Safety Data Sheet

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

o-Xylene

Version number: GHS 1.2 Date of compilation: 03.02.2022

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

1.1 Product identifier

Identification of the substance	**o-Xylene**
Registration number (REACH)	01-2119485822-30-xxxx
EC number	202-422-2
CAS number	95-47-6
Product number	RDG-7703

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

Relevant identified uses	Distribution Formulation Manufacture of substance Rubber production and processing Use as an intermediate Use as binders and release agents Use in cleaning agents Use in oil and gas field drilling and production operations Use in coatings Laboratory use
Uses advised against	Do not use for products which come into contact with foodstuffs. Do not use for private purposes (household).

1.3 Details of the supplier of the safety data sheet

Rosneft Deutschland GmbH
Behrenstr. 18
10117 Berlin
Germany

Telephone: +49 30 70014 2597
e-mail: hseq@rosneft.de
Website: www.rosneft.de

e-mail (competent person) hseq@rosneft.de

1.4 Emergency telephone number

Poison centre

Country	Name	Telephone	Opening hours
Germany	Giftnotruf München	0049 - 89 -19240	Mon - Fri 00:00 - 23:59

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

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

Section	Hazard class	Category	Hazard class and category	Hazard statement
2.6	flammable liquid	3	Flam. Liq. 3	H226
3.1D	acute toxicity (dermal)	4	Acute Tox. 4	H312
3.1I	acute toxicity (inhal.)	4	Acute Tox. 4	H332
3.2	skin corrosion/irritation	2	Skin Irrit. 2	H315
3.3	serious eye damage/eye irritation	2	Eye Irrit. 2	H319
3.8R	specific target organ toxicity - single exposure (respiratory tract irritation)	3	STOT SE 3	H335
3.10	aspiration hazard	1	Asp. Tox. 1	H304
4.1C	hazardous to the aquatic environment - chronic hazard	3	Aquatic Chronic 3	H412

For full text of abbreviations: see SECTION 16.

The most important adverse physicochemical, human health and environmental effects

The product is combustible and can be ignited by potential ignition sources. Spillage and fire water can cause pollution of watercourses.

2.2 Label elements

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

- Signal word danger

- Pictograms

GHS02, GHS07, GHS08 

- Hazard statements

H226	Flammable liquid and vapour.
H304	May be fatal if swallowed and enters airways.
H312+H332	Harmful in contact with skin or if inhaled.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
H412	Harmful to aquatic life with long lasting effects.

- Precautionary statements

P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P301+P310	IF SWALLOWED: Immediately call a POISON CENTER/doctor.
P331	Do NOT induce vomiting.
P370+P378	In case of fire: Use sand, carbon dioxide or powder extinguisher to extinguish.
P403+P233	Store in a well-ventilated place. Keep container tightly closed.
P403+P235	Store in a well-ventilated place. Keep cool.

2.3 Other hazards

Results of PBT and vPvB assessment

According to the results of its assessment, this substance is not a PBT or a vPvB.

SECTION 3: Composition/information on ingredients

3.1 Substances

Name of substance	o-xylene
Identifiers	
REACH Reg. No	01-2119485822-30-xxxx
CAS No	95-47-6
EC No	202-422-2
Index No	601-022-00-9
Purity	>99 %

Specific Conc. Limits	M-Factors	ATE	Exposure route
-	-	1.100 $^{mg}/_{kg}$ 11 $^{mg}/_{l}$/4h	dermal inhalation: vapour

Molecular formula	C8H10
Molar mass	106,2 $^{g}/_{mol}$

SECTION 4: First aid measures

4.1 Description of first aid measures

General notes

Do not leave affected person unattended. Remove victim out of the danger area. Keep affected person warm, still and covered. Take off immediately all contaminated clothing. In all cases of doubt, or when symptoms persist, seek medical advice. In case of unconsciousness place person in the recovery position. Never give anything by mouth.

Following inhalation

If breathing is irregular or stopped, immediately seek medical assistance and start first aid actions. In case of respiratory tract irritation, consult a physician. Provide fresh air.

Following skin contact

Wash with plenty of soap and water.

Following eye contact

Remove contact lenses, if present and easy to do. Continue rinsing. Irrigate copiously with clean, fresh water for at least 10 minutes, holding the eyelids apart.

Following ingestion

Rinse mouth with water (only if the person is conscious). Do NOT induce vomiting.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms and effects are not known to date.

4.3 Indication of any immediate medical attention and special treatment needed

none

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

Water spray, BC-powder, Carbon dioxide (CO2)

Unsuitable extinguishing media

Water jet

5.2 Special hazards arising from the substance or mixture

In case of insufficient ventilation and/or in use, may form flammable/explosive vapour-air mixture. Solvent vapours are heavier than air and may spread along floors. Places which are not ventilated, e.g. unventilated below ground level areas such as trenches, conduits and shafts, are particularly prone to the presence of flammable substances or mixtures.

Hazardous combustion products

Carbon monoxide (CO), Carbon dioxide (CO2)

5.3 Advice for firefighters

In case of fire and/or explosion do not breathe fumes. Co-ordinate firefighting measures to the fire surroundings. Do not allow firefighting water to enter drains or water courses. Collect contaminated firefighting water separately. Fight fire with normal precautions from a reasonable distance.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Remove persons to safety.

For emergency responders

Wear breathing apparatus if exposed to vapours/dust/spray/gases.

6.2 Environmental precautions

Keep away from drains, surface and ground water. Retain contaminated washing water and dispose of it.

6.3 Methods and material for containment and cleaning up

Advice on how to contain a spill

Covering of drains

Advice on how to clean up a spill

Wipe up with absorbent material (e.g. cloth, fleece). Collect spillage: sawdust, kieselgur (diatomite), sand, universal binder

Appropriate containment techniques

Use of adsorbent materials.

Other information relating to spills and releases

Place in appropriate containers for disposal. Ventilate affected area.

6.4 Reference to other sections

Hazardous combustion products: see section 5. Personal protective equipment: see section 8. Incompatible materials: see section 10. Disposal considerations: see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Recommendations

- Measures to prevent fire as well as aerosol and dust generation

Use local and general ventilation. Avoidance of ignition sources. Keep away from sources of ignition - No smoking. Take precautionary measures against static discharge. Use only in well-ventilated areas. Due to danger of explosion, prevent leakage of vapours into cellars, flues and ditches. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting/equipment. Use only non-sparking tools.

- Specific notes/details

Places which are not ventilated, e.g. unventilated below ground level areas such as trenches, conduits and shafts, are particularly prone to the presence of flammable substances or mixtures. Vapours are heavier than air, spread along floors and form explosive mixtures with air. Vapours may form explosive mixtures with air.

Advice on general occupational hygiene

Wash hands after use. Do not eat, drink and smoke in work areas. Remove contaminated clothing and protective equipment before entering eating areas. Never keep food or drink in the vicinity of chemicals. Never place chemicals in containers that are normally used for food or drink. Keep away from food, drink and animal feedingstuffs.

7.2 Conditions for safe storage, including any incompatibilities

Managing of associated risks

- Explosive atmospheres

Keep container tightly closed and in a well-ventilated place. Use local and general ventilation. Keep cool. Protect from sunlight.

- Flammability hazards

Keep away from sources of ignition - No smoking. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Take precautionary measures against static discharge. Protect from sunlight.

- Ventilation requirements

Keep any substance that emits harmful vapours or gases in a place that allows these to be permanently extracted. Use local and general ventilation. Ground/bond container and receiving equipment.

- Packaging compatibilities

Only packagings which are approved (e.g. acc. to ADR) may be used.

7.3 Specific end use(s)

See section 16 for a general overview.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limit values (Workplace Exposure Limits)

Country	Name of agent	CAS No	Identifier	TWA [ppm]	TWA [mg/m³]	STEL [ppm]	STEL [mg/m³]	Ceiling-C [ppm]	Ceiling-C [mg/m³]	Notation	Source
DE	xylene, mixture of isomers	95-47-6	MAK	50	220	100	440				DFG
DE	o-xylene	95-47-6	AGW	50	220	100	440			H	TRGS 900
EU	o-xylene	95-47-6	IOELV	50	221	100	442				2000/39/EC

Notation

Ceiling-C	ceiling value is a limit value above which exposure should not occur
H	absorbed through the skin

Notation	
STEL	short-term exposure limit: a limit value above which exposure should not occur and which is related to a 15-minute period (unless otherwise specified)
TWA	time-weighted average (long-term exposure limit): measured or calculated in relation to a reference period of 8 hours time-weighted average (unless otherwise specified)

Biological limit values

Country	Name of agent	Parameter	Notation	Identifier	Value	Source
DE	xylene, mixture of isomers	methylhippuric acids		BAT	2.000 mg/l	DFG
DE	xylene, mixture of isomers	methylhippuric acids		BLV	2.000 mg/l	TRGS 903

8.2 Exposure controls

Appropriate engineering controls

General ventilation.

Individual protection measures (personal protective equipment)

Eye/face protection

Wear eye/face protection.

Skin protection

- Hand protection

Wear suitable gloves. Chemical protection gloves are suitable, which are tested according to EN 374. Check leak-tightness/impermeability prior to use. In the case of wanting to use the gloves again, clean them before taking off and air them well. For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves.

- Other protection measures

Take recovery periods for skin regeneration. Preventive skin protection (barrier creams/ointments) is recommended. Wash hands thoroughly after handling.

Respiratory protection

In case of inadequate ventilation wear respiratory protection.

Environmental exposure controls

Use appropriate container to avoid environmental contamination. Keep away from drains, surface and ground water.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	liquid
Colour	colourless
Odour	mild sweet
Melting point/freezing point	-25,2 °C at 1.013 hPa
Boiling point or initial boiling point and boiling range	144,5 °C at 1.013 hPa
Flammability	flammable liquid in accordance with GHS criteria
Lower and upper explosion limit	0,9 vol% - 6,7 vol%

Flash point	32 °C at 1.013 hPa
Auto-ignition temperature	463 °C at 1.013 hPa (ECHA) (auto-ignition temperature (liquids and gases))
Decomposition temperature	not relevant
pH (value)	not determined
Kinematic viscosity	0,6756 $^{mm^2}/_{s}$ at 25 °C

Solubility(ies)

Water solubility	170,5 $^{mg}/_{l}$ at 25 °C

Partition coefficient

Partition coefficient n-octanol/water (log value)	3,12 (pH value: 7, 20 °C) (ECHA)

Vapour pressure	0,88 kPa at 25 °C

Density and/or relative density

Density	879 – 885 $^{kg}/_{m^3}$ at 15 °C
Relative vapour density	information on this property is not available

Particle characteristics	not relevant (liquid)

9.2 Other information

Information with regard to physical hazard classes	there is no additional information

Other safety characteristics

Gas group (explosion group)	IIA (Maximum Experimental Safe Gap value; MESG > 0,9 mm)
Solvent content	100 %
Temperature class (EU, acc. to ATEX)	T1 (maximum permissible surface temperature on the equipment: 450°C)

SECTION 10: Stability and reactivity

10.1 Reactivity

Concerning incompatibility: see below "Conditions to avoid" and "Incompatible materials". It's a reactive substance. The mixture contains reactive substance(s). Risk of ignition.

