumes a good basic standard of occupational hygiene is implemented	
Risk management measures		
Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance	
	No other specific measures identified	
Conditions and measures related to personal protection, hygiene and health evaluation	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	
	No other specific measures identified	

2.1.6 Contributing scenario controlling worker exposure (PROC15) (Laboratory activities)

PROC15	Use as laboratory reagent	
Product characteristics		
Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP	
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)	
Operational conditions		
Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently	
	Assumes a good basic standard of occupational hygiene is implemented	
Risk management measures		
Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance	
	No other specific measures identified	
Conditions and measures related to personal protection, hygiene and health evaluation	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	
	No other specific measures identified	

2.1.7 Contributing scenario controlling worker exposure (PROC8b) (Bulk transfers)

PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	
Product characteristics		
Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP	
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)	
Operational conditions		
Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated	

Tetramer

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

	differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently	
	Assumes a good basic standard of occupational hygiene is implemented	

Risk management measures

Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance	
	No other specific measures identified	
Conditions and measures related to personal protection, hygiene and health evaluation	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	
	No other specific measures identified	

2.1.8 Contributing scenario controlling worker exposure (PROC8b) (Bulk transfers)

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

Product characteristics

Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)

Operational conditions

Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently	
	Assumes a good basic standard of occupational hygiene is implemented	

Risk management measures

Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance	
	No other specific measures identified	
Conditions and measures related to personal protection, hygiene and health evaluation	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	
	No other specific measures identified	

2.1.9 Contributing scenario controlling worker exposure (PROC8b) (Bulk transfers)

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

Product characteristics

Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)

Operational conditions

Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently	
	Assumes a good basic standard of occupational hygiene is implemented	

Risk management measures

Organisational measures to prevent /limit releases,	Do not ingest. If swallowed then seek immediate medical assistance	
---	--	--

Tetramer

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

dispersion and exposure	No other specific measures identified	
Conditions and measures related to personal protection, hygiene and health evaluation	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	
	No other specific measures identified	

2.1.10 Contributing scenario controlling worker exposure (PROC8a) (Equipment cleaning and maintenance)

PROC8a	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
--------	--

Product characteristics

Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)

Operational conditions

Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently	
	Assumes a good basic standard of occupational hygiene is implemented	

Risk management measures

Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance	
	No other specific measures identified	
Conditions and measures related to personal protection, hygiene and health evaluation	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	
	No other specific measures identified	

2.1.11 Contributing scenario controlling worker exposure (PROC1, PROC2) (Storage)

PROC1	Use in closed process, no likelihood of exposure
PROC2	Use in closed, continuous process with occasional controlled exposure

Product characteristics

Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)

Operational conditions

Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently	
	Assumes a good basic standard of occupational hygiene is implemented	

Risk management measures

Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance	
	No other specific measures identified	
Conditions and measures related to personal protection, hygiene and health evaluation	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	

Tetramer

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

	that may develop	
	No other specific measures identified	

2.2 Contributing scenario controlling environmental exposure (ERC6a, ESVO SPERC 6.1a.v1)

ERC6a	Industrial use resulting in manufacture of another substance (use of intermediates)
ESVO SPERC 6.1a.v1	Manufacture of substances: Industrial (SU8, SU9)

Product characteristics

Physical form of product	Substance is complex UVCB, Predominantly hydrophobic, Readily biodegradable
--------------------------	---

Operational conditions

Amounts used	Fraction of EU tonnage used in region:	1
	Regional use tonnage (tons/year):	1000
	Fraction of Regional tonnage used locally:	0.1
	Annual site tonnage (tons/year):	100
	Maximum daily site tonnage (kg/day):	5000
Frequency and duration of use	Continuous release	
	Emission days (days/year):	20
Environmental factors not influenced by risk management	Local freshwater dilution factor:	10
	Local marine water dilution factor:	100
Other given operational conditions affecting environmental exposure	Release fraction to air from process (initial release prior to RMM):	0.001
	Release fraction to wastewater from process (initial release prior to RMM):	0.00001
	Release fraction to soil from process (initial release prior to RMM):	0.001

