LOGO

SAFETY DATA SHEET
ABC-77

According to Regulation (EC) No. 1907/2006 (REACH)

Revision: 1
Date: 11-1-2016

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

1.1 Product identifier

Product name: ABC-77

REACH Registration Number

Registration number	Substance Identification	CAS number
XXXXXXXX-XXXX-0001	TeXXXXXXXXe	XXXX-01-XX
XX-XXXXXXX-XX-0000	2-XXX2-XXX	XXX-66-XX

Formula: $X_{33}X_{14}X_3X_2$

Molecular weight: 432.1

Synonyms: CXXXXXXXie, Hxxxxxx, XXXXX-1,3,5-XXXX-1,3,5-XXXX

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

Relevant identified uses

Main use category: Industrial use

Specific use(s): Further information: see exposure scenarios attached to the safety data sheet.

Uses advised against: No additional information available.

1.3 Details of the supplier of the safety data sheet

Supplier:
XXXXX XXXXX Ltd
XXXX, XXXXX XXXX
XXXXXXX, XXXXXXXXXX
XXXXXXXX, XXXXXXXX, XXXX XXX
Tel:+XX (0) 99999 999 / 9999
XXXXX@XXXXX.net

Contact Person: XXXXX XXXX

Manufacturer:
XXXXXXX INC [XXXXXXXXXXX]
XXXX XXX XXXXX XXXX
4509 XXXX XXXX XXXXX
XXXXXXX, TN XXXXX
XXXXXX@XXXX.com

1.4 Emergency telephone number: Poison Control Centre: +XXXX-XX1-5XX0

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

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

Flam. Liq. 2	H225
Acute Tox. 4 (Dermal)	H312
Acute Tox. 4 (Inhalation)	H332
Skin Irrit. 2	H315
Eye Irrit. 2	H319
Skin Sens. 1	H317
Aquatic Chronic 2	H411

2.2 Label elements

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

Sample

Hazard pictograms

Signal Word	Danger
Hazard Statements	
H225	Highly flammable liquid and vapour.
H312	Harmful in contact with skin.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H411	Toxic to aquatic life with long lasting effects.
Precautionary Statements	
P210	Keep away from heat, hot surfaces, sparks, open flame and other ignition sources. No smoking.
P243	Take precautionary measures against static discharge.
P273	Avoid release to the environment.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P303 + P361 + P353	IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P403 + P235	Store in a well-ventilated place. Keep cool.

2.3 Other hazards

Other hazards which do not result in classification	Product does not meet criteria for PBT or vPvB in accordance with Annex XIII of Regulation (EC) No 1907/2006.

SECTION 3: Composition/information on ingredients

3.1 Substances

Not applicable.

3.2 Mixtures

Substance name	Product identifier	Percentage (wt/wt)	Classification EC 1272/2008
TeXXXXXXXXe	(CAS No.) XXXX-01-XX (EC No.) XXX-500-XXX (REACH Registration No.) XXXXXXXX-XXXX-0001	70	Flam. Liq. 2; H225 Acute Tox. 4; H302 Acute Tox. 4; H332 Acute Tox. 4; H312 Skin Irrit. 2; H315 Eye Irrit. 2; H319 Aquatic Chronic 3; H412
2-XXX2-XXX	(CAS No.) XXX-66-XX (EC No.) XX3-090-X (REACH Registration No.) XX-XXXXXXX-XX-0000	30	Flam. Liq. 2; H225 Aquatic Acute 2; H401 Skin Sens. 1; H317 Aquatic Chronic 2; H411

Sample

See section 16 for full text of Hazard Statements.

SECTION 4: First aid measures

4.1 Description of first aid measures

General	Move out of dangerous area. If you feel unwell seek medical advice. Show this safety data sheet to the doctor in attendance. Symptoms of poisoning may appear several hours later. Do not leave the victim unattended.
Inhalation	Call a physician or poison control centre immediately. Move to fresh air. If unconscious place in recovery position and seek medical advice.
Ingestion	Keep respiratory tract clear. Do NOT induce vomiting. Do not give milk or alcoholic beverages. Never give anything by mouth to an unconscious person. Get medical attention immediately.
Skin contact	Wash skin thoroughly with soap and water and rinse thoroughly or use a recognized skin cleanser. Remove contaminated clothing and shoes. If symptoms occur, get medical attention. Wash clothing before reuse.
Eye contact	Rinse cautiously with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Obtain medical attention.