If heated:

Risk of ignition

10.2 Chemical stability

See below "Conditions to avoid".

10.3 Possibility of hazardous reactions

No known hazardous reactions.

10.4 Conditions to avoid

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

Hints to prevent fire or explosion

Use explosion-proof electrical/ventilating/lighting/equipment. Use only non-sparking tools. Take precautionary measures against static discharge.

10.5 Incompatible materials

Oxidisers

10.6 Hazardous decomposition products

Reasonably anticipated hazardous decomposition products produced as a result of use, storage, spill and heating are not known. Hazardous combustion products: see section 5.

SECTION 11: Toxicological information

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

Classification according to GHS (1272/2008/EC, CLP)

Acute toxicity

Harmful in contact with skin. Harmful if inhaled.

GHS of the United Nations, annex 4: May be harmful if swallowed.

- Acute toxicity estimate (ATE)

Dermal	1.100 $^{mg}/_{kg}$
Inhalation: vapour	11 $^{mg}/_{l}$/4h

Skin corrosion/irritation

Causes skin irritation.

Serious eye damage/eye irritation

Causes serious eye irritation.

Respiratory or skin sensitisation

Shall not be classified as a respiratory or skin sensitiser.

Germ cell mutagenicity

Shall not be classified as germ cell mutagenic.

Carcinogenicity

Shall not be classified as carcinogenic.

Reproductive toxicity

Shall not be classified as a reproductive toxicant.

Specific target organ toxicity - single exposure

May cause respiratory irritation.

Specific target organ toxicity - repeated exposure

Shall not be classified as a specific target organ toxicant (repeated exposure).

Aspiration hazard

May be fatal if swallowed and enters airways.

11.2 Information on other hazards

There is no additional information.

SECTION 12: Ecological information

12.1 Toxicity

Acc. to 1272/2008/EC: Harmful to aquatic life with long lasting effects.
Verordnung über Anlagen zum Umgang mit wassergefährdenden Stoffen (Ordinance on facilities for handling substances hazardous to water) (AwSV): WGK 2, hazardous to water (Germany)

Aquatic toxicity (chronic)

Endpoint	Value	Species	Exposure time
EL50	2,9 $^{mg}/_{l}$	aquatic invertebrates	21 d
ErC50	4,36 $^{mg}/_{l}$	algae	73 h
EC50	2,2 $^{mg}/_{l}$	algae	73 h

12.2 Persistence and degradability

Process of degradability

Process	Degradation rate	Time
oxygen depletion	90 %	28 d

12.3 Bioaccumulative potential

Data are not available.

n-octanol/water (log KOW)	3,12 (pH value: 7, 20 °C) (ECHA)
BCF	>5,5 – <12,2 (ECHA)

12.4 Mobility in soil

Henry's law constant	623 $^{Pa\ m^3}/_{mol}$ at 25 °C

12.5 Results of PBT and vPvB assessment

Data are not available.

12.6 Endocrine disrupting properties

Not listed.

12.7 Other adverse effects

Data are not available.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Waste treatment-relevant information

Solvent reclamation/regeneration.

Sewage disposal-relevant information

Do not empty into drains. Avoid release to the environment. Refer to special instructions/safety data sheets.

Waste treatment of containers/packagings

It is a dangerous waste; only packagings which are approved (e.g. acc. to ADR) may be used. Completely emptied packages can be recycled. Handle contaminated packages in the same way as the substance itself.

Remarks

Please consider the relevant national or regional provisions. Waste shall be separated into the categories that can be handled separately by the local or national waste management facilities.

SECTION 14: Transport information

14.1 UN number or ID number

ADR/RID/ADN	UN 1307
IMDG-Code	UN 1307
ICAO-TI	UN 1307

14.2 UN proper shipping name

ADR/RID/ADN	XYLENES
IMDG-Code	XYLENES
ICAO-TI	Xylenes

14.3 Transport hazard class(es)

ADR/RID/ADN	3
IMDG-Code	3
ICAO-TI	3

14.4 Packing group

ADR/RID/ADN	III
IMDG-Code	III
ICAO-TI	III

14.5 Environmental hazards

non-environmentally hazardous acc. to the dangerous goods regulations

14.6 Special precautions for user

Provisions for dangerous goods (ADR) should be complied within the premises.

14.7 Maritime transport in bulk according to IMO instruments

The cargo is not intended to be carried in bulk.

Information for each of the UN Model Regulations

Transport of dangerous goods by road, rail and inland waterway (ADR/RID/ADN) - Additional information

Classification code	F1
Danger label(s)	3

Excepted quantities (EQ)	E1
Limited quantities (LQ)	5 L
Transport category (TC)	3
Tunnel restriction code (TRC)	D/E
Hazard identification No	30
ADN	Table C: 3+N2

International Maritime Dangerous Goods Code (IMDG) - Additional information

Marine pollutant	-
Danger label(s)	3

Special provisions (SP)	223
Excepted quantities (EQ)	E1
Limited quantities (LQ)	5 L
EmS	F-E, S-D
Stowage category	A

International Civil Aviation Organization (ICAO-IATA/DGR) - Additional information

Danger label(s)	3

Special provisions (SP)	A3
Excepted quantities (EQ)	E1
Limited quantities (LQ)	10 L

SECTION 15: Regulatory information

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

Relevant provisions of the European Union (EU)

Restrictions according to REACH, Annex XVII

Dangerous substances with restrictions (REACH, Annex XVII)

Name of substance	Name acc. to inventory	CAS No	Restriction	No
o-xylene	this product meets the criteria for classification in accordance with Regulation No 1272/2008/EC		R3	3
o-xylene	flammable / pyrophoric		R40	40
o-xylene	substances in tattoo inks and permanent make-up		R75	75

Legend

R3 1. Shall not be used in:
- ornamental articles intended to produce light or colour effects by means of different phases, for example in ornamental lamps and ashtrays,
- tricks and jokes,
- games for one or more participants, or any article intended to be used as such, even with ornamental aspects,
2. Articles not complying with paragraph 1 shall not be placed on the market.
3. Shall not be placed on the market if they contain a colouring agent, unless required for fiscal reasons, or perfume, or both, if they:
— can be used as fuel in decorative oil lamps for supply to the general public, and
— present an aspiration hazard and are labelled with H304.
4. Decorative oil lamps for supply to the general public shall not be placed on the market unless they conform to the European Standard on Decorative oil lamps (EN 14059) adopted by the European Committee for Standardisation (CEN).
5. Without prejudice to the implementation of other Union provisions relating to the classification, labelling and packaging of substances and mixtures, suppliers shall ensure, before the placing on the market, that the following requirements are met:
(a) lamp oils, labelled with H304, intended for supply to the general public are visibly, legibly and indelibly marked as follows: "Keep lamps filled with this liquid out of the reach of children"; and, by 1 December 2010, "Just a sip of lamp oil – or even sucking the wick of lamps – may lead to life-threatening lung damage";
(b) grill lighter fluids, labelled with H304, intended for supply to the general public are legibly and indelibly marked by 1 December 2010 as follows: 'Just a sip of grill lighter fluid may lead to life threatening lung damage';
(c) lamps oils and grill lighters, labelled with H304, intended for supply to the general public are packaged in black opaque containers not exceeding 1 litre by 1 December 2010.';

R40 1. Shall not be used, as substance or as mixtures in aerosol dispensers where these aerosol dispensers are intended for supply to the general public for entertainment and decorative purposes such as the following:
- metallic glitter intended mainly for decoration,
- artificial snow and frost,
- 'whoopee' cushions,
- silly string aerosols,
- imitation excrement,
- horns for parties,
- decorative flakes and foams,
- artificial cobwebs,
- stink bombs.
2. Without prejudice to the application of other Community provisions on the classification, packaging and labelling of substances, suppliers shall ensure before the placing on the market that the packaging of aerosol dispensers referred to above is marked visibly, legibly and indelibly with:
'For professional users only'.
3. By way of derogation, paragraphs 1 and 2 shall not apply to the aerosol dispensers referred to Article 8 (1a) of Council Directive 75/324/EEC (2).
4. The aerosol dispensers referred to in paragraphs 1 and 2 shall not be placed on the market unless they conform to the requirements indicated.