Risk management measures

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	Risk from environmental exposure is driven by freshwater sediment. No wastewater treatment required	
	Treat air emission to provide a typical removal efficiency of (%):	80
	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of ... ³ (%):	>= 0
	If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%):	>= 0
Organisational measures to prevent/limit release from site	Prevent discharge of undissolved substance to or recover from onsite wastewater	
	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 wastewater via domestic sewage treatment (%):	97.2
	Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):	97.2
	Maximum allowable site tonnage (MSafe) (kg/d):	180000 (based on domestic sewage treatment release)
	Assumed domestic sewage treatment plant flow (m3/d):	2000
Conditions and measures related to external treatment of waste for disposal	Sludge should be incinerated, contained or reclaimed	
Conditions and measures related to external recovery of waste	External treatment and disposal of waste should comply with applicable local and/or national regulations	

3. Exposure estimation and reference to its source

3.1. Health

Information for contributing exposure scenario	
2.1	A quantitative risk assessment is not required for human health

3.2. Environment

Information for contributing exposure scenario	
--	--

Tetramer

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

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

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

4.1. Health

Guidance – Health	A quantitative risk assessment is not required for human health
-------------------	---

4.2. Environment

Guidance - 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)
------------------------	--

Tetramer

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

1. Exposure scenario ES 4

Formulation - Industrial

ES Ref.: ES 4
ES Type: Worker

Use descriptors	SU3, SU10 PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC14, PROC15 ERC2 ESVOC SPERC 2.2.v1
Processes, tasks, activities covered	Formulation of the substance and its mixtures in batch or continuous operations within closed or contained systems, including incidental exposures during storage, materials transfers, mixing, maintenance, sampling and associated laboratory activities Industrial use

2. Operational conditions and risk management measures

2.1.1 Contributing scenario controlling worker exposure (PROC1) (General exposures (closed systems))

PROC1	Use in closed process, no likelihood of exposure	
Product characteristics		
Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP	
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)	
Operational conditions		
Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently	
	Assumes a good basic standard of occupational hygiene is implemented	
Risk management measures		
Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance	
	No other specific measures identified	
Conditions and measures related to personal protection, hygiene and health evaluation	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	
	No other specific measures identified	

2.1.2 Contributing scenario controlling worker exposure (PROC2) (General exposures (closed systems))

PROC2	Use in closed, continuous process with occasional controlled exposure	
Product characteristics		
Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP	
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)	
Operational conditions		
Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently	
	Assumes a good basic standard of occupational hygiene is implemented	
Risk management measures		
Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance	
	No other specific measures identified	
Conditions and measures related to personal	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves	

Tetramer

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

protection, hygiene and health evaluation	(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	
	No other specific measures identified	

2.1.3 Contributing scenario controlling worker exposure (PROC3) (General exposures (closed systems))

PROC3	Use in closed batch process (synthesis or formulation)	
Product characteristics		
Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP	
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)	
Operational conditions		
Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently	
	Assumes a good basic standard of occupational hygiene is implemented	
Risk management measures		
Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance	
	No other specific measures identified	
Conditions and measures related to personal protection, hygiene and health evaluation	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	
	No other specific measures identified	

2.1.4 Contributing scenario controlling worker exposure (PROC4) (General exposures (open systems))

PROC4	Use in batch and other process (synthesis) where opportunity for exposure arises	
Product characteristics		
Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP	
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)	
Operational conditions		
Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently	
	Assumes a good basic standard of occupational hygiene is implemented	
Risk management measures		
Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance	
	No other specific measures identified	
Conditions and measures related to personal protection, hygiene and health evaluation	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	
	No other specific measures identified	

2.1.5 Contributing scenario controlling worker exposure (PROC4) (General exposures (open systems))

PROC4	Use in batch and other process (synthesis) where opportunity for exposure arises	
-------	--	--

Tetramer

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

Product characteristics		
Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP	
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)	
Operational conditions		
Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently	
	Assumes a good basic standard of occupational hygiene is implemented	
Risk management measures		
Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance	
	No other specific measures identified	
Conditions and measures related to personal protection, hygiene and health evaluation	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	
	No other specific measures identified	

2.1.6 Contributing scenario controlling worker exposure (PROC3) (Batch processes at elevated temperatures)

PROC3	Use in closed batch process (synthesis or formulation)	
Product characteristics		
Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP	
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)	
Operational conditions		
Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently	
	Assumes a good basic standard of occupational hygiene is implemented	
Risk management measures		
Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance	
	No other specific measures identified	
Conditions and measures related to personal protection, hygiene and health evaluation	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	
	No other specific measures identified	

2.1.7 Contributing scenario controlling worker exposure (PROC3) (Process sampling)

PROC3	Use in closed batch process (synthesis or formulation)	
Product characteristics		
Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP	
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)	
Operational conditions		
Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	

