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

#### **1.1 Product identifier**

1.1 Floudelide	nunei	
Trade name: REACH registration No.:	Phenol, synthetic 01-2119471329-32-XXXX Location Germany: 01-2119471329-32-0000 Location Belgium: 01-2119471329-32-0004 Location Mobile: 01-2119471329-32-0002	
CAS-Number: EC-number: EU index number: <b>1.2 Relevant id</b> d	108-95-2 203-632-7 604-001-00-2 entified uses of the substance or mixture and uses advised against	
General use:	Phenol is an important raw material of the chemical industry. It is used for manufacturing of Bisphenol A, Phenol-Formaldehyde-Resins and Caprolactam. Furthermore it is used for manufacturing of Alkyl Phenols, Salicylic Acid and Nit	
Identified uses:	<ul> <li>Industrial use:</li> <li>Generic exposure scenario (GES): Industrial Processes relevant for phenol and phenol containing products (ES 1 - 8)</li> <li>Manufacture, processing and distribution of substances and mixtures *</li> <li>Use in laboratories</li> <li>Uses in coatings</li> <li>Use in binders and release agents</li> <li>Rubber production and processing</li> <li>Polymer manufacturing</li> <li>Polymer processing</li> <li>Phenolic resin processing</li> <li>Use of phenolic resins uses of downstream users (DU)</li> </ul>	Page 14 Page 46 Page 50 Page 53 Page 56 Page 59 Page 62 Page 65 Page 68
	<ul> <li>Professional use:</li> <li>10 Generic exposure scenario (GES): Professional Processes relevant for phenol and phenol containing products (ES 11 - 16)</li> <li>11 Use in laboratories</li> <li>12 Uses in coatings</li> <li>13 Use in binders and release agents</li> <li>14 Polymer manufacturing</li> <li>15 Polymer processing</li> <li>16 Phenolic resin processing Use of phenolic resins uses of downstream users (DU)</li> <li>* Examples for processing:</li> <li>use as an intermediate,</li> <li>use as a solvent,</li> <li>use as a solvent,</li> </ul>	Page 71 Page 99 Page 102 Page 105 Page 108 Page 111 Page 114

use for the manufacturing of resins

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#### 1.3 Details of the supplier of the safety data sheet

Company name: Street/POB-No.: Postal Code, city: WWW: E-mail: Telephone: Telefax:	INEOS Phenol GmbH Dechenstraße 3 DE-45966 Gladbeck www.ineosphenol.com msds.phenolde@ineos.com +49 (0)2043 / 9 58-0 +49 (0)2043 / 9 58-900
Dept. responsible for infor	mation: Telephone: +49 (0)2043 / 9 58-0 (Department ESHQ)
	E-mail: msds.phenolde@ineos.com
Additional information:	Location Belgium: INEOS Phenol Belgium NV Haven 1930 Geslecht 1, B-9130 Beveren Telephone: +32 3 730 13 50 Telefax: +32 3 730 12 62
	On behalf of: INEOS Europe AG, INEOS Phenol Division, 3, Avenue des Uttins, 1180 Rolle, Switzerland

#### 1.4 Emergency telephone number

Telephone: +32 14 58 45 45 (B.I.G.)

### **SECTION 2: Hazards identification**

#### 2.1 Classification of the substance or mixture

#### Classification according to EC regulation 1272/2008 (CLP)

	5 5 7 7
Acute Tox. 3; H301	Toxic if swallowed.
Acute Tox. 3; H311	Toxic in contact with skin.
Acute Tox. 3; H331	Toxic if inhaled.
Skin Corr. 1B; H314	Causes severe skin burns and eye damage.
Muta. 2; H341	Suspected of causing genetic defects.
STOT RE 2; H373	May cause damage to organs through prolonged or repeated exposure.
Aquatic Chronic 2; H411	Toxic to aquatic life with long lasting effects.
Additional information Self-c	classified according to ATP 2 (EC 286/2011):
Aqua	tic Chronic 2; H411: Toxic to aquatic life with long lasting effects.
Speci	ific concentration limit (SCL):
Skin (	Corr. 1B; H314: C >= 3 %
	Irrit. 2; H315: 1 % <= C < 3 %