Legend

R75 1. Shall not be placed on the market in mixtures for use for tattooing purposes, and mixtures containing any such substances shall not be used for tattooing purposes, after 4 January 2022 if the substance or substances in question is or are present in the following circumstances:
(a) in the case of a substance classified in Part 3 of Annex VI to Regulation (EC) No 1272/2008 as carcinogen category 1A, 1B or 2, or germ cell mutagen category 1A, 1B or 2, the substance is present in the mixture in a concentration equal to or greater than 0,00005 % by weight;
(b) in the case of a substance classified in Part 3 of Annex VI to Regulation (EC) No 1272/2008 as reproductive toxicant category 1A, 1B or 2, the substance is present in the mixture in a concentration equal to or greater than 0,001 % by weight;
(c) in the case of a substance classified in Part 3 of Annex VI to Regulation (EC) No 1272/2008 as skin sensitiser category 1, 1A or 1B, the substance is present in the mixture in a concentration equal to or greater than 0,001 % by weight;
(d) in the case of a substance classified in Part 3 of Annex VI to Regulation (EC) No 1272/2008 as skin corrosive category 1, 1A, 1B or 1C or skin irritant category 2, or as serious eye damage category 1 or eye irritant category 2, the substance is present in the mixture in a concentration equal to or greater than:
(i) 0,1 % by weight, if the substance is used solely as a pH regulator;
(ii) 0,01 % by weight, in all other cases;
(e) in the case of a substance listed in Annex II to Regulation (EC) No 1223/2009 (*1), the substance is present in the mixture in a concentration equal to or greater than 0,00005 % by weight;
(f) in the case of a substance for which a condition of one or more of the following kinds is specified in column g (Product type, Body parts) of the table in Annex IV to Regulation (EC) No 1223/2009, the substance is present in the mixture in a concentration equal to or greater than 0,00005 % by weight:
(i) “Rinse-off products”;
(ii) “Not to be used in products applied on mucous membranes”;
(iii) “Not to be used in eye products”;
(g) in the case of a substance for which a condition is specified in column h (Maximum concentration in ready for use preparation) or column i (Other) of the table in Annex IV to Regulation (EC) No 1223/2009, the substance is present in the mixture in a concentration, or in some other way, that does not accord with the condition specified in that column;
(h) in the case of a substance listed in Appendix 13 to this Annex, the substance is present in the mixture in a concentration equal to or greater than the concentration limit specified for that substance in that Appendix.
2. For the purposes of this entry use of a mixture “for tattooing purposes” means injection or introduction of the mixture into a person’s skin, mucous membrane or eyeball, by any process or procedure (including procedures commonly referred to as permanent make-up, cosmetic tattooing, micro-blading and micro-pigmentation), with the aim of making a mark or design on his or her body.
3. If a substance not listed in Appendix 13 falls within more than one of points (a) to (g) of paragraph 1, the strictest concentration limit laid down in the points in question shall apply to that substance. If a substance listed in Appendix 13 also falls within one or more of points (a) to (g) of paragraph 1, the concentration limit laid down in point (h) of paragraph 1 shall apply to that substance.
4. By way of derogation, paragraph 1 shall not apply to the following substances until 4 January 2023:
(a) Pigment Blue 15:3 (CI 74160, EC No 205-685-1, CAS No 147-14-8);
(b) Pigment Green 7 (CI 74260, EC No 215-524-7, CAS No 1328-53-6).
5. If Part 3 of Annex VI to Regulation (EC) No 1272/2008 is amended after 4 January 2021 to classify or re-classify a substance such that the substance then becomes caught by point (a), (b), (c) or (d) of paragraph 1 of this entry, or such that it then falls within a different one of those points from the one within which it fell previously, and the date of application of that new or revised classification is after the date referred to in paragraph 1 or, as the case may be, paragraph 4 of this entry, that amendment shall, for the purposes of applying this entry to that substance, be treated as taking effect on the date of application of that new or revised classification.
6. If Annex II or Annex IV to Regulation (EC) No 1223/2009 is amended after 4 January 2021 to list or change the listing of a substance such that the substance then becomes caught by point (e), (f) or (g) of paragraph 1 of this entry, or such that it then falls within a different one of those points from the one within which it fell previously, and the amendment takes effect after the date referred to in paragraph 1 or, as the case may be, paragraph 4 of this entry, that amendment shall, for the purposes of applying this entry to that substance, be treated as taking effect from the date falling 18 months after entry into force of the act by which that amendment was made.
7. Suppliers placing a mixture on the market for use for tattooing purposes shall ensure that, after 4 January 2022, the mixture is marked with the following information:
(a) the statement “Mixture for use in tattoos or permanent make-up”;
(b) a reference number to uniquely identify the batch;
(c) the list of ingredients in accordance with the nomenclature established in the glossary of common ingredient names pursuant to Article 33 of Regulation (EC) No 1223/2009, or in the absence of a common ingredient name, the IUPAC name. In the absence of a common ingredient name or IUPAC name, the CAS and EC number. Ingredients shall be listed in descending order by weight or volume of the ingredients at the time of formulation. “Ingredient” means any substance added during the process of formulation and present in the mixture for use for tattooing purposes. Impurities shall not be regarded as ingredients. If the name of a substance, used as ingredient within the meaning of this entry, is already required to be stated on the label in accordance with Regulation (EC) No 1272/2008, that ingredient does not need to be marked in accordance with this Regulation;
(d) the additional statement “pH regulator” for substances falling under point (d)(i) of paragraph 1;
(e) the statement "Contains nickel. Can cause allergic reactions." if the mixture contains nickel below the concentration limit specified in Appendix 13;
(f) the statement "Contains chromium (VI). Can cause allergic reactions." if the mixture contains chromium (VI) below the concentration limit specified in Appendix 13;
(g) safety instructions for use insofar as they are not already required to be stated on the label by Regulation (EC) No 1272/2008.
The information shall be clearly visible, easily legible and marked in a way that is indelible.
The information shall be written in the official language(s) of the Member State(s) where the mixture is placed on the market, unless the Member State(s) concerned provide(s) otherwise.
Where necessary because of the size of the package, the information listed in the first subparagraph, except for point (a), shall be included instead in the instructions for use.
Before using a mixture for tattooing purposes, the person using the mixture shall provide the person undergoing the procedure with the information marked on the package or included in the instructions for use pursuant to this paragraph.
8. Mixtures that do not contain the statement “Mixture for use in tattoos or permanent make-up” shall not be used for tattoo-

Legend

ing purposes.
9. This entry does not apply to substances that are gases at temperature of 20 °C and pressure of 101,3 kPa, or generate a vapour pressure of more than 300 kPa at temperature of 50 °C, with the exception of formaldehyde (CAS No 50-00-0, EC No 200-001-8).
10. This entry does not apply to the placing on the market of a mixture for use for tattooing purposes, or to the use of a mixture for tattooing purposes, when placed on the market exclusively as a medical device or an accessory to a medical device, within the meaning of Regulation (EU) 2017/745, or when used exclusively as a medical device or an accessory to a medical device, within the same meaning. Where the placing on the market or use may not be exclusively as a medical device or an accessory to a medical device, the requirements of Regulation (EU) 2017/745 and of this Regulation shall apply cumulatively.

List of substances subject to authorisation (REACH, Annex XIV) / SVHC - candidate list

not listed

Deco-Paint Directive

VOC content	100 %

Industrial Emissions Directive (IED)

VOC content	100 %

Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS)

not listed

Regulation concerning the establishment of a European Pollutant Release and Transfer Register (PRTR)

not listed

Water Framework Directive (WFD)

not listed

Regulation on persistent organic pollutants (POP)

Not listed.

National regulations (Germany)

Verordnung über Anlagen zum Umgang mit wassergefährdenden Stoffen (Ordinance on facilities for handling substances hazardous to water) (AwSV)

Wassergefährdungsklasse, WGK (water hazard class) 2 hazardous to water

Index number 206

Technical instructions on air quality control (Germany)

Number	Group of substances	Class	Conc.	Mass flow	Mass concentration	Notation
5.2.5	organic substances		≥ 25 wt%	0,5 $^{kg}/_{h}$	50 $^{mg}/_{m^3}$	3)

Notation

3) a total mass flow of 0.50 kg/h or a total mass concentration of 50 mg/m³, each of which to be indicated as total carbon, shall not be exceeded (except organic particulate matter)

Storage of hazardous substances in non-stationary containers (TRGS 510) (Germany)

Storage class (LGK) 3 (flammable and desensitizing explosive liquids)

National inventories

Country	Inventory	Status
EU	REACH Reg.	substance is listed

Legend
REACH Reg. REACH registered substances

15.2 Chemical Safety Assessment

No Chemical Safety Assessment has been carried out for this substance.

SECTION 16: Other information

Indication of changes (revised safety data sheet)

Section	Former entry (text/value)	Actual entry (text/value)	Safety-relevant
1.1		Product number: RDG-7703	yes

Abbreviations and acronyms

Abbr.	Descriptions of used abbreviations
2000/39/EC	Commission Directive establishing a first list of indicative occupational exposure limit values in implementation of Council Directive 98/24/EC
ADN	Accord européen relatif au transport international des marchandises dangereuses par voies de navigation intérieures (European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways)
ADR	Accord relatif au transport international des marchandises dangereuses par route (Agreement concerning the International Carriage of Dangerous Goods by Road)
ADR/RID/ADN	Agreements concerning the International Carriage of Dangerous Goods by Road/Rail/Inland Waterways (ADR/RID/ADN)
AGW	Workplace exposure limit
ATE	Acute Toxicity Estimate
BCF	Bioconcentration factor
CAS	Chemical Abstracts Service (service that maintains the most comprehensive list of chemical substances)
Ceiling-C	Ceiling value
CLP	Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures
DFG	Deutsche Forschungsgemeinschaft MAK-und BAT-Werte-Liste, Senatskommission zur Prüfung gesundheitsschädlicher Arbeitsstoffe, Wiley-VCH, Weinheim
DGR	Dangerous Goods Regulations (see IATA/DGR)
EC50	Effective Concentration 50 %. The EC50 corresponds to the concentration of a tested substance causing 50 % changes in response (e.g. on growth) during a specified time interval
EC No	The EC Inventory (EINECS, ELINCS and the NLP-list) is the source for the seven-digit EC number, an identifier of substances commercially available within the EU (European Union)
EINECS	European Inventory of Existing Commercial Chemical Substances
EL50	Effective Loading 50 %: the EL50 corresponds to the loading rate required to produce a response in 50% of the test organisms

Abbr.	Descriptions of used abbreviations
ELINCS	European List of Notified Chemical Substances
EmS	Emergency Schedule
ErC50	≡ EC50: in this method, that concentration of test substance which results in a 50 % reduction in either growth (EbC50) or growth rate (ErC50) relative to the control
GHS	"Globally Harmonized System of Classification and Labelling of Chemicals" developed by the United Nations
IATA	International Air Transport Association
IATA/DGR	Dangerous Goods Regulations (DGR) for the air transport (IATA)
ICAO	International Civil Aviation Organization
ICAO-TI	Technical instructions for the safe transport of dangerous goods by air
IMDG	International Maritime Dangerous Goods Code
IMDG-Code	International Maritime Dangerous Goods Code
index No	The Index number is the identification code given to the substance in Part 3 of Annex VI to Regulation (EC) No 1272/2008
IOELV	Indicative occupational exposure limit value
LGK	Lagerklasse (storage class according to TRGS 510, Germany)
NLP	No-Longer Polymer
PBT	Persistent, Bioaccumulative and Toxic
ppm	Parts per million
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
RID	Règlement concernant le transport International ferroviaire des marchandises Dangereuses (Regulations concerning the International carriage of Dangerous goods by Rail)
STEL	Short-term exposure limit
SVHC	Substance of Very High Concern
TRGS	Technische Regeln für GefahrStoffe (technical rules for hazardous substances, Germany)
TRGS 900	Arbeitsplatzgrenzwerte (TRGS 900)
TRGS 903	Biologische Grenzwerte (TRGS 903)
TWA	Time-weighted average
VOC	Volatile Organic Compounds
vPvB	Very Persistent and very Bioaccumulative

Key literature references and sources for data

Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures. Regulation (EC) No. 1907/2006 (REACH), amended by 2020/878/EU.

Transport of dangerous goods by road, rail and inland waterway (ADR/RID/ADN). International Maritime Dangerous Goods Code (IMDG). Dangerous Goods Regulations (DGR) for the air transport (IATA).

List of relevant phrases (code and full text as stated in section 2 and 3)

Code	Text
H226	Flammable liquid and vapour.
H304	May be fatal if swallowed and enters airways.
H312	Harmful in contact with skin.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H335	May cause respiratory irritation.
H412	Harmful to aquatic life with long lasting effects.

Disclaimer

This information is based upon the present state of our knowledge. This SDS has been compiled and is solely intended for this product.

Annex to the extended Safety Data Sheet (eSDS)

o-Xylene

Exposure Scenario / ES No 1

1 TITLE SECTION

Exposure Scenario name: Distribution of substance

Sectors of use [SU]

SU3: Industrial uses.
SU8: Manufacture of bulk, large scale chemicals (including petroleum products).
SU9: Manufacture of fine chemicals.