4.2 Most important symptoms and effects, both acute and delayed

General information	Harmful in contact with skin and if inhaled. May cause an allergic skin reaction. Cause irritation in skin and eyes.
Inhalation	Inhalation can cause respiratory irritation.
Ingestion	May be harmful if swallowed and enters airways.
Skin contact	Exposure to skin causes irritation and sensitization.
Eye contact	Direct contact with the eyes is likely irritating.

4.3 Indication of any immediate medical attention and special treatment needed

Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media	Dry chemical. Carbon dioxide (CO2). Alcohol-resistant foam.
Unsuitable extinguishing media	High volume water jet.

5.2 Special hazards arising from the substance or mixture

In case of fire may form: Oxides of carbon and sulphur.

5.3 Advice for firefighters

Wear self-contained breathing apparatus for firefighting if necessary.
Do not spray on an open flame or any other incandescent material. Use only explosion-proof equipment. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapours). Keep away from open flames, hot surfaces and sources of ignition.

Sample

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

6.2 Environmental precautions

Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. If the product contaminates rivers and lakes or drains inform respective authorities.

6.3 Methods and material for containment and cleaning up

Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations.

6.4 Reference to other sections

See Section 7 for information on safe handling.
See Section 8 for personal protective equipment.
See Section 12 for information about ecology.
See Section 13 for waste disposal.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Avoid formation of aerosol. Do not breathe vapours/dust. Avoid exposure - obtain special instructions before use. Avoid contact with skin and eyes. See Section 8 for personal protective equipment. Smoking, eating and drinking is prohibited in areas where this product is handled, stored and processed. Take precautionary measures against static discharges. Provide sufficient air exchange and/or exhaust in work rooms. Open drum carefully as content may be under pressure. Dispose of rinse water in accordance with local and national regulations. Persons susceptible to skin sensitization problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used.

7.2 Conditions for safe storage, including any incompatibilities

Prevent unauthorized access. No smoking. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Observe label precautions. Electrical installations / working materials must comply with the technological safety standards.

7.3 Specific end use(s)

Further information: see exposure scenarios attached to this safety data sheet.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Exposure limit(s)

TeXXXXXXXXe(XXXX-01-XX)		
Germany (AGS)	AGW TWA	180 mg/m^3 (50 ppm)
Germany (AGS)	AGW STEL	180 mg/m^3 (50 ppm)
Germany (DFG)	AGW TWA	180 mg/m^3 (50 ppm)
Germany (DFG)	AGW STEL	100 mg/m^3 (360 ppm)
Switzerland	VME	180 mg/m^3 (50 ppm)
Switzerland	VLE	180 mg/m^3 (50 ppm)

Sample

8.2 Exposure controls

Appropriate engineering controls

Provide adequate ventilation. Where reasonably practicable this should be achieved by the use of local exhaust ventilation and good general extraction. If these are not sufficient to maintain concentrations of particulates and solvent vapours below the OEL, wear suitable respiratory equipment. If this product contains ingredients with exposure limits, personal monitoring to determine the effectiveness of the ventilation or other control measures and / or the necessity to use respiratory protective equipment required.

Personal Protection equipment

Gloves. Protective clothing. Safety glasses. In case of inadequate ventilation: Use respiratory protection.

Respiratory protection

Respiratory protective equipment is not normally required where there is adequate natural or local exhaust ventilation at the site to control exposure. In case of insufficient ventilation, wear suitable respiratory equipment. The correct choice of respiratory protection depends upon the chemicals and conditions of work and use, and the condition of the respiratory equipment. Security measures should be developed for every possible application.

Hand protection

Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough. Please note the information provided by the manufacturer in terms of permeability and breakthrough times and for special workplace conditions (Mechanical strain, contact duration). Please note that the duration of chemical resistant gloves may be considerably shorter than the breakthrough time measured according to EN 374 with daily use because of a large number of external influences (example: Temperature).

Eye protection

Eye wash bottle with pure water. Wear tight-fitting goggles or face shield (according to EN 166). Wear face-shield and protective suit for abnormal processing problems.

Skin and Body Protection

Choose body protection according to the amount and concentration of the dangerous substance at the work place.

General protective and hygienic measures

Wash hands at the end of each work shift and before eating, smoking and using the toilet. Promptly remove any clothing that becomes wet or contaminated. Isolate contaminated clothing and wash before reuse. No smoking in the workplace.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance

Physical state	Liquid.
Colour	Colourless.
Odour	Pungent.
Odour threshold	No data available.