Tetramer

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently Assumes a good basic standard of occupational hygiene is implemented	
Risk management measures		
Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance No other specific measures identified	
Conditions and measures related to personal protection, hygiene and health evaluation	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 No other specific measures identified	

2.1.8 Contributing scenario controlling worker exposure (PROC15) (Laboratory activities)

PROC15	Use as laboratory reagent	
Product characteristics		
Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP	
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)	
Operational conditions		
Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently	
	Assumes a good basic standard of occupational hygiene is implemented	
Risk management measures		
Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance	
	No other specific measures identified	
Conditions and measures related to personal protection, hygiene and health evaluation	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	
	No other specific measures identified	

2.1.9 Contributing scenario controlling worker exposure (PROC8b) (Bulk transfers)

PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	
Product characteristics		
Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP	
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)	
Operational conditions		
Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently	
	Assumes a good basic standard of occupational hygiene is implemented	
Risk management measures		
Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance	
	No other specific measures identified	
Conditions and measures related to personal	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves	

Tetramer

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

protection, hygiene and health evaluation	(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	
	No other specific measures identified	

2.1.10 Contributing scenario controlling worker exposure (PROC5) (Mixing operations (open systems))

PROC5	Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)
-------	--

Product characteristics

Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)

Operational conditions

Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently	
	Assumes a good basic standard of occupational hygiene is implemented	

Risk management measures

Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance	
	No other specific measures identified	
Conditions and measures related to personal protection, hygiene and health evaluation	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	
	No other specific measures identified	

2.1.11 Contributing scenario controlling worker exposure (PROC5) (Mixing operations (open systems))

PROC5	Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)
-------	--

Product characteristics

Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)

Operational conditions

Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently	
	Assumes a good basic standard of occupational hygiene is implemented	

Risk management measures

Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance	
	No other specific measures identified	
Conditions and measures related to personal protection, hygiene and health evaluation	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	
	No other specific measures identified	

Tetramer

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

2.1.12 Contributing scenario controlling worker exposure (PROC8a) (Transfer from/pouring from containers)

PROC8a	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	
Product characteristics		
Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP	
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)	
Operational conditions		
Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently	
	Assumes a good basic standard of occupational hygiene is implemented	
Risk management measures		
Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance	
	No other specific measures identified	
Conditions and measures related to personal protection, hygiene and health evaluation	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	
	No other specific measures identified	

2.1.13 Contributing scenario controlling worker exposure (PROC8b) (Drum/batch transfers)

PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	
Product characteristics		
Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP	
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)	
Operational conditions		
Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently	
	Assumes a good basic standard of occupational hygiene is implemented	
Risk management measures		
Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance	
	No other specific measures identified	
Conditions and measures related to personal protection, hygiene and health evaluation	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	
	No other specific measures identified	

2.1.14 Contributing scenario controlling worker exposure (PROC14) (Production of preparations or articles by tableting, compression, extrusion, pelettisation)

PROC14	Production of preparations or articles by tableting, compression, extrusion, pelletisation	
Product characteristics		
Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP	
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)	
Operational conditions		

Tetramer

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently	
	Assumes a good basic standard of occupational hygiene is implemented	
Risk management measures		
Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance	
	No other specific measures identified	
Conditions and measures related to personal protection, hygiene and health evaluation	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	
	No other specific measures identified	

2.1.15 Contributing scenario controlling worker exposure (PROC9) (Drum and small package filling)

PROC9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	
Product characteristics		
Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP	
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)	
Operational conditions		
Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently	
	Assumes a good basic standard of occupational hygiene is implemented	
Risk management measures		
Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance	
	No other specific measures identified	
Conditions and measures related to personal protection, hygiene and health evaluation	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	
	No other specific measures identified	

2.1.16 Contributing scenario controlling worker exposure (PROC8a) (Equipment cleaning and maintenance)

PROC8a	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities		
Product characteristics			
Physical form of product		Liquid, vapour pressure < 0,5 kPa at STP	
Concentration of substance in product		Covers percentage substance in the product up to 100 % (unless stated differently)	
Operational conditions			
Amounts used		Not applicable	
Frequency and duration of use		Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management		Not applicable	
Other given operational conditions affecting workers exposure		Assumes use at not more than 20°C above ambient temperature, unless stated differently	
		Assumes a good basic standard of occupational hygiene is implemented	

Tetramer

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

Risk management measures		
Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance	
	No other specific measures identified	
Conditions and measures related to personal protection, hygiene and health evaluation	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	
	No other specific measures identified	