Process categories [PROC]

PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.
PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions.
PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition.
PROC4: Chemical production where opportunity for exposure arises.
PROC8a: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities.
PROC8b: Transfer of substance or mixture (charging and discharging) at dedicated facilities.
PROC9: Transfer of substance or mixture into small containers (dedicated filling line, including weighing).
PROC15: Use as laboratory reagent.

Environmental release categories [ERC]

ERC1: Manufacture of the substance.
ERC2: Formulation into mixture.

2 Operational conditions and risk management measures

2.1 Control of environmental exposure

Product characteristics	Medium volatile liquid, Solubility: 158 mg/L, Vapour pressure: 1050 Pa at °C: 20, Log KOW: 3,16, Readily biodegradable
Amounts used	
Fraction of EU tonnage used in region:	4200E3 t(onnes)/year
Fraction of regional tonnage used locally:	1
Regional use tonnage (tons/year):	600E3
Frequency and duration of use	
Emission days	300 days per year
Environment factors not influenced by risk management	
Local marine water dilution factor	100
Local freshwater dilution factor	10

Release fraction to air from process (initial release prior to RMM):	0,0001
Release fraction to soil from process (initial release prior to RMM):	0,00001
Release fraction to wastewater from process (initial release prior to RMM):	0,00001

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

Prevent discharge of undissolved substance to or recover from onsite wastewater. Soil emission controls are not applicable as there is no direct release to soil.

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 (%):	93,57

Organisational measures to prevent/limit release from site:

Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

Conditions and measures related to municipal sewage treatment plant

Estimated substance removal from wastewater via on-site sewage treatment (%):	93,57
Assumed on-site sewage treatment plant flow (m3/d):	2000
Conditions and measures related to external treatment of waste for disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations
Conditions and measures related to external recovery of waste	External recovery and recycling of waste should comply with applicable local and/or national regulations

2 Conditions of use affecting exposure - Workers

2.2 Control of worker exposure

Product characteristics

Physical form of product	Liquid, vapour pressure 0,5 - 10 kPa at STP
Vapour pressure	0.207 PSI at 85 °F
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently).
Amounts used	not applicable
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)
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.

Contributing Scenarios: Operational conditions and risk management measures

General exposures (closed systems):	No specific measures identified
General exposures (closed systems) - with sample collection - With occasional controlled exposure:	No specific measures identified

General exposures (closed systems) - Use in contained batch processes:	No specific measures identified
General exposures (open systems) - Batch process - With sample collection:	No specific measures identified
Process sampling:	No specific measures identified
Laboratory activities:	No specific measures identified
Bulk transfers - Open systems:	Ensure material transfers are under containment or extract ventilation. Operate activity away from sources of substance emission or release.
Bulk transfers - Closed systems:	Ensure material transfers are under containment or extract ventilation. Operate activity away from sources of substance emission or release.
Drum and small package filling:	Fill containers/cans at dedicated fill points supplied with local extract ventilation. Ensure material transfers are under containment or extract ventilation.
Equipment cleaning and maintenance:	Drain down and flush system prior to equipment break-in or maintenance. Apply vessel entry procedures including use of forced supplied air.
Storage - With occasional controlled exposure:	Store substance within a closed system. No specific measures identified.

3 Exposure estimation and reference to its source

Exposure assessment (environment)	Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented
Exposure assessment (human)	Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented

4 Guidance to check compliance with the exposure scenario

Environment

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Health

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Annex to the extended Safety Data Sheet (eSDS)

o-Xylene

Version number: GHS 1.0 Issue date: 2022-01-26

Exposure Scenario / ES No 2

1 TITLE SECTION

Exposure Scenario name: Formulation

Sectors of use [SU]

SU3: Industrial uses.
SU10: Formulation [mixing] of preparations and/or re-packaging (excluding alloys).

Process categories [PROC]

PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.
PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions.
PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition.
PROC4: Chemical production where opportunity for exposure arises.
PROC5: Mixing or blending in batch processes.
PROC8a: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities.
PROC8b: Transfer of substance or mixture (charging and discharging) at dedicated facilities.
PROC9: Transfer of substance or mixture into small containers (dedicated filling line, including weighing).
PROC14: Tabletting, compression, extrusion, pelletisation, granulation.
PROC15: Use as laboratory reagent.

Environmental release categories [ERC]

ERC2: Formulation into mixture.

2 Operational conditions and risk management measures

2.1 Control of environmental exposure

Product characteristics	Medium volatile liquid, Water solubility (g/L): 0,158, Vapour pressure: 1050 Pa at °C: 25, Log KOW: 2,16, Readily biodegradable

Amounts used

Fraction of EU tonnage used in region:	70E3 t(onnes)/year
Fraction of regional tonnage used locally:	1
Regional use tonnage (tons/year):	7E3

Frequency and duration of use

Emission days	300 days per year

Environment factors not influenced by risk management

Local marine water dilution factor	100
Local freshwater dilution factor	10

Release fraction to air from process (initial release prior to RMM):	0,025
Release fraction to soil from process (initial release prior to RMM):	0,0001
Release fraction to wastewater from process (initial release prior to RMM):	0,002

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

Prevent discharge of undissolved substance to or recover from onsite wastewater. Soil emission controls are not applicable as there is no direct release to soil. Release fraction to air from process (after typical onsite RMMs consistent with EU Solvent Emissions Directive requirements):.

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 (%):	94,51

Organisational measures to prevent/limit release from site:

Do not apply industrial sludge to natural soils. Sewage sludge should be incinerated, contained or reclaimed.

Conditions and measures related to municipal sewage treatment plant

Estimated substance removal from wastewater via on-site sewage treatment (%):	93,57
Assumed on-site sewage treatment plant flow (m3/d):	2000
Conditions and measures related to external treatment of waste for disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations
Conditions and measures related to external recovery of waste	External recovery and recycling of waste should comply with applicable local and/or national regulations

2 Conditions of use affecting exposure - Workers

2.2 Control of worker exposure

Product characteristics

Physical form of product	Liquid, vapour pressure 0,5 - 10 kPa at STP
Vapour pressure	0.207 PSI at 85 °F
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently).
Amounts used	not applicable
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)
Other 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.

Contributing Scenarios: Operational conditions and risk management measures

General measures (skin irritants):	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop. Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying.
General exposures (closed systems):	No specific measures identified
General exposures (closed systems) - Use in contained batch processes - With occasional controlled exposure:	No specific measures identified
General exposures (open systems) - Batch process - With sample collection - With potential for aerosol generation:	No specific measures identified
Batch processes at elevated temperatures:	Provide a good standard of controlled ventilation (10 to 15 air changes per hour)
Process sampling:	No specific measures identified
Mixing operations - Open systems - With potential for aerosol generation:	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Laboratory activities:	No specific measures identified
Bulk transfers:	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
Manual Transfer from/pouring from containers:	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
Drum/batch transfers:	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Production of preparations or articles by tabletting, compression, extrusion, pelletisation:	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
Equipment cleaning and maintenance:	Drain down and flush system prior to equipment break-in or maintenance.
Drum and small package filling:	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Storage: - With occasional controlled exposure:	No specific measures identified

3 Exposure estimation and reference to its source

Exposure assessment (environment)	Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented
Exposure assessment (human)	Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented

4 Guidance to check compliance with the exposure scenario

Environment

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Health

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Annex to the extended Safety Data Sheet (eSDS)

o-Xylene

Version number: GHS 1.0 Issue date: 2022-01-24

Exposure Scenario / ES No 3

1 TITLE SECTION

Exposure Scenario name: Manufacture of substance

Sectors of use [SU]

SU3: Industrial uses.
SU8: Manufacture of bulk, large scale chemicals (including petroleum products).
SU9: Manufacture of fine chemicals.

Process categories [PROC]

PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.
PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions.
PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition.
PROC4: Chemical production where opportunity for exposure arises.
PROC8a: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities.
PROC8b: Transfer of substance or mixture (charging and discharging) at dedicated facilities.
PROC15: Use as laboratory reagent.

Environmental release categories [ERC]

ERC1: Manufacture of the substance.
ERC4: Use of non-reactive processing aid at industrial site (no inclusion into or onto article).

2 Operational conditions and risk management measures

2.1 Control of environmental exposure

Product characteristics	Medium volatile liquid, Water solubility (g/L): 0,158, Vapour pressure: 1050 Pa at °C: 25, Log KOW: 3,16, Readily biodegradable
Amounts used	
Fraction of EU tonnage used in region:	4200E3 t(onnes)/year
Fraction of regional tonnage used locally:	1
Regional use tonnage (tons/year):	600E3
Frequency and duration of use	
Emission days	300 days per year
Environment factors not influenced by risk management	
Local marine water dilution factor	100
Local freshwater dilution factor	40
Release fraction to air from process (initial release prior to RMM):	0,005
Release fraction to soil from process (initial release prior to RMM):	0,0001
Release fraction to wastewater from process (initial release prior to RMM):	0,003

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

Prevent discharge of undissolved substance to or recover from onsite wastewater. Soil emission controls are not applicable as there is no direct release to soil.

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 (%):	93,57

Organisational measures to prevent/limit release from site:

Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

Conditions and measures related to municipal sewage treatment plant

Estimated substance removal from wastewater via on-site sewage treatment (%):	93,57
Assumed on-site sewage treatment plant flow (m3/d):	2000
Conditions and measures related to external treatment of waste for disposal	During manufacturing no waste of the substance is generated
Conditions and measures related to external recovery of waste	During manufacturing no waste of the substance is generated

2 Conditions of use affecting exposure - Workers

2.2 Control of worker exposure

Product characteristics

Physical form of product	Liquid, vapour pressure 0,5 - 10 kPa at STP
Vapour pressure	0.207 PSI at 85 °F
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently).
Amounts used	not applicable
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)
Other 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.

Contributing Scenarios: Operational conditions and risk management measures

General measures (skin irritants):	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop. Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying.
General exposures (closed systems):	No specific measures identified

General exposures (closed systems) - with sample collection - With occasional controlled exposure:	No specific measures identified
General exposures (closed systems) - Use in contained batch processes:	No specific measures identified
General exposures (open systems) - Batch process - With sample collection:	No specific measures identified
Process sampling:	Provide a good standard of controlled ventilation (10 to 15 air changes per hour). Avoid carrying out activities involving exposure for more than 1 hour.
Laboratory activities:	No specific measures identified
Bulk transfers - Open systems - With potential for aerosol generation:	Provide a good standard of controlled ventilation (10 to 15 air changes per hour). Avoid carrying out activities involving exposure for more than 1 hour.
Bulk transfers - Closed systems:	Provide a good standard of controlled ventilation (10 to 15 air changes per hour). Avoid carrying out activities involving exposure for more than 1 hour.
Equipment cleaning and maintenance:	Drain down and flush system prior to equipment break-in or maintenance
Storage - With occasional controlled exposure:	No specific measures identified

3 Exposure estimation and reference to its source

Exposure assessment (environment)	Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented
Exposure assessment (human)	Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented

4 Guidance to check compliance with the exposure scenario

Environment

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Health

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Annex to the extended Safety Data Sheet (eSDS)

o-Xylene

ROSNEFT DEUTSCHLAND

Version number: GHS 1.0 | Issue date: 2022-01-21

Exposure Scenario / ES No 4

1 TITLE SECTION

Exposure Scenario name: Rubber production and processing - Industrial

Sectors of use [SU]

SU3: Industrial uses.
SU10: Formulation [mixing] of preparations and/or re-packaging (excluding alloys).