Sample

pH	Not applicable.
Melting point	No data available.
Freezing point	No data available.
Initial boiling point and boiling range	85 °C (185 °F).
Flash point	< -17,8 °C (< -0,0 °F).
Evaporation rate	No data available.
Flammability (solid, gas)	No data available.
Upper / lower flammability or explosive limits	No data available.
Vapour Pressure	20,00 mbar at 20 °C (68 °F).
Relative vapour Density (Air = 1)	3,04
Relative density	0,94 at 15,6 °C (60,1 °F).
Solubility	Insoluble in water.
Partition Coefficient (N-Octanol/Water)	No data available.
Auto-ignition temperature	No data available.
Decomposition temperature	No data available.
Viscosity	Not applicable.
Explosive properties	No data available.
Oxidising properties	No data available.

9.2 Other information

Percent volatile	>99 %

SECTION 10: Stability and reactivity

10.1 Reactivity	No specific reactivity hazards associated with this product.
10.2 Chemical stability	Stable under recommended storage conditions.
10.3 Possibility of hazardous reactions	No dangerous reaction known.
10.4 Conditions to avoid	Keep away from open flames, hot surfaces and sources of ignition.
10.5 Incompatible materials	Avoid exposure to strong oxidizers.
10.6 Hazardous decomposition products	Oxides of carbon and sulphur.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute Toxicity Dermal: Harmful in contact with skin. Inhalation: Harmful if inhaled.

ABC-77	
ATE (oral)	2,600 mg/kg
ATE(dermal)	1,500 mg/kg
ATE(inhalation)	15 mg/l

Skin Corrosion/Irritation	May cause skin irritation and/or dermatitis.
Serious Eye Damage/Irritation	May cause eye irritation.
Respiratory or Skin Sensitization	May cause an allergic skin reaction.
Germ Cell Mutagenicity	Not classified.
Carcinogenicity	Not classified.
Reproductive Toxicity	Not classified.
Specific Target Organ Toxicity (Single Exposure)	Not classified.
Specific Target Organ Toxicity (Repeated	Not classified.

Sample

Exposure)

Aspiration Hazard Not classified.

SECTION 12: Ecological information

12.1 Toxicity

TeXXXXXXXXe (XXXX-01-XX)	
LC_{50} fish	>24 mg/l (Exposure time: 96 h - Species: *Danio rerio* [Method: OECD Test Guideline 203])
EC_{50} daphnia	24 mg/l (Exposure time: 48 h - Species: *Oncorhynchus mykiss* [Method: OECD Test Guideline 202])
EC_{50} algae	153,2 mg/l (Exposure time: 72 h - Species: *Pseudokirchneriella subcapitata* [Method: OECD Test Guideline 201])
2-XXX2-XXX (XXX-66-XX)	
LC_{50} fish	>34 mg/l (Exposure time: 96 h - Species: *Oncorhynchus mykiss* [Method: OECD Test Guideline 203])
EC_{50} daphnia	6,7 mg/l (Exposure time: 48 h - Species: *Daphnia magna* [Method: OECD Test Guideline 202])
EC_{50} algae	24 mg/l (Exposure time: 72 h - Species: *Pseudokirchneriella subcapitata* [Method: OECD Test Guideline 201])

12.2 Persistence and degradability This material is not expected to be readily biodegradable.

12.3 Bioaccumulative potential Bioaccumulation is unlikely.

2-XXX2-XXX (XXX-66-XX)	
BCF	12

12.4 Mobility in soil No additional information available.

12.5 Results of PBT and vPvB assessment Product does not meet criteria for PBT or vPvB in accordance with Annex XIII of Regulation (EC) No 1907/2006.

12.6 Other adverse effects An environmental hazard cannot be excluded in the event of unprofessional handling or disposal. Toxic to aquatic life with long lasting effects.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

If possible, arrange for product to be recycled. Abolition of larger amounts via an authorized person / contractor in accordance with local laws and regulations.

Product Do not discharge into drains, water courses or soil. Do not contaminate ponds, waterways or ditches with chemical or used container. Send to a licensed waste management company.

Contaminated packaging Empty remaining contents. Dispose of as unused product. Do not re-use empty containers. Do not burn, or use a cutting torch on, the empty drum.