2.1.17 Contributing scenario controlling worker exposure (PROC1, PROC2) (Storage)

PROC1	Use in closed process, no likelihood of exposure
PROC2	Use in closed, continuous process with occasional controlled exposure

Product characteristics		
Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP	
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)	
Operational conditions		
Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently	
	Assumes a good basic standard of occupational hygiene is implemented	

Risk management measures		
Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance	
	No other specific measures identified	
Conditions and measures related to personal protection, hygiene and health evaluation	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	
	No other specific measures identified	

2.2 Contributing scenario controlling environmental exposure (ERC2, ESVO SPERC 2.2.v1)

ERC2	Formulation of preparations
ESVO SPERC 2.2.v1	Formulation & packing of preparations and mixtures: Industrial (SU10)

Product characteristics		
Physical form of product	Substance is complex UVCB, Predominantly hydrophobic, Readily biodegradable	
Operational conditions		
Amounts used	Fraction of EU tonnage used in region:	1
	Regional use tonnage (tons/year):	1000
	Fraction of Regional tonnage used locally:	0.1
	Annual site tonnage (tons/year):	100
	Maximum daily site tonnage (kg/day):	1000
Frequency and duration of use	Continuous release	
	Emission days (days/year):	100
Environmental factors not influenced by risk management	Local freshwater dilution factor:	10
	Local marine water dilution factor:	100
Other given operational conditions affecting environmental exposure	Release fraction to air from process (initial release prior to RMM):	0.01
	Release fraction to wastewater from process (initial release prior to RMM):	0.000005
	Release fraction to soil from process (initial release prior to RMM):	0.0001

Risk management measures		
--------------------------	--	--

Tetramer

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

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	Risk from environmental exposure is driven by freshwater sediment. No wastewater treatment required	
	Treat air emission to provide a typical removal efficiency of (%):	0
	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of ... ³ (%):	>= 0
	If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%):	>= 0
Organisational measures to prevent/limit release from site	Prevent discharge of undissolved substance to or recover from onsite wastewater	
	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 wastewater via domestic sewage treatment (%):	97.2
	Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):	97.2
	Maximum allowable site tonnage (MSafe) (kg/d):	370000 (based on domestic sewage treatment release)
	Assumed domestic sewage treatment plant flow (m3/d):	2000
Conditions and measures related to external treatment of waste for disposal	Sludge should be incinerated, contained or reclaimed	
Conditions and measures related to external recovery of waste	External treatment and disposal of waste should comply with applicable local and/or national regulations	

3. Exposure estimation and reference to its source

3.1. Health

Information for contributing exposure scenario	
2.1	A quantitative risk assessment is not required for human health

3.2. Environment

Information for contributing exposure scenario	
2.2	The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model

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

4.1. Health

Guidance - Health	A quantitative risk assessment is not required for human health
-------------------	---

4.2. Environment

Guidance - 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)
------------------------	--

Tetramer

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

1. Exposure scenario ES 5

Use in Polymer production – Industrial

ES Ref.: ES 5
ES Type: Consumer

Use descriptors	SU10 PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC8a, PROC8b, PROC14, PROC15 ERC4, ERC6c ESVOC SPERC 4.20.v1
Processes, tasks, activities covered	Manufacture of polymers from monomers in continuous and batch processes. Including production, re-cycling and recovery, degassing, discharging, reactor maintenance and immediate polymer product formation (i.e. compounding, pelletisation, product off-gassing) Industrial use

2. Operational conditions and risk management measures

2.1.1 Contributing scenario controlling worker exposure (PROC1) (General exposures (closed systems))

PROC1	Use in closed process, no likelihood of exposure	
Product characteristics		
Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP	
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)	
Operational conditions		
Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently	
	Assumes a good basic standard of occupational hygiene is implemented	
Risk management measures		
Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance	
	No other specific measures identified	
Conditions and measures related to personal protection, hygiene and health evaluation	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	
	No other specific measures identified	

2.1.2 Contributing scenario controlling worker exposure (PROC8b) (Bulk transfers)

PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	
Product characteristics		
Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP	
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)	
Operational conditions		
Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently	
	Assumes a good basic standard of occupational hygiene is implemented	
Risk management measures		
Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance	
	No other specific measures identified	
Conditions and measures related to personal	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves	

Tetramer

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

protection, hygiene and health evaluation	(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	
	No other specific measures identified	