Process categories [PROC]

PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.
PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions.
PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition.
PROC4: Chemical production where opportunity for exposure arises.
PROC5: Mixing or blending in batch processes.
PROC6: Calendering operations.
PROC7: Industrial spraying.
PROC8a: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities.
PROC8b: Transfer of substance or mixture (charging and discharging) at dedicated facilities.
PROC9: Transfer of substance or mixture into small containers (dedicated filling line, including weighing).
PROC13 Treatment of articles by dipping and pouring.
PROC14: Tabletting, compression, extrusion, pelletisation, granulation.
PROC15: Use as laboratory reagent.
PROC21: Low energy manipulation of substances bound in materials and/or articles.

Environmental release categories [ERC]

ERC1: Manufacture of the substance.
ERC4: Use of non-reactive processing aid at industrial site (no inclusion into or onto article).
ERC6d Use of reactive process regulators in polymerisation processes at industrial site (inclusion or not into/onto article).

2 Operational conditions and risk management measures

2.1 Control of environmental exposure

Product characteristics	Medium volatile liquid, Water solubility (g/L): 0,158, Vapour pressure: 1050 Pa at °C: 25, Log KOW: 3,16, Readily biodegradable

Amounts used

Fraction of EU tonnage used in region:	42E3 t(onnes)/year
Fraction of regional tonnage used locally:	1
Regional use tonnage (tons/year):	4,2E3

Frequency and duration of use

Emission days	300 days per year

Environment factors not influenced by risk management

Local marine water dilution factor	100
Local freshwater dilution factor	10

Release fraction to air from process (initial release prior to RMM):	0,01
Release fraction to soil from process (initial release prior to RMM):	0,0001
Release fraction to wastewater from process (initial release prior to RMM):	0,003

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

Prevent discharge of undissolved substance to or recover from onsite wastewater. Soil emission controls are not applicable as there is no direct release to soil.

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 (%):	93,57

Organisational measures to prevent/limit release from site:

Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

Conditions and measures related to municipal sewage treatment plant

Estimated substance removal from wastewater via on-site sewage treatment (%):	93,57
Assumed on-site sewage treatment plant flow (m3/d):	2000
Conditions and measures related to external treatment of waste for disposal	This substance is consumed during use and no waste of the substance is generated
Conditions and measures related to external recovery of waste	This substance is consumed during use and no waste of the substance is generated

2 Conditions of use affecting exposure - Workers

2.2 Control of worker exposure

Product characteristics

Physical form of product	Liquid, vapour pressure 0,5 - 10 kPa at STP
Vapour pressure	0.207 PSI at 85 °F
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently).
Amounts used	not applicable
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)
Other 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.

Contributing Scenarios: Operational conditions and risk management measures

Material transfers - With occasional controlled exposure:	No specific measures identified
Material transfers - Dedicated facility:	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)

Material transfers:	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Bulk weighing:	No specific measures identified
Bulk weighing - With occasional controlled exposure:	No specific measures identified
Small scale weighing:	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Additive premixing:	No specific measures identified.
Additive premixing - Batch process:	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Calendering (including Banburys):	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings.
Pressing uncured rubber blanks:	Provide a good standard of controlled ventilation (10 to 15 air changes per hour).
Vulcanisation:	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings
Cooling cured articles:	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Laboratory activities:	No specific measures identified
Equipment maintenance:	Drain or remove substance from equipment prior to break-in or maintenance

3 Exposure estimation and reference to its source

Exposure assessment (environment)	EUSES
Exposure assessment (human)	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

4 Guidance to check compliance with the exposure scenario

Environment

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Health

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Annex to the extended Safety Data Sheet (eSDS)

o-Xylene

Version number: GHS 1.0 Issue date: 2022-01-26

Exposure Scenario / ES No 5

1 TITLE SECTION

Exposure Scenario name: Use as an intermediate - Industrial

Sectors of use [SU]

SU3: Industrial uses.
SU8: Manufacture of bulk, large scale chemicals (including petroleum products).
SU9: Manufacture of fine chemicals.

Process categories [PROC]

PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.
PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions.
PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition.
PROC4: Chemical production where opportunity for exposure arises.
PROC8a: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities.
PROC8b: Transfer of substance or mixture (charging and discharging) at dedicated facilities.
PROC15: Use as laboratory reagent.

Environmental release categories [ERC]

ERC6a: Use of intermediate.

2 Operational conditions and risk management measures

2.1 Control of environmental exposure

Product characteristics	Medium volatile liquid, Water solubility (g/L): 0,158, Vapour pressure: 1050 Pa at °C: 25, Log KOW: 3,16, Readily biodegradable
Amounts used	
Fraction of EU tonnage used in region:	3570E3 t(onnes)/year
Fraction of regional tonnage used locally:	0,01
Regional use tonnage (tons/year):	357E3
Frequency and duration of use	
Emission days	300 days per year
Environment factors not influenced by risk management	
Local marine water dilution factor	100
Local freshwater dilution factor	10
Release fraction to air from process (initial release prior to RMM):	0,005
Release fraction to soil from process (initial release prior to RMM):	0,0001
Release fraction to wastewater from process (initial release prior to RMM):	0,003

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

Prevent discharge of undissolved substance to or recover from onsite wastewater. Soil emission controls are not applicable as there is no direct release to soil.

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 (%):	93,57

Organisational measures to prevent/limit release from site:

Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

Conditions and measures related to municipal sewage treatment plant

Estimated substance removal from wastewater via on-site sewage treatment (%):	93,57
Assumed on-site sewage treatment plant flow (m3/d):	2000
Conditions and measures related to external treatment of waste for disposal	This substance is consumed during use and no waste of the substance is generated
Conditions and measures related to external recovery of waste	This substance is consumed during use and no waste of the substance is generated

2 Conditions of use affecting exposure - Workers

2.2 Control of worker exposure

Product characteristics

Physical form of product	Liquid, vapour pressure 0,5 - 10 kPa at STP
Vapour pressure	0.207 PSI at 85 °F
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently).
Amounts used	not applicable
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)
Other 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.

Contributing Scenarios: Operational conditions and risk management measures

General measures (skin irritants):	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop. Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying.
General exposures (closed systems):	No specific measures identified

General exposures (closed systems) - with sample collection:	No specific measures identified
General exposures (closed systems) - Use in contained batch processes:	No specific measures identified
General exposures (open systems) - With sample collection:	No specific measures identified
Process sampling:	Provide a good standard of controlled ventilation (10 to 15 air changes per hour). Avoid carrying out activities involving exposure for more than 1 hour.
Bulk transfers - Open systems - With potential for aerosol generation:	Provide a good standard of controlled ventilation (10 to 15 air changes per hour). Avoid carrying out activities involving exposure for more than 1 hour.
Bulk transfers - Closed systems:	Provide a good standard of controlled ventilation (10 to 15 air changes per hour). Avoid carrying out activities involving exposure for more than 1 hour.
Laboratory activities:	No other specific measures identified
Equipment cleaning and maintenance:	Drain down and flush system prior to equipment break-in or maintenance
Storage:	No specific measures identified

3 Exposure estimation and reference to its source

Exposure assessment (environment)	Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented
Exposure assessment (human)	not applicable

4 Guidance to check compliance with the exposure scenario

Environment

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Health

not applicable

Annex to the extended Safety Data Sheet (eSDS)

o-Xylene

ROSNEFT DEUTSCHLAND

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Exposure Scenario / ES No 6

1 TITLE SECTION

Exposure Scenario name: Use as binders and release agents - Industrial

Sectors of use [SU]

SU3: Industrial uses.

Process categories [PROC]

PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.
PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions.
PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition.
PROC4: Chemical production where opportunity for exposure arises.
PROC6: Calendering operations.
PROC7: Industrial spraying.
PROC8b: Transfer of substance or mixture (charging and discharging) at dedicated facilities.
PROC10: Roller application or brushing.
PROC13 Treatment of articles by dipping and pouring.
PROC14: Tabletting, compression, extrusion, pelletisation, granulation.

Environmental release categories [ERC]

ERC4: Use of non-reactive processing aid at industrial site (no inclusion into or onto article).

2 Operational conditions and risk management measures

2.1 Control of environmental exposure

Product characteristics	Medium volatile liquid, Water solubility (g/L): 0,158, Vapour pressure: 1050 Pa at °C: 25, Log KOW: 3,16, Readily biodegradable
Amounts used	
Fraction of EU tonnage used in region:	21E3 t(onnes)/year
Fraction of regional tonnage used locally:	1
Regional use tonnage (tons/year):	2,1E3
Frequency and duration of use	
Emission days	300 days per year
Environment factors not influenced by risk management	
Local marine water dilution factor	100
Local freshwater dilution factor	10
Release fraction to air from process (initial release prior to RMM):	0,2
Release fraction to soil from process (initial release prior to RMM):	0
Release fraction to wastewater from process (initial release prior to RMM):	0,00003

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

Prevent discharge of undissolved substance to or recover from onsite wastewater. Soil emission controls are not applicable as there is no direct release to soil.

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 (%):	93,57

Organisational measures to prevent/limit release from site:

Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

Conditions and measures related to municipal sewage treatment plant

Estimated substance removal from wastewater via on-site sewage treatment (%):	93,57
Assumed on-site sewage treatment plant flow (m3/d):	2000
Conditions and measures related to external treatment of waste for disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations
Conditions and measures related to external recovery of waste	External recovery and recycling of waste should comply with applicable local and/or national regulations

2 Conditions of use affecting exposure - Workers

2.2 Control of worker exposure

Product characteristics

Physical form of product	Liquid, vapour pressure 0,5 - 10 kPa at STP
Vapour pressure	0.207 PSI at 85 °F
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently).
Amounts used	not applicable
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)
Other 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.

Contributing Scenarios: Operational conditions and risk management measures

General measures (skin irritants):	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop. Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying.