Sample

SECTION 14: Transport information

In accordance with ADR/IMDG/IATA/ADN/RID

ADR	IMDG	IATA	ADN	RID
14.1. UN number				
3XX6	3XX6	3XX6	3XX6	3XX6
14.2 UN proper shipping name				
MXXXX MIXTURE, LIQUID, FLAMMABLE, N.O.S.,	MXXXX MIXTURE, LIQUID, FLAMMABLE, N.O.S.,	MXXXX MIXTURE, LIQUID, FLAMMABLE, N.O.S.,	MXXXX MIXTURE, LIQUID, FLAMMABLE, N.O.S.,	MXXXX MIXTURE, LIQUID, FLAMMABLE, N.O.S.,
14.3 Transport hazard class(es)				
3	3	3	3	3
				
14.4 Packing group				
II	II	II	II	II
14.5 Environmental hazards				
Dangerous for the environment: Yes	Dangerous for the environment: Yes Marine pollutant: Yes	Dangerous for the environment: Yes	Dangerous for the environment: Yes	Dangerous for the environment: Yes

14.6 Special precautions for user
No additional information available.
14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code
Not applicable

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
Relevant information regarding the European legislation

EU Regulation (EC) No. 1907/2006 (REACH) Regulation (EC) no.1907/2006 of the European Parliament and of the Council regarding the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) Regulation.

Regulation (EC) No. 1272/2008 of the European parliament and of the council on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006.

Commission regulation (EU) No 453/2010, amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH).

European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR).

Sample

Regulation referring to the International Carriage of Dangerous Goods by Rail (RID).

EU Regulation (EC) No. 1907/2006 (REACH)

Annex XIV - Authorisation List

Contains no REACH Annex XIV substances.

Candidate List of substances of very high concern for Authorisation

Contains no substance on the REACH candidate list.

Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles

Contains no substances with Annex XVII restrictions.

Percent volatile	>99%
EU Inventory	Listed

15.2 Chemical Safety Assessment

A Chemical Safety Assessment has been carried out for TeXXXXXXXXe (XXXX-01-XX) and 2-XXX2-XXX (XXX-66-XX).

SECTION 16: Other information

Revision Date	11-Jan-2016
Version	1
Abbreviations and acronyms	
Flam. Liq.2	Flammable liquid Category 2
Acute Tox.4 (Oral)	Acute toxicity (Oral) Category 4
Acute Tox.4 (Dermal)	Acute toxicity (Dermal) Category 4
Acute Tox.4 (Inhalation)	Acute Tox.4 (Inhalation) Category 4
Skin Irrit.2	Skin Irritation Category 2
Eye Irrit.2	Eye Irritation Category 2
Skin Sens.1	Skin Sensitization Category 1
Aquatic Acute 2	Hazardous to aquatic environment - Acute Hazard Category 2
Aquatic Chronic 2	Hazardous to aquatic environment - Chronic Hazard Category 2
ATE	Acute Toxicity Estimate
Hazard Statements In Full	
H225	Highly flammable liquid and vapour.
H302	Harmful if swallowed.
H312	Harmful in contact with skin.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H401	Toxic to aquatic life.
H411	Toxic to aquatic life with long lasting effects.
H412	Harmful to aquatic life with long lasting effects.

Disclaimer

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.

Sample

ABC-77

ANNEX: EXPOSURE SCENARIO

Exposure Scenario(ES) Number	Life cycle stage covered by ES			Sector of Use (SU)	Product Category (PC) or Article category (AC)	Process category (PROC)	Environmental Release Category (ERC)
	Formulation	Use at Industrial site	Use by professional worker				
ES 1 Manufacture		X		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	PC 20: Odorant	PROC 1 PROC 3 PROC 8b PROC 15	ERC 1 ERC 4
ES2 Distribution		X		SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites	PC11: Odorant	PROC 1 PROC 2 PROC 3 PROC 4	ERC 1 ERC 2

Sample

EXPOSURE SCENARIO 1: MANUFACTURE

1. Manufacture	
Environment Contributing Scenario(s)	
CS1: Manufacture of substances	ERC 1
CS2: Industrial use of processing aids in processes and products, not becoming part of articles	ERC 4
Worker Contributing Scenario(s)	
CS3: Use in closed process, no likelihood of exposure	PROC 1
CS4: Use in closed batch process (synthesis or	PROC 3

formulation)	
CS5: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities	PROC 8b
CS6: Use as laboratory reagent	PROC 15
Further information	Lead substance(s) EC-No. XXX-500-XXX EC-No. XX3-090-X Manufacture of the substance or use as an intermediate or process chemical or extraction agent. Includes recycling/ recovery, material transfers, storage, sampling, associated laboratory activities, maintenance and loading (including marine vessel/barge, road/rail car and bulk container).