Eye. Irrit. 2; H319: 1 % <= C < 3 %

### 2.2 Label elements

Labelling (CLP)



Signal word:

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Hazard statements:	H301	Toxic if swallowed.		
	H311	Toxic in contact with skin.		
	H314	Causes severe skin burns and eye damage.		
	H331	Toxic if inhaled.		
	H341	Suspected of causing genetic defects.		
	H373	May cause damage to organs through prolonged or repeated	ed exposur	e.
	H411	Toxic to aquatic life with long lasting effects.	-	
Precautionary statements:	P202	Do not handle until all safety precautions have been read a	nd underst	ood.
	P261	Avoid breathing dust/fume/gas/mist/vapours/spray.		
	P262	Do not get in eyes, on skin, or on clothing.		
	P273	Avoid release to the environment.		
	P280	Wear protective gloves/protective clothing/eye protection/fa	ce protecti	on.
	P301+P310	IF SWALLOWED: Immediately call a POISON CENTER/do	octor.	
	P302+P352	IF ON SKIN: Wash with plenty of water/soap.		
	P305+P351+P33	8		
		IF IN EYES: Rinse cautiously with water for several minutes	s. Remove	
		contact lenses, if present and easy to do. Continue rinsing.		
	P307+P311	IF exposed: Call a POISON CENTER or doctor/physician.		
	P311	Call a POISON CENTER/doctor.		
	P330	Rinse mouth.		
	P361	Take off immediately all contaminated clothing.		
	P405	Store locked up.		
	P501	Dispose of contents/container to hazardous or special wast	e collection	n point.

#### 2.3 Other hazards

After resorption: injuries of the internal organs liver, kidneys, heart. Strong skin absorption as main danger of phenol poisoning at the workplace with paralysis of the central nervous system (with lethal consequences in severe cases) as well as liver and kidney damage

Results of PBT and vPvB assessment:

This substance does not meet the PBT/vPvB criteria of REACH, Annex XIII.

## **SECTION 3: Composition / information on ingredients**

### 3.1 Substances

Chemical characterisation:	C6 H6 O = C6 H5 OH Phenol, Hydroxybenzene
CAS-Number:	108-95-2
EC-number:	203-632-7
EU index number:	604-001-00-2
RTECS-Number:	SJ3325000
Customs tariff number:	2907 11 00
Hazardous impurities	Keep in a cool, well-ventilated place. storage temperature: liquid: 50 °C up to 60 °C solid: 15 °C up to 25 °C

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## **SECTION 4: First aid measures**

#### 4.1 Description of first aid measures

General information:	First aider: Pay attention to self-protection! Remove the casualty into fresh air and keep him calm. Remove contaminated clothing. If victim is at risk of losing consciousness, position and transport on their side.
In case of inhalation:	Provide for adequate fresh air. If breathing becomes irregular or ceases, apply rescue breathing or artificial respiration immediately, where required supply oxygen. Immediately get medical attention.
Following skin contact:	Take off immediately all contaminated clothing. Immediately get medical attention. Treat by intermittent water washes and polyethylene glycol (e.g. PEG300 or PEG400). Time is essential to prevent tissue destruction. Wash as much residue phenol from the skin as possible with water and PEG alternating at least for 30 minutes or until further medical attention is received. Gloves must be used when applying the PEG
After eye contact:	If product gets into the eye, keep eyelid open and rinse immediately with large quantities of water, for at least 30 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Subsequently seek the immediate attention of an ophthalmologist.
After swallowing:	Rinse mouth immediately and drink plenty of water. Do not induce vomiting. Immediately get medical attention.

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

In case of inhalation:

Mucous membrane irritation, cough, shortage of breath, damage of respiratory tract. After contact with skin:

Strong skin absorption as main danger of phenol poisoning at the workplace with paralysis of the central nervous system (with lethal consequences in severe cases) as well as liver and kidney damage After eve contact: burns

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

#### Symptoms and dangers:

No specific antidote therapy for phenol poisoning is known. Therefore it is important to remove the phenol completely from the body surface and out of the body as quickly as possible, and in the case of inhalation prophylactic treatment to prevent pulmonal oedema is of great importance. Phenol causes strong caustic burns of the skin and mucous membranes due to its protein degenerating action. The skin initially discolours white, later red. After initial pain, local anaesthesia appears. Absortive poisoning by large amounts of phenol is possible also through small affected skin regions and quickly leads to paralysis of the central nervous system as well as strong depression of the body temperature. Inhaling phenol vapours can lead to damage of the bronchial system and pulmonal oedema. Systemic damage to kidneys, liver and heart as well as neuropsychiatric disturbances are produced.