Drum/batch transfers:	Provide a good standard of controlled ventilation (10 to 15 air changes per hour)
Material transfers:	No specific measures identified
Material transfers - With occasional controlled exposure:	No specific measures identified
Material transfers - Closed systems - Batch process:	No specific measures identified
Mixing operations:	No specific measures identified
Mixing operations - Open systems:	No specific measures identified
Article formation in mould:	Provide a good standard of controlled ventilation (10 to 15 air changes per hour)
Casting operations:	Provide extract ventilation to points where emissions occur
Manual Application - Rolling, Brushing:	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Spraying - Machine:	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings. Wear suitable gloves tested to EN374.
Storage: - With occasional controlled exposure:	No specific measures identified

3 Exposure estimation and reference to its source

Exposure assessment (environment)	Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented
Exposure assessment (human)	Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented

4 Guidance to check compliance with the exposure scenario

Environment

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Health

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Annex to the extended Safety Data Sheet (eSDS)

o-Xylene

Exposure Scenario / ES No 7

1 TITLE SECTION

Exposure Scenario name: Use as binders and release agents - Professional

Sectors of use [SU]

SU22: Professional uses.

Process categories [PROC]

PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.
PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions.
PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition.
PROC4: Chemical production where opportunity for exposure arises.
PROC6: Calendering operations.
PROC8a: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities.
PROC8b: Transfer of substance or mixture (charging and discharging) at dedicated facilities.
PROC10: Roller application or brushing.
PROC11: Non industrial spraying.
PROC14: Tabletting, compression, extrusion, pelletisation, granulation.

Environmental release categories [ERC]

ERC8a: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor).
ERC8a: Wide dispersive indoor use of processing aids in open systems.
ERC8d: Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor).
ERC8d: Wide dispersive outdoor use of processing aids in open systems.

2 Operational conditions and risk management measures

2.1 Control of environmental exposure

Product characteristics	Medium volatile liquid, Water solubility (g/L): 0,158, Vapour pressure: 1050 Pa at °C: 25, Readily biodegradable

Amounts used

Fraction of EU tonnage used in region:	21E3 t(onnes)/year
Fraction of regional tonnage used locally:	0,002
Regional use tonnage (tons/year):	2,1E3

Frequency and duration of use

Emission days	365 days per year

Environment factors not influenced by risk management

Local marine water dilution factor	100
Local freshwater dilution factor	10

Release fraction to air from process (initial release prior to RMM):	0,95
Release fraction to soil from process (initial release prior to RMM):	0,025
Release fraction to wastewater from process (initial release prior to RMM):	0,025

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

Soil emission controls are not applicable as there is no direct release to soil. Negligible air emissions as process operates in a contained system.

Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%):	93,57

Organisational measures to prevent/limit release from site:

Prevent environmental discharge consistent with regulatory requirements.

Conditions and measures related to municipal sewage treatment plant

Estimated substance removal from wastewater via on-site sewage treatment (%):	93,57
Assumed on-site sewage treatment plant flow (m3/d):	2000
Conditions and measures related to external treatment of waste for disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations
Conditions and measures related to external recovery of waste	External recovery and recycling of waste should comply with applicable local and/or national regulations

2 Conditions of use affecting exposure - Workers

2.2 Control of worker exposure

Product characteristics

Physical form of product	Liquid, vapour pressure 0,5 - 10 kPa at STP
Vapour pressure	0.207 PSI at 85 °F
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently).
Amounts used	not applicable
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)
Other 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.

Contributing Scenarios: Operational conditions and risk management measures

General measures (skin irritants):	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop. Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying.
Drum/batch transfers:	Transfer materials directly to mixing vessels
Material transfers - Closed systems:	No specific measures identified
Material transfers - Closed systems - With occasional controlled exposure:	No specific measures identified
Material transfers - Closed systems - Batch process:	No specific measures identified
Mixing operations:	No specific measures identified
Mixing operations - Open systems:	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Article formation in mould:	Provide a good standard of controlled ventilation (10 to 15 air changes per hour)
Casting operations - Open systems:	Provide a good standard of controlled ventilation (10 to 15 air changes per hour)
Manual Application - Rolling, Brushing:	Provide a good standard of controlled ventilation (10 to 15 air changes per hour)
Manual Spraying:	Carry out in a vented booth or extracted enclosure. Provide a good standard of controlled ventilation (10 to 15 air changes per hour).
Manual Spraying:	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Wear a respirator conforming to EN140 with Type A filter or better.
Storage:	No specific measures identified
Storage: - With occasional controlled exposure:	No specific measures identified

3 Exposure estimation and reference to its source

Exposure assessment (environment)	Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented
Exposure assessment (human)	Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented

4 Guidance to check compliance with the exposure scenario

Environment

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Health

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Annex to the extended Safety Data Sheet (eSDS)

o-Xylene

Exposure Scenario / ES No 8

1 TITLE SECTION

Exposure Scenario name: Use in cleaning agents - Industrial

Sectors of use [SU]

SU3: Industrial uses.

Process categories [PROC]

PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.
PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions.
PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition.
PROC4: Chemical production where opportunity for exposure arises.
PROC7: Industrial spraying.
PROC8a: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities.
PROC8b: Transfer of substance or mixture (charging and discharging) at dedicated facilities.
PROC10: Roller application or brushing.
PROC13 Treatment of articles by dipping and pouring.

Environmental release categories [ERC]

ERC4: Use of non-reactive processing aid at industrial site (no inclusion into or onto article).

2 Operational conditions and risk management measures

2.1 Control of environmental exposure

Product characteristics	Medium volatile liquid, Water solubility (g/L): 0,158, Vapour pressure: 1050 Pa at °C: 25, Log KOW: 3,16, Readily biodegradable
Amounts used	
Fraction of EU tonnage used in region:	14E3 t(onnes)/year
Fraction of regional tonnage used locally:	1
Regional use tonnage (tons/year):	1,4E3
Frequency and duration of use	
Emission days	300 days per year
Environment factors not influenced by risk management	
Local marine water dilution factor	100
Local freshwater dilution factor	10
Release fraction to air from process (initial release prior to RMM):	0,3
Release fraction to soil from process (initial release prior to RMM):	0
Release fraction to wastewater from process (initial release prior to RMM):	0,00003

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

Prevent discharge of undissolved substance to or recover from onsite wastewater. Soil emission controls are not applicable as there is no direct release to soil.

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 (%):	93,57

Organisational measures to prevent/limit release from site:

Do not apply industrial sludge to natural soils. Sewage sludge should be incinerated, contained or reclaimed.

Conditions and measures related to municipal sewage treatment plant

Estimated substance removal from wastewater via on-site sewage treatment (%):	93,57
Assumed on-site sewage treatment plant flow (m3/d):	2000
Conditions and measures related to external treatment of waste for disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations
Conditions and measures related to external recovery of waste	External recovery and recycling of waste should comply with applicable local and/or national regulations

2 Conditions of use affecting exposure - Workers

2.2 Control of worker exposure

Product characteristics

Physical form of product	Liquid, vapour pressure 0,5 - 10 kPa at STP
Vapour pressure	0.207 PSI at 85 °F
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently).
Amounts used	not applicable
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)
Other 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.

Contributing Scenarios: Operational conditions and risk management measures

General measures (skin irritants):	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop. Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying.
Automated process with (semi) closed systems - Use in contained systems:	No specific measures identified
Automated process with (semi) closed systems - Use in contained systems - Drum/batch transfers:	No specific measures identified
Application of cleaning products in closed systems:	No specific measures identified
Filling / preparation of equipment from drums or containers - Dedicated facility:	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Bulk transfers:	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
Use in contained batch processes - Treatment by heating:	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Degreasing small objects in cleaning station:	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Manual Surfaces Cleaning - No spraying:	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
Cleaning with high pressure washers:	Provide a good standard of controlled ventilation (10 to 15 air changes per hour). Wear a respirator conforming to EN140 with Type A filter or better.
Cleaning with low-pressure washers:	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
Equipment cleaning and maintenance:	Drain down system prior to equipment break-in or maintenance
Storage: - With occasional controlled exposure:	No specific measures identified

3 Exposure estimation and reference to its source

Exposure assessment (environment)	Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented
Exposure assessment (human)	Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented

4 Guidance to check compliance with the exposure scenario

Environment

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Health

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Exposure Scenario / ES No 9

1 TITLE SECTION

Exposure Scenario name: Use in cleaning agents - Professional

Sectors of use [SU]

SU22: Professional uses.

Process categories [PROC]

PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.
PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions.
PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition.
PROC4: Chemical production where opportunity for exposure arises.
PROC8a: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities.
PROC8b: Transfer of substance or mixture (charging and discharging) at dedicated facilities.
PROC10: Roller application or brushing.
PROC11: Non industrial spraying.
PROC13 Treatment of articles by dipping and pouring.

Environmental release categories [ERC]

ERC8a: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor).
ERC8a: Wide dispersive indoor use of processing aids in open systems.
ERC8d: Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor).
ERC8d: Wide dispersive outdoor use of processing aids in open systems.

2 Operational conditions and risk management measures

2.1 Control of environmental exposure

Product characteristics	Medium volatile liquid, Water solubility (g/L): 0,158, Vapour pressure: 1050 Pa at °C: 25, Log KOW: 3,16, Readily biodegradable

Amounts used

Fraction of EU tonnage used in region:	14E3 t(onnes)/year
Fraction of regional tonnage used locally:	0,002
Regional use tonnage (tons/year):	1,4E3

Frequency and duration of use

Emission days	365 days per year

Environment factors not influenced by risk management

Local marine water dilution factor	100
Local freshwater dilution factor	10

Release fraction to air from process (initial release prior to RMM):	0,02
Release fraction to soil from process (initial release prior to RMM):	0
Release fraction to wastewater from process (initial release prior to RMM):	0,000001

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

Negligible air emissions as process operates in a contained system. Soil emission controls are not applicable as there is no direct release to soil.

Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%):	93,57

Organisational measures to prevent/limit release from site:

Prevent environmental discharge consistent with regulatory requirements.

Conditions and measures related to municipal sewage treatment plant

Estimated substance removal from wastewater via on-site sewage treatment (%):	93,57
Assumed on-site sewage treatment plant flow (m3/d):	2000
Conditions and measures related to external treatment of waste for disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations
Conditions and measures related to external recovery of waste	External recovery and recycling of waste should comply with applicable local and/or national regulations

2 Conditions of use affecting exposure - Workers

2.2 Control of worker exposure

Product characteristics

Physical form of product	Liquid, vapour pressure 0,5 - 10 kPa at STP
Vapour pressure	0.207 PSI at 85 °F
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently).
Amounts used	not applicable
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)
Other 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.