2. Conditions of use affecting exposure

CS1: Control of environmental exposure: Manufacture of substances (ERC 1)

Product characteristics	Liquid
Amount used, frequency and duration of use (or from service life)	
Daily use at site	<= 1 tonnes/day
Annual use at a site	<= 190 tonnes/year
Percentage of tonnage used at regional scale	100 %
Conditions and measures related to sewage treatment plant	
Flow rate of sewage treatment plant effluent	2,000 m^3/d
Conditions and measures related to treatment of waste	
Waste disposal according to national/local legislation is sufficient.	
Environment factors not influenced by risk management	
Discharge rate of effluent	18,000 m^3/d
Dilution factor (River)	10
Dilution factor (Coastal areas)	100
Other operational conditions affecting environmental exposure	
Number of emission days per year	365
Emission or Release Factor	Water-0%
Emission or Release Factor	Soil-0.01%
Technical conditions and Organizational measures	
Treat air emission to provide the required removal efficiency of (%): (Effectiveness: > 99,9 %). Wastewater emission controls are not applicable as there is no direct release to wastewater. Prevent environmental discharge consistent with regulatory requirements.	
Conditions and measures related to external treatment of waste for disposal and recovery	
External treatment and disposal of waste should comply with applicable local and/or national regulations. External recovery and recycling of waste should comply with applicable local and/or national regulations.	

CS2: Control of environmental exposure: Industrial use of processing aids in processes and products, not becoming part of articles (ERC 4)

Product characteristics	Liquid
Amount used, frequency and duration of use (or from service life)	
Daily use at site	<= 1 tonnes/day
Annual use at a site	<= 190 tonnes/year
Percentage of tonnage used at regional scale	100 %

Sample

Conditions and measures related to sewage treatment plant	
Flow rate of sewage treatment plant effluent	2,000 m^3/d
Conditions and measures related to treatment of waste	
Waste disposal according to national/local legislation is sufficient.	
Environment factors not influenced by risk management	
Discharge rate of effluent	18,000 m^3/d
Dilution factor (River)	10
Dilution factor (Coastal areas)	100
Other operational conditions affecting environmental exposure	
Number of emission days per year	365
Emission or Release Factor	Water-0%
Emission or Release Factor	Soil-0.01%
Technical conditions and Organisational measures	
Treat air emission to provide the required removal efficiency of (%): (Effectiveness: > 99,9 %). Wastewater emission controls are not applicable as there is no direct release to wastewater. Prevent environmental discharge consistent with regulatory requirements.	
Conditions and measures related to external treatment of waste for disposal and recovery	
External treatment and disposal of waste should comply with applicable local and/or national regulations. External recovery and recycling of waste should comply with applicable local and/or national regulations.	
CS3: Control of worker exposure: Use in closed process, no likelihood of exposure (PROC 1)	
Product characteristics	Liquid, vapour pressure 0.5 - 10 kPa at STP
Amount used, frequency and duration of use/exposure	
Frequency	Covers daily exposures up to 8 hours
Technical and organisational conditions and measures	
Handle substance within a closed system. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)	
Conditions and measures related to personal protection, hygiene and health evaluation	
Wear suitable gloves tested to EN374.	
Other conditions affecting workers exposure	
Assumes a good basic standard of occupational hygiene is implemented. Assumes use at not more than 20°C above ambient temperature, unless stated differently.	
Technical conditions and measures to control dispersal from source towards the worker	
General protection measures: Provide sufficient ventilation and/or renewal in the workshops.	
Organisational measures to prevent/limit releases, dispersals, and exposures	
Locate bulk storage outdoors. 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.	
CS4: Control of worker exposure: Use in closed batch process (synthesis or formulation) (PROC 3)	
Product characteristics	Liquid, vapour pressure 0.5 - 10 kPa at STP
Amount used frequency and duration of use/exposure	
Frequency	Covers daily exposures up to 8 hours
Technical and organisational conditions and measures	
Handle substance within a closed system. Ensure material transfers are under containment or extract ventilation.	
Conditions and measures related to personal protection, hygiene and health evaluation	