2.1.3 Contributing scenario controlling worker exposure (PROC2) (polymerization (Bulk and batch))

PROC2	Use in closed, continuous process with occasional controlled exposure	
Product characteristics		
Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP	
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)	
Operational conditions		
Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently	
	Assumes a good basic standard of occupational hygiene is implemented	
Risk management measures		
Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance	
	No other specific measures identified	
Conditions and measures related to personal protection, hygiene and health evaluation	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	
	No other specific measures identified	

2.1.4 Contributing scenario controlling worker exposure (PROC3) (polymerization (Bulk and batch))

PROC3	Use in closed batch process (synthesis or formulation)	
Product characteristics		
Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP	
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)	
Operational conditions		
Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently	
	Assumes a good basic standard of occupational hygiene is implemented	
Risk management measures		
Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance	
	No other specific measures identified	
Conditions and measures related to personal protection, hygiene and health evaluation	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	
	No other specific measures identified	

2.1.5 Contributing scenario controlling worker exposure (PROC3) (Finishing operations)

PROC3	Use in closed batch process (synthesis or formulation)	
-------	--	--

Tetramer

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

Product characteristics		
Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP	
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)	
Operational conditions		
Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently	
	Assumes a good basic standard of occupational hygiene is implemented	
Risk management measures		
Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance	
	No other specific measures identified	
Conditions and measures related to personal protection, hygiene and health evaluation	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	
	No other specific measures identified	

2.1.6 Contributing scenario controlling worker exposure (PROC4) (Intermediate polymer storage)

PROC4	Use in batch and other process (synthesis) where opportunity for exposure arises
-------	--

Product characteristics		
Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP	
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)	
Operational conditions		
Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently	
	Assumes a good basic standard of occupational hygiene is implemented	
Risk management measures		
Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance	
	No other specific measures identified	
Conditions and measures related to personal protection, hygiene and health evaluation	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	
	No other specific measures identified	

2.1.7 Contributing scenario controlling worker exposure (PROC3) (Addition and stabilisation)

PROC3	Use in closed batch process (synthesis or formulation)
-------	--

Product characteristics		
Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP	
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)	
Operational conditions		
Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	

Tetramer

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently Assumes a good basic standard of occupational hygiene is implemented	
Risk management measures		
Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance No other specific measures identified	
Conditions and measures related to personal protection, hygiene and health evaluation	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 No other specific measures identified	

2.1.8 Contributing scenario controlling worker exposure (PROC5) (Mixing operations (open systems))

PROC5	Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)	
Product characteristics		
Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP	
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)	
Operational conditions		
Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently Assumes a good basic standard of occupational hygiene is implemented	
Risk management measures		
Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance No other specific measures identified	
Conditions and measures related to personal protection, hygiene and health evaluation	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 No other specific measures identified	

2.1.9 Contributing scenario controlling worker exposure (PROC6) (Pelletising)

PROC6	Calendering operations	
Product characteristics		
Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP	
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)	
Operational conditions		
Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently Assumes a good basic standard of occupational hygiene is implemented	
Risk management measures		
Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance No other specific measures identified	

Tetramer

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

Conditions and measures related to personal protection, hygiene and health evaluation	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	
	No other specific measures identified	

2.1.10 Contributing scenario controlling worker exposure (PROC14) (Pelletising)

PROC14	Production of preparations or articles by tableting, compression, extrusion, pelletisation	
Product characteristics		
Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP	
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)	
Operational conditions		
Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently	
	Assumes a good basic standard of occupational hygiene is implemented	
Risk management measures		
Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance	
	No other specific measures identified	
Conditions and measures related to personal protection, hygiene and health evaluation	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	
	No other specific measures identified	

2.1.11 Contributing scenario controlling worker exposure (PROC8b) (Pelletisation and pellet screening)

PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	
Product characteristics		
Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP	
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)	
Operational conditions		
Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently	
	Assumes a good basic standard of occupational hygiene is implemented	
Risk management measures		
Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance	
	No other specific measures identified	
Conditions and measures related to personal protection, hygiene and health evaluation	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	
	No other specific measures identified	

Tetramer

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

2.1.12 Contributing scenario controlling worker exposure (PROC2) (Bulk transfers)

PROC2	Use in closed, continuous process with occasional controlled exposure	
Product characteristics		
Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP	
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)	
Operational conditions		
Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently	
	Assumes a good basic standard of occupational hygiene is implemented	
Risk management measures		
Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance	
	No other specific measures identified	
Conditions and measures related to personal protection, hygiene and health evaluation	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	
	No other specific measures identified	