Contributing Scenarios: Operational conditions and risk management measures

General measures (skin irritants):	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop. Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying.
Semi-automated process (e.g.: Semi-automatic application of floor care and maintenance products):	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Automated process with (semi) closed systems - Use in contained systems:	No specific measures identified
Automated process with (semi) closed systems - Use in contained systems - Drum/batch transfers:	No specific measures identified
Filling / preparation of equipment from drums or containers - Dedicated facility:	Provide a good standard of controlled ventilation (10 to 15 air changes per hour)
Filling / preparation of equipment from drums or containers - Outdoor:	Ensure operation is undertaken outdoors. Avoid carrying out operation for more than 4 hours.
Manual Surfaces Cleaning - Dipping, immersion and pouring:	Provide a good standard of controlled ventilation (10 to 15 air changes per hour)
Manual Surfaces Cleaning - Spraying:	Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan. Wear a respirator conforming to EN140 with Type A filter or better.
Cleaning with low-pressure washers - Rolling, Brushing - No spraying:	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) Wear a respirator conforming to EN140 with Type A filter or better.
Cleaning with high pressure washers - Indoor:	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Wear a respirator conforming to EN140 with Type A filter or better.
Cleaning with high pressure washers - Outdoor:	Ensure operation is undertaken outdoors. Wear a respirator conforming to EN140 with Type A filter or better.
Ad hoc manual application via trigger sprays, dipping, etc - Rolling, Brushing:	Provide extract ventilation to points where emissions occur. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Wear a respirator conforming to EN140 with Type A filter or better.
Application of cleaning products in closed systems - Outdoor:	Ensure operation is undertaken outdoors
Equipment cleaning and maintenance:	Drain down system prior to equipment break-in or maintenance
Cleaning of medical devices:	Provide extract ventilation to points where emissions occur
Storage: - With occasional controlled exposure:	No specific measures identified

3 Exposure estimation and reference to its source

Exposure assessment (environment)	Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented
Exposure assessment (human)	Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented

4 Guidance to check compliance with the exposure scenario

Environment

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Health

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Annex to the extended Safety Data Sheet (eSDS)

o-Xylene

Exposure Scenario / ES No 10

1 TITLE SECTION

Exposure Scenario name: Use in laboratories - Industrial

Sectors of use [SU]

SU3: Industrial uses.

Process categories [PROC]

PROC10: Roller application or brushing.
PROC15: Use as laboratory reagent.

Environmental release categories [ERC]

ERC2: Formulation into mixture.
ERC4: Use of non-reactive processing aid at industrial site (no inclusion into or onto article).

2 Operational conditions and risk management measures

2.1 Control of environmental exposure

Product characteristics	Medium volatile liquid, Water solubility (g/L): 0,158, Vapour pressure: 1050 Pa at °C: 25, Log KOW: 3,16, Readily biodegradable

Amounts used

Fraction of EU tonnage used in region:	21E3 t(onnes)/year
Fraction of regional tonnage used locally:	0,3
Regional use tonnage (tons/year):	2,1E3

Frequency and duration of use

Emission days	300 days per year

Environment factors not influenced by risk management

Local marine water dilution factor	100
Local freshwater dilution factor	10
Release fraction to air from process (initial release prior to RMM):	0,025
Release fraction to soil from process (initial release prior to RMM):	0,00001
Release fraction to wastewater from process (initial release prior to RMM):	0,2

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

Soil emission controls are not applicable as there is no direct release to soil.

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 (%):	93,57

Organisational measures to prevent/limit release from site:

Do not apply industrial sludge to natural soils.

Conditions and measures related to municipal sewage treatment plant

Estimated substance removal from wastewater via on-site sewage treatment (%):	93,57
Assumed on-site sewage treatment plant flow (m3/d):	2000
Conditions and measures related to external treatment of waste for disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations
Conditions and measures related to external recovery of waste	External recovery and recycling of waste should comply with applicable local and/or national regulations

2 Conditions of use affecting exposure - Workers

2.2 Control of worker exposure

Product characteristics

Physical form of product	Liquid, vapour pressure 0,5 - 10 kPa at STP
Vapour pressure	0.207 PSI at 85 °F
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently).
Amounts used	not applicable
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)
Other 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.

Contributing Scenarios: Operational conditions and risk management measures

General measures (skin irritants):	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop. Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying.
Cleaning - Rolling, Brushing - Vessel and container cleaning - Regular cleaning of equipment 15 min - 1 h/day:	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Laboratory activities - Small scale < 1000 mL - Use > 4 h/day:	Handle in a fume cupboard or under extract ventilation. No specific measures identified.

3 Exposure estimation and reference to its source

Exposure assessment (environment)	Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented
Exposure assessment (human)	Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented

4 Guidance to check compliance with the exposure scenario

Environment

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Health

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Annex to the extended Safety Data Sheet (eSDS)

o-Xylene

Exposure Scenario / ES No 11

1 TITLE SECTION

Exposure Scenario name: Use in laboratories - Professional

Sectors of use [SU]

SU22: Professional uses.

Process categories [PROC]

PROC10: Roller application or brushing.
PROC15: Use as laboratory reagent.

Environmental release categories [ERC]

ERC8a: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor).
ERC8a: Wide dispersive indoor use of processing aids in open systems.

2 Operational conditions and risk management measures

2.1 Control of environmental exposure

Product characteristics	Medium volatile liquid, Water solubility (g/L): 0,158, Vapour pressure: 1050 Pa at °C: 25, Log KOW: 3,16, Readily biodegradable

Amounts used

Fraction of EU tonnage used in region:	21E3 t(onnes)/year
Fraction of regional tonnage used locally:	0,002
Regional use tonnage (tons/year):	2,1E3

Frequency and duration of use

Emission days	365 days per year

Environment factors not influenced by risk management

Local marine water dilution factor	100
Local freshwater dilution factor	10
Release fraction to air from process (initial release prior to RMM):	0,5
Release fraction to soil from process (initial release prior to RMM):	0
Release fraction to wastewater from process (initial release prior to RMM):	0,5

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

Soil emission controls are not applicable as there is no direct release to soil.

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 (%):	93,57

Organisational measures to prevent/limit release from site:

Do not apply industrial sludge to natural soils.

Conditions and measures related to municipal sewage treatment plant

Estimated substance removal from wastewater via on-site sewage treatment (%):	93,57
Assumed on-site sewage treatment plant flow (m3/d):	2000
Conditions and measures related to external treatment of waste for disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations
Conditions and measures related to external recovery of waste	External recovery and recycling of waste should comply with applicable local and/or national regulations

2 Conditions of use affecting exposure - Workers

2.2 Control of worker exposure

Product characteristics

Physical form of product	Liquid, vapour pressure 0,5 - 10 kPa at STP
Vapour pressure	0.207 PSI at 85 °F
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently).
Amounts used	not applicable
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)
Other 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.

Contributing Scenarios: Operational conditions and risk management measures

General measures (skin irritants):	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop. Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying.
Cleaning - Rolling, Brushing - Vessel and container cleaning:	Provide a good standard of controlled ventilation (10 to 15 air changes per hour)
Laboratory activities - Small scale:	Handle in a fume cupboard or under extract ventilation. No specific measures identified.

3 Exposure estimation and reference to its source

Exposure assessment (environment)	Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented
Exposure assessment (human)	Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented

4 Guidance to check compliance with the exposure scenario

Environment

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Health

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Annex to the extended Safety Data Sheet (eSDS)

o-Xylene

Exposure Scenario / ES No 12

1 TITLE SECTION

Exposure Scenario name: Use in oil and gas field drilling and production operations - Professional

Sectors of use [SU]

SU22: Professional uses.

Process categories [PROC]

PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.
PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions.
PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition.
PROC4: Chemical production where opportunity for exposure arises.
PROC8a: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities.
PROC8b: Transfer of substance or mixture (charging and discharging) at dedicated facilities.

Environmental release categories [ERC]

ERC8d: Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor).
ERC8d: Wide dispersive outdoor use of processing aids in open systems.

2 Operational conditions and risk management measures

2.1 Control of environmental exposure

Product characteristics	Medium volatile liquid, Water solubility (g/L): 0,158, Vapour pressure: 1050 Pa at °C: 25, Log KOW: 3,16, Readily biodegradable

Frequency and duration of use

Emission days	not applicable

Environment factors not influenced by risk management

Local marine water dilution factor	not applicable
Local freshwater dilution factor	not applicable
Release fraction to air from process (initial release prior to RMM):	not applicable
Release fraction to soil from process (initial release prior to RMM):	not applicable
Release fraction to wastewater from process (initial release prior to RMM):	not applicable

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

Discharge to aquatic environment is restricted (see Section 4.2).

Organisational measures to prevent/limit release from site:

Prevent environmental discharge consistent with regulatory requirements.

Conditions and measures related to municipal sewage treatment plant	not applicable

Conditions and measures related to external treatment of waste for disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations
Conditions and measures related to external recovery of waste	External recovery and recycling of waste should comply with applicable local and/or national regulations

2 Conditions of use affecting exposure - Workers

2.2 Control of worker exposure

Product characteristics

Physical form of product	Liquid, vapour pressure 0,5 - 10 kPa at STP
Vapour pressure	0.207 PSI at 85 °F
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently).
Amounts used	not applicable
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)
Other 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.

Contributing Scenarios: Operational conditions and risk management measures

General measures (skin irritants):	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop. Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying.
General exposures (closed systems):	No specific measures identified
General exposures (open systems):	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Process sampling:	No specific measures identified
Filling / preparation of equipment from drums or containers:	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Drill floor operations:	Ensure operation is undertaken outdoors. No specific measures identified.
Operation of solids filtering equipment - vapour exposures , Operation of solids filtering equipment - aerosol exposures , Operation of solids filtering equipment:	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Treatment and disposal of filtered solids:	No specific measures identified
Bulk transfers:	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

Pouring from small containers:	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
Equipment cleaning and maintenance:	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 4 hours.
Batch process:	No specific measures identified
Batch process - With occasional controlled exposure:	No specific measures identified

3 Exposure estimation and reference to its source

Exposure assessment (environment)	Quantitative exposure and risk assessment not possible due to lack of emissions to aquatic environment. Qualitative approach used to conclude safe use.
Exposure assessment (human)	Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented

4 Guidance to check compliance with the exposure scenario

Environment

Discharge to aquatic environment is restricted by law and industry prohibits release.

Health

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Annex to the extended Safety Data Sheet (eSDS)

o-Xylene

Exposure Scenario / ES No 13

1 TITLE SECTION

Exposure Scenario name: Use in oil and gas field drilling and production operations - Industrial

Sectors of use [SU]

SU3: Industrial uses.

Process categories [PROC]

PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.
PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions.
PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition.
PROC4: Chemical production where opportunity for exposure arises.
PROC8a: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities.
PROC8b: Transfer of substance or mixture (charging and discharging) at dedicated facilities.

Environmental release categories [ERC]

ERC4: Use of non-reactive processing aid at industrial site (no inclusion into or onto article).

2 Operational conditions and risk management measures

2.1 Control of environmental exposure

Product characteristics	Medium volatile liquid, Water solubility (g/L): 0,158, Vapour pressure: 1050 Pa at °C: 25, Log KOW: 3,16, Readily biodegradable

Frequency and duration of use

Emission days	not applicable

Environment factors not influenced by risk management

Local marine water dilution factor	not applicable
Local freshwater dilution factor	not applicable
Release fraction to air from process (initial release prior to RMM):	not applicable
Release fraction to soil from process (initial release prior to RMM):	not applicable
Release fraction to wastewater from process (initial release prior to RMM):	not applicable

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

Discharge to aquatic environment is restricted (see Section 4.2).