Wear suitable gloves tested to EN374.	
Other conditions affecting workers exposure	
Assumes a good basic standard of occupational hygiene is implemented. Assumes use at not more than 20°C above ambient temperature, unless stated differently.	
Technical conditions and measures to control dispersal from source towards the worker	
General protection measures: Provide sufficient ventilation and/or renewal in the workshops.	
Organisational measures to prevent/limit releases, dispersals, and exposures	
Locate bulk storage outdoors. 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.	
CS5: Control of worker exposure: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities (PROC 8b)	
Product characteristics	Liquid, vapour pressure 0.5 - 10 kPa at STP
Amount used, frequency and duration of use/exposure	
Frequency	Covers daily exposures up to 8 hours
Technical and organisational conditions and measures	
Ensure material transfers are under containment or extract ventilation.	
Conditions and measures related to personal protection, hygiene and health evaluation	
Wear suitable gloves tested to EN374.	
Other conditions affecting workers exposure	
Assumes a good basic standard of occupational hygiene is implemented. Assumes use at not more than 20°C above ambient temperature, unless stated differently.	
Technical conditions and measures to control dispersal from source towards the worker	
General protection measures: Provide sufficient ventilation and/or renewal in the workshops.	
Organisational measures to prevent/limit releases, dispersals, and exposures	
Locate bulk storage outdoors. 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.	
CS6: Control of worker exposure: Use as laboratory reagent (PROC 15)	
Product characteristics	Liquid, vapour pressure 0.5 - 10 kPa at STP
Amount used, frequency and duration of use/exposure	
Frequency	Covers daily exposures up to 8 hours
Technical and organisational conditions and measures	
Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure.	
Conditions and measures related to personal protection, hygiene and health evaluation	
Wear suitable gloves tested to EN374.	
Other conditions affecting workers exposure	
Assumes a good basic standard of occupational hygiene is implemented. Assumes use at not more than 20°C above ambient temperature, unless stated differently.	
Technical conditions and measures to control dispersal from source towards the worker	
General protection measures: Provide sufficient ventilation and/or renewal in the workshops.	
Organisational measures to prevent/limit releases, dispersals, and exposures	
Locate bulk storage outdoors. 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.	
3. Exposure estimation and reference to its source	

Environment

The environmental exposure estimation was calculated using the EUSES software.

Control of environmental exposure

ERC 1: Manufacture of substances

ERC 4: Industrial use of processing aids in processes and products, not becoming part of articles

Contributing scenario	Environment exposure	Exposure level	Ratio
ERC 1, ERC 4	Freshwater	0,413 ng/L	0,000062
ERC 1, ERC 4	Marine water	0,0348 ng/L	0,000052
ERC 1, ERC 4	Freshwater sediment	1,7 ng/kg	0,000146
ERC 1, ERC 4	Marine sediment	0,143 ng/kg	0,000123
ERC 1, ERC 4	Soil	0,514 ng/kg	0,000074

Workers

The worker exposure estimate was calculated using ECETOC TRA Modified software.

Control of worker exposure

PROC1: Use in closed process, no likelihood of exposure

CS15: General exposures (closed systems)

CS54: Continuous process

CS57: No sampling

CS67: Storage

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

CS15: General exposures (closed systems)

CS2: Process sampling

CS55: Batch process

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

CS14: Bulk transfers

CS2: Process sampling

PROC15: Use as laboratory reagent

CS36: Laboratory activities

Contributing scenario	Worker exposure	Exposure level	Ratio
PROC1, CS15, CS54, CS57	Inhalation - Long-term Systemic	0,01 ppm	0
	Dermal - Long-term Systemic	0,03 mg/kg/d	0
PROC1, CS67	Inhalation - Long-term Systemic	7 ppm	0,1
	Dermal - Long-term Systemic	0,03 mg/kg/d	0,0
PROC3, CS15, CS2, CS55	Inhalation - Long-term Systemic	2,5 ppm	0,1
	Dermal - Long-term Systemic	0,034 mg/kg/d	0,0
PROC8b, CS14, CS2	Inhalation - Long-term Systemic	5 ppm	0,1
	Dermal - Long-term Systemic	0,686 mg/kg/d	0,1

Sample

PROC15, CS36	Inhalation - Long-term Systemic	1 ppm	0,0
	Dermal - Long-term Systemic	0,034 mg/kg/d	0,0

4. Guidance to downstream user to evaluate whether he works inside the boundaries set by the exposure scenario
-Confirm that RMMs and OCs are as described or of equivalent efficiency.
-RMMs and OCs are described in adequate documentation at site level and efficiency is checked on a regular basis.
-When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted PNECs and the resulting risk characterization ratios are expected to be less than 1.

EXPOSURE SCENARIO 2: DISTRIBUTION

1. Distribution	
Environment Contributing Scenario(s)	
CS1: Manufacture of substances	ERC 1
CS2: Formulation of preparations	ERC 2
Worker Contributing Scenario(s)	
CS3: Use in closed process, no likelihood of exposure	PROC 1
CS4: Use in closed, continuous process with occasional controlled exposure	PROC 2
CS5: Use in closed batch process (synthesis or formulation)	PROC 3
CS6: Use in batch and other process (synthesis) where opportunity for exposure arises	PROC 4
Further information	Lead substance(s) EC-No. XXX-500-XXX EC-No. XX3-090-X Distribution of Substance: loading (including marine vessel/barge, rail/road car IBC loading), and repacking including drums and small packs of substance, including its distribution and associated laboratory activities.