2.1.13 Contributing scenario controlling worker exposure (PROC3) (Bulk transfers)

PROC3	Use in closed batch process (synthesis or formulation)	
Product characteristics		
Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP	
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)	
Operational conditions		
Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently	
	Assumes a good basic standard of occupational hygiene is implemented	
Risk management measures		
Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance	
	No other specific measures identified	
Conditions and measures related to personal protection, hygiene and health evaluation	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	
	No other specific measures identified	

2.1.14 Contributing scenario controlling worker exposure (PROC8b) (Transport)

PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	
Product characteristics		
Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP	
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)	
Operational conditions		
Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated	

Tetramer

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

	differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently	
	Assumes a good basic standard of occupational hygiene is implemented	

Risk management measures

Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance	
	No other specific measures identified	
Conditions and measures related to personal protection, hygiene and health evaluation	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	
	No other specific measures identified	

2.1.15 Contributing scenario controlling worker exposure (PROC8a) (Equipment maintenance)

PROC8a	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
--------	--

Product characteristics

Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)

Operational conditions

Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently	
	Assumes a good basic standard of occupational hygiene is implemented	

Risk management measures

Organisational measures to prevent /limit releases, dispersion and exposure	Do not ingest. If swallowed then seek immediate medical assistance	
	No other specific measures identified	
Conditions and measures related to personal protection, hygiene and health evaluation	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	
	No other specific measures identified	

2.1.16 Contributing scenario controlling worker exposure (PROC15) (Laboratory activities)

PROC15	Use as laboratory reagent
--------	---------------------------

Product characteristics

Physical form of product	Liquid, vapour pressure < 0,5 kPa at STP
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently)

Operational conditions

Amounts used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently	
	Assumes a good basic standard of occupational hygiene is implemented	

Risk management measures

Organisational measures to prevent /limit releases,	Do not ingest. If swallowed then seek immediate	
---	---	--

Tetramer

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

dispersion and exposure	medical assistance	
	No other specific measures identified	
Conditions and measures related to personal protection, hygiene and health evaluation	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	
	No other specific measures identified	

2.2 Contributing scenario controlling environmental exposure (ERC4, ERC6c, ESVOC SPERC 4.20.v1)

ERC4	Industrial use of processing aids in processes and products, not becoming part of articles
ERC6c	Industrial use of monomers for manufacture of thermo-plastics
ESVOC SPERC 4.20.v1	Polymer production: Industrial (SU10)

Product characteristics

Physical form of product	Substance is complex UVCB, Predominantly hydrophobic, Readily biodegradable
--------------------------	---

Operational conditions

Amounts used	Fraction of EU tonnage used in region:	1
	Regional use tonnage (tons/year):	1000
	Fraction of Regional tonnage used locally:	0.1
	Annual site tonnage (tons/year):	100
	Maximum daily site tonnage (kg/day):	5000
Frequency and duration of use	Continuous release	
	Emission days (days/year):	20
Environmental factors not influenced by risk management	Local freshwater dilution factor:	10
	Local marine water dilution factor:	100
Other given operational conditions affecting environmental exposure	Release fraction to air from process (initial release prior to RMM):	0.01
	Release fraction to wastewater from process (initial release prior to RMM):	0.00001
	Release fraction to soil from process (initial release prior to RMM):	0.0001

Risk management measures

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	Risk from environmental exposure is driven by freshwater sediment. No wastewater treatment required	
	Treat air emission to provide a typical removal efficiency of (%):	80
	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of ... ³ (%):	>= 0
	If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%):	>= 0
Organisational measures to prevent/limit release from site	Prevent discharge of undissolved substance to or recover from onsite wastewater	
	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 wastewater via domestic sewage treatment (%):	97.2
	Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):	97.2
	Maximum allowable site tonnage (MSafe) (kg/d):	180000 (based on domestic sewage treatment release)
	Assumed domestic sewage treatment plant flow (m3/d):	2000
Conditions and measures related to external treatment of waste for disposal	Sludge should be incinerated, contained or reclaimed	
Conditions and measures related to external recovery of waste	External treatment and disposal of waste should comply with applicable local and/or national regulations	

Tetramer

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

3. Exposure estimation and reference to its source

3.1. Health

Information for contributing exposure scenario	
2.1	A quantitative risk assessment is not required for human health

3.2. Environment

Information for contributing exposure scenario	
2.2	The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model

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

4.1. Health

Guidance - Health	A quantitative risk assessment is not required for human health
-------------------	---

4.2. Environment

Guidance - 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)
------------------------	--