Organisational measures to prevent/limit release from site:

Prevent environmental discharge consistent with regulatory requirements.

Conditions and measures related to municipal sewage treatment plant	not applicable

Conditions and measures related to external treatment of waste for disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations
Conditions and measures related to external recovery of waste	External recovery and recycling of waste should comply with applicable local and/or national regulations

2 Conditions of use affecting exposure - Workers

2.2 Control of worker exposure

Product characteristics

Physical form of product	Liquid, vapour pressure 0,5 - 10 kPa at STP
Vapour pressure	0.207 PSI at 85 °F
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently).
Amounts used	not applicable
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)
Other 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.

Contributing Scenarios: Operational conditions and risk management measures

General measures (skin irritants):	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop. Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying.
General exposures (closed systems):	No specific measures identified
General exposures (open systems):	Ensure operation is undertaken outdoors
Process sampling:	No specific measures identified
Filling / preparation of equipment from drums or containers:	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Drill floor operations:	Ensure operation is undertaken outdoors. No specific measures identified.
Operation of solids filtering equipment - vapour exposures:	Ensure material transfers are under containment or extract ventilation
Operation of solids filtering equipment - aerosol exposures:	Ensure material transfers are under containment or extract ventilation
Operation of solids filtering equipment:	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Treatment and disposal of filtered solids:	No specific measures identified

Bulk transfers:	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
Pouring from small containers:	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Wear suitable gloves tested to EN374.
Equipment cleaning and maintenance:	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Wear suitable gloves tested to EN374.
Batch process:	No specific measures identified
Batch process - With occasional controlled exposure:	Provide extract ventilation to points where emissions occur

3 Exposure estimation and reference to its source

Exposure assessment (environment)	Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented
Exposure assessment (human)	Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented

4 Guidance to check compliance with the exposure scenario

Environment

Discharge to aquatic environment is restricted by law and industry prohibits release.

Health

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Annex to the extended Safety Data Sheet (eSDS)

o-Xylene

Exposure Scenario / ES No 14

1 TITLE SECTION

Exposure Scenario name: Uses in coatings - Industrial

Sectors of use [SU]

SU3: Industrial uses.

Process categories [PROC]

PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.
PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions.
PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition.
PROC4: Chemical production where opportunity for exposure arises.
PROC5: Mixing or blending in batch processes.
PROC7: Industrial spraying.
PROC8a: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities.
PROC8b: Transfer of substance or mixture (charging and discharging) at dedicated facilities.
PROC10: Roller application or brushing.
PROC13 Treatment of articles by dipping and pouring.
PROC15: Use as laboratory reagent.

Environmental release categories [ERC]

ERC4: Use of non-reactive processing aid at industrial site (no inclusion into or onto article).

2 Operational conditions and risk management measures

2.1 Control of environmental exposure

Product characteristics	Medium volatile liquid, Water solubility (g/L): 0,158, Vapour pressure: 1050 Pa at °C: 25, Log KOW: 3,16, Readily biodegradable

Amounts used

Fraction of EU tonnage used in region:	70E3 t(onnes)/year
Fraction of regional tonnage used locally:	3,00E-01
Regional use tonnage (tons/year):	7E3

Frequency and duration of use

Emission days	300 days per year

Environment factors not influenced by risk management

Local marine water dilution factor	100
Local freshwater dilution factor	10
Release fraction to air from process (initial release prior to RMM):	0,098
Release fraction to soil from process (initial release prior to RMM):	0
Release fraction to wastewater from process (initial release prior to RMM):	0,007

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

Prevent discharge of undissolved substance to or recover from onsite wastewater. Soil emission controls are not applicable as there is no direct release to soil.

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 (%):	93,57

Organisational measures to prevent/limit release from site:

Do not apply industrial sludge to natural soils. Sewage sludge should be incinerated, contained or reclaimed.

Conditions and measures related to municipal sewage treatment plant

Estimated substance removal from wastewater via on-site sewage treatment (%):	93,57
Assumed on-site sewage treatment plant flow (m3/d):	2000
Conditions and measures related to external treatment of waste for disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations
Conditions and measures related to external recovery of waste	External recovery and recycling of waste should comply with applicable local and/or national regulations

2 Conditions of use affecting exposure - Workers

2.2 Control of worker exposure

Product characteristics

Physical form of product	Liquid, vapour pressure 0,5 - 10 kPa at STP
Vapour pressure	0.207 PSI at 85 °F
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently).
Amounts used	not applicable
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)
Other 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.

Contributing Scenarios: Operational conditions and risk management measures

General measures (skin irritants):	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop. Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying.
General exposures (closed systems):	No specific measures identified
Mixing operations - General exposures (closed systems):	No specific measures identified
General exposures (closed systems) - with sample collection, Use in contained batch processes:	No other specific measures identified
Film formation - force drying (50-100°C). Stoving (>100°C). UV/EB radiation curing:	No specific measures identified
Film formation - air drying:	No specific measures identified
Preparation of material for application , Mixing operations (open systems):	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Spraying (automatic/robotic):	Carry out in a vented booth provided with laminar airflow
Manual Spraying:	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Wear a respirator conforming to EN140 with Type A filter or better.
Material transfers - Non-dedicated facility:	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Material transfers - Dedicated facility:	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Roller, spreader, flow application:	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Wear suitable gloves tested to EN374.
Dipping, immersion and pouring:	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Laboratory activities:	No specific measures identified
Material transfers, Drum/batch transfers , Transfer from/pouring from containers:	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Production of preparations or articles by tabletting, compression, extrusion, pelletisation:	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Equipment cleaning and maintenance:	Drain down system prior to equipment break-in or maintenance
Storage - With occasional controlled exposure:	No specific measures identified

3 Exposure estimation and reference to its source

Exposure assessment (environment)	Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented
Exposure assessment (human)	Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented

4 Guidance to check compliance with the exposure scenario

Environment

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Health

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Annex to the extended Safety Data Sheet (eSDS)

o-Xylene

Exposure Scenario / ES No 15

1 TITLE SECTION

Exposure Scenario name: Uses in coatings - Industrial

Sectors of use [SU]

SU22: Professional uses.

Process categories [PROC]

PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.
PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions.
PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition.
PROC4: Chemical production where opportunity for exposure arises.
PROC5: Mixing or blending in batch processes.
PROC8a: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities.
PROC8b: Transfer of substance or mixture (charging and discharging) at dedicated facilities.
PROC10: Roller application or brushing.
PROC11: Non industrial spraying.
PROC13 Treatment of articles by dipping and pouring.
PROC15: Use as laboratory reagent.
PROC19: Manual activities involving hand contact.

Environmental release categories [ERC]

ERC8a: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor).
ERC8a: Wide dispersive indoor use of processing aids in open systems.
ERC8d: Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor).
ERC8d: Wide dispersive outdoor use of processing aids in open systems.

2 Operational conditions and risk management measures

2.1 Control of environmental exposure

Product characteristics	Medium volatile liquid, Water solubility (g/L): 0,158, Vapour pressure: 1050 Pa at °C: 25, Log KOW: 3,16, Readily biodegradable

Amounts used

Fraction of EU tonnage used in region:	70E3 t(onnes)/year
Fraction of regional tonnage used locally:	0,02
Regional use tonnage (tons/year):	7E3

Frequency and duration of use

Emission days	365 days per year

Environment factors not influenced by risk management

Local marine water dilution factor	100
Local freshwater dilution factor	10

Release fraction to air from process (initial release prior to RMM):	0,98
Release fraction to soil from process (initial release prior to RMM):	0,01
Release fraction to wastewater from process (initial release prior to RMM):	0,01

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

Negligible air emissions as process operates in a contained system. Soil emission controls are not applicable as there is no direct release to soil.

Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%):	93,57

Organisational measures to prevent/limit release from site:

Prevent environmental discharge consistent with regulatory requirements.

Conditions and measures related to municipal sewage treatment plant

Estimated substance removal from wastewater via on-site sewage treatment (%):	93,57
Assumed on-site sewage treatment plant flow (m3/d):	2000
Conditions and measures related to external treatment of waste for disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations
Conditions and measures related to external recovery of waste	External recovery and recycling of waste should comply with applicable local and/or national regulations

2 Conditions of use affecting exposure - Workers

2.2 Control of worker exposure

Product characteristics

Physical form of product	Liquid, vapour pressure 0,5 - 10 kPa at STP
Vapour pressure	0.207 PSI at 85 °F
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently).
Amounts used	not applicable
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)
Other 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.

Contributing Scenarios: Operational conditions and risk management measures

General measures (skin irritants):	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop. Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying.
General exposures (closed systems):	No specific measures identified
General exposures (closed systems) - Use in contained systems	No specific measures identified
Film formation - air drying - Outdoor:	Ensure operation is undertaken outdoors
Film formation - air drying - Indoor:	Provide a good standard of controlled ventilation (10 to 15 air changes per hour)
Preparation of material for application:	No specific measures identified
Preparation of material for application: - Indoor:	Provide a good standard of controlled ventilation (10 to 15 air changes per hour)
Preparation of material for application: - Outdoor:	Avoid carrying out activities involving exposure for more than 4 hours
Manual Spraying Indoor:	Carry out in a vented booth or extracted enclosure. Wear a respirator conforming to EN140 with Type A filter or better.
Manual Spraying Outdoor:	Ensure operation is undertaken outdoors. Wear a respirator conforming to EN140 with Type A filter or better.
Filling / preparation of equipment from drums or containers:	No specific measures identified
Roller, spreader, flow application - Indoor:	Provide a good standard of controlled ventilation (10 to 15 air changes per hour)
Roller, spreader, flow application - Outdoor:	Ensure operation is undertaken outdoors. Wear a respirator conforming to EN140 with Type A filter or better.
Dipping, immersion and pouring - Indoor:	Provide extract ventilation to points where emissions occur
Dipping, immersion and pouring - Outdoor:	Ensure operation is undertaken outdoors. Wear a respirator conforming to EN140 with Type A filter or better.
Laboratory activities:	No specific measures identified
Material transfers, Drum/batch transfers , Dedicated facility:	Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan
Material transfers, Drum/batch transfers , Non-dedicated facility:	Use drum pumps or carefully pour from container. Use container to collect drips.
Hand application - finger paints, pastels, adhesives - Indoor:	Provide a good standard of controlled ventilation (10 to 15 air changes per hour)

Hand application - finger paints, pastels, adhesives - Outdoor:	Ensure operation is undertaken outdoors. Avoid carrying out activities involving exposure for more than 4 hours.
Equipment cleaning and maintenance:	Drain down system prior to equipment break-in or maintenance
Storage - With occasional controlled exposure:	No specific measures identified

3 Exposure estimation and reference to its source

Exposure assessment (environment)	Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented
Exposure assessment (human)	Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented

4 Guidance to check compliance with the exposure scenario

Environment

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Health

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.