2. Conditions of use affecting exposure	
CS1: Control of environmental exposure: Manufacture of substances (ERC 1)	
Product characteristics	Liquid
Amount used, frequency and duration of use (or from service life)	
Daily use at site	<= 1.25 tonnes/day
Annual use at a site	<= 25 tonnes/year
Percentage of tonnage used at regional scale	100 %

Sample

Conditions and measures related to sewage treatment plant	
Flow rate of sewage treatment plant effluent	2,000 m^3/d
Conditions and measures related to treatment of waste	
Waste disposal according to national/local legislation is sufficient.	
Environment factors not influenced by risk management	
Discharge rate of effluent	18,000 m^3/d
Dilution factor (River)	10
Dilution factor (Coastal areas)	100
Other conditions affecting environmental exposure	
Number of emission days per year	300
Emission or Release Factor	Air-0,01%
Emission or Release Factor	Water-0,001%
Emission or Release Factor	Soil-0,001%
Technical conditions and Organisational measures	
Treat air emission to provide the required removal efficiency of (%): (Effectiveness: > 99,9 %). Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of ≥ (%): (Effectiveness: 99,9 %).	
Conditions and measures related to external treatment of waste for disposal and recovery	
External treatment and disposal of waste should comply with applicable local and/or national regulations. External recovery and recycling of waste should comply with applicable local and/or national regulations.	
CS2: Control of environmental exposure: Formulation of preparations (ERC 2)	
Product characteristics	Liquid
Amount used, frequency and duration of use (or from service life)	
Daily use at site	<= 1.25 tonnes/day
Annual use at a site	<= 25 tonnes/year
Percentage of tonnage used at regional scale	100 %
Conditions and measures related to sewage treatment plant	
Flow rate of sewage treatment plant effluent	2,000 m^3/d
Conditions and measures related to treatment of waste	
Waste disposal according to national/local legislation is sufficient.	
Environment factors not influenced by risk management	
Discharge rate of effluent	18,000 m^3/d
Dilution factor (River)	10
Dilution factor (Coastal areas)	100
Other conditions affecting environmental exposure	
Number of emission days per year	300
Emission or Release Factor	Air-0,01%
Emission or Release Factor	Water-0,001%
Emission or Release Factor	Soil-0,001%
Technical conditions and Organisational measures	
Treat air emission to provide the required removal efficiency of (%): (Effectiveness: > 99,9 %). Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of ≥ (%): (Effectiveness: 99,9 %).	
Conditions and measures related to external treatment of waste for disposal and recovery	
External treatment and disposal of waste should comply with applicable local and/or national regulations. External recovery and recycling of waste should comply with applicable local and/or national regulations.	
CS3: Control of worker exposure: Use in closed process, no likelihood of exposure	

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(PROC 1)	
Product characteristics	Liquid, vapour pressure 0.5 - 10 kPa at STP
Amount used, frequency and duration of use/exposure	
Frequency	Covers daily exposures up to 8 hours
Technical and organisational conditions and measures	
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Handle substance within a closed system.	
Conditions and measures related to personal protection, hygiene and health evaluation	
Wear suitable gloves tested to EN374.	
Other conditions affecting workers exposure	
Assumes a good basic standard of occupational hygiene is implemented. Assumes use at not more than 20°C above ambient temperature, unless stated differently.	
Technical conditions and measures to control dispersal from source towards the worker	
General protection measures: Provide sufficient ventilation and/or renewal in the workshops.	
Organisational measures to prevent/limit releases, dispersals, and exposures	
Locate bulk storage outdoors. 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.	
CS4: Control of worker exposure: Use in closed, continuous process with occasional controlled exposure (PROC 2)	
Product characteristics	Liquid, vapour pressure 0.5 - 10 kPa at STP
Amount used, frequency and duration of use/exposure	
Frequency	Covers daily exposures up to 8 hours
Technical and organisational conditions and measures	
Handle substance within a closed system. Ensure operation is undertaken outdoors. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).	
Conditions and measures related to personal protection, hygiene and health evaluation	
Wear suitable gloves tested to EN374.	
Other conditions affecting workers exposure	
Assumes a good basic standard of occupational hygiene is implemented. Assumes use at not more than 20°C above ambient temperature, unless stated differently.	
Technical conditions and measures to control dispersal from source towards the worker	
General protection measures: Provide sufficient ventilation and/or renewal in the workshops.	
Organisational measures to prevent/limit releases, dispersals, and exposures	
Locate bulk storage outdoors. 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.	
CS5: Control of worker exposure: Use in closed batch process (synthesis or formulation) (PROC 3)	
Product characteristics	Liquid, vapour pressure 0.5 - 10 kPa at STP
Amount used, frequency and duration of use/exposure	
Frequency	Covers daily exposures up to 8 hours
Technical and organisational conditions and measures	
Handle substance within a closed system. Ensure material transfers are under containment or extract ventilation.	
Conditions and measures related to personal protection, hygiene and health evaluation	
Wear suitable gloves tested to EN374.	

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Other conditions affecting workers exposure
Assumes a good basic standard of occupational hygiene is implemented, Assumes use at not more than 20°C above ambient temperature, unless stated differently.
Technical conditions and measures to control dispersal from source towards the worker
General protection measures: Provide sufficient ventilation and/or renewal in the workshops.
Organisational measures to prevent/limit releases, dispersals, and exposures
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.

CS6: Control of worker exposure: Use in batch and other process (synthesis) where opportunity for exposure arises (PROC 4)

Product characteristics	Liquid, vapour pressure 0.5 - 10 kPa at STP
Amount used, frequency and duration of use/exposure	
Frequency	Covers daily exposures up to 8 hours

Technical and organisational conditions and measures
Ensure material transfers are under containment or extract ventilation.
Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374.
Other conditions affecting workers exposure
Assumes a good basic standard of occupational hygiene is implemented. Assumes use at not more than 20°C above ambient temperature, unless stated differently.
Technical conditions and measures to control dispersal from source towards the worker
General protection measures: Provide sufficient ventilation and/or renewal in the workshops.
Organisational measures to prevent/limit releases, dispersals, and exposures
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.

3. Exposure estimation and reference to its source

Environment

The environmental exposure estimation was calculated using the EUSES software.

Control of environmental exposure

ERC 1: Manufacture of substances

ERC 2: Formulation of preparations

Contributing scenario	Environment exposure	Exposure level	Ratio
ERC 1, ERC 2	Freshwater	0,107 ng/L	0,016
ERC 1, ERC 2	Marine water	0,10 ng/L	0,149
ERC 1, ERC 2	Freshwater sediment	0,124 ng/kg	0,0379
ERC 1, ERC 2	Marine sediment	0,133 ng/kg	0,354
ERC 1, ERC 2	Soil	1,61 ng/kg	0,236

Workers

The worker exposure estimate was calculated using ECETOC TRA Modified software.

Control of worker exposure

PROC1: Use in closed process, no likelihood of exposure

CS15: General exposures (closed systems)

CS54: Continuous process

Sample

CS57: no sampling
CS67: Storage
PROC2: Use in closed, continuous process with occasional controlled exposure
CS107: (closed systems)
CS38: Use in contained systems
CS67: Storage
PROC3: Use in closed batch process (synthesis or formulation)
CS2: Process sampling
CS15: General exposures (closed systems)
CS55: Batch process
PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises
CS16: General exposures (open systems)

Contributing scenario	Worker exposure	Exposure level	Ratio
PROC1, CS15, CS54, CS57	Inhalation - Long-term Systemic	0,01 ppm	0
	Dermal - Long-term Systemic	0,03 mg/kg/d	0
PROC1, CS67	Inhalation - Long-term Systemic	7 ppm	0,1
	Dermal - Long-term Systemic	1,37 mg/kg/d	0,2
PROC2, CS15, CS54, CS56, CS67	Inhalation - Long-term Systemic	7 ppm	0,1
	Dermal - Long-term Systemic	1,37 mg/kg/d	0,2
PROC3, CS2, CS15, CS55	Inhalation - Long-term Systemic	2,5 ppm	0,1
	Dermal - Long-term Systemic	0,034 mg/kg/d	0,0
PROC4, CS16	Inhalation - Long-term Systemic	2 ppm	0,0
	Dermal - Long-term Systemic	0,686 mg/kg/d	0,1

4. Guidance to downstream user to evaluate whether he works inside the boundaries set by the exposure scenario

-Confirm that RMMs and OCs are as described or of equivalent efficiency.

-RMMs and OCs are described in adequate documentation at site level and efficiency is checked on a regular basis.

-When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted PNECs and the resulting risk characterization ratios are expected to be less than 1.

Sample