Treatment:

Thoroughly clean the wetted skin areas, if possible with polyethylene glycol (e.g. polyethylene glycol 300). In case of eye contact, rinse copiously with water, in case of burns rinse continuously with water as far as possible and take to an eye specialist or eye clinic. In case of inhalation, to prevent pulmonal oedemia, initiate inhalative cortisone therapy as early as possible (e.g. every 10 minutes 5 strokes of a cortisone containing aerosol dosing spray); administer codeine against dry coughing. In case of commencing or manifested pulmonary oedemia, systemic administration of cortisone. Caution: A low symptom or symptom-free interval is possible. If swallowed, gastric lavage after intubation, activated charcoal, saline laxative.

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## **SECTION 5: Firefighting measures**

#### 5.1 Extinguishing media

Suitable extinguishing media:

Extinguishing powder, Foam, water spray jet In enclosed areas: carbon dioxide

Extinguishing media which must not be used for safety reasons:

Full water jet.

#### 5.2 Special hazards arising from the substance or mixture

Combustible. Vapours are heavier than air and will spread at floor level. In case of warming Development of explosive gases/vapours. Hazardous vapours may form during fires. In case of fire may be liberated: carbon monoxide and carbon dioxide.

#### 5.3 Advice for firefighters

Special protective equipment for firefighters:

Wear a self-contained breathing apparatus and chemical protective clothing.

Additional information: Hazchem-Code: 2X

Heating will lead to pressure increase: Danger of bursting and explosion. Move container away or cool with water from a protected position. Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residuals and contaminated extinguishing water must be disposed of in accordance with the regulations of the local authorities.

## **SECTION 6: Accidental release measures**

#### 6.1 Personal precautions, protective equipment and emergency procedures

Remove all sources of ignition. Keep upwind.

Do not breathe vapours. Do not breathe dust. Avoid contact with the substance. Wear suitable protective clothing. Provide adequate ventilation.

Leaks may be repaired only with full protection (tightly closing chemical protection clothing, respirator equipment independent of the ambient air).

#### **6.2 Environmental precautions**

Do not allow to penetrate into soil, waterbodies or drains. Danger to drinking water when soaking into the soil or waters. In case of entry into waterways, soil or drains, inform the responsible authorities.

#### 6.3 Methods and material for containment and cleaning up

Allow the leaked product to solidify if this is possible without endangering people. Take up mechanically, placing in appropriate containers for disposal. Phenol, liquid: Collect spillage. Absorb with liquid-binding material (e.g. sand, diatomaceous earth, acid- or universal binding agents) and place in closed containers for disposal. Final cleaning. Collect the rinsing water when cleaning-down contaminated equipment and plant components (to prevent phenol from escaping into deep soil layers).

#### 6.4 Reference to other sections

Refer additionally to section 8 and 13.

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## **SECTION 7: Handling and storage**

#### 7.1 Precautions for safe handling

Advices on safe handling: Execute works under fume hood. Do not inhale substance. Avoid contact with skin, eyes, and clothing. The material is to be handled with extreme caution. Requires good ventilation. Welding operations are permitted only under supervision. Precautions against fire and explosion: Keep away from sources of ignition - No smoking. 7.2 Conditions for safe storage, including any incompatibilities Requirements for storerooms and containers: Keep container tightly closed. storage temperature: liquid: 50 °C up to 60 °C solid: 15 °C up to 25 °C Keep container in a well-ventilated place. Protect from light. Material: steel or Refined steel. Keep locked up. Only trained personnel may be allowed to enter storage area. Do not store together with food. Do not store together with: Solvent, aluminium, Hints on joint storage: aldehydes, halogens, hydrogen peroxide, oxidizing agents, strong acids, strong bases, formaldehyde, nitrites, nitrates, halogenates, peroxide compounds. Further details: Reserved for industrial and professional use.

#### 7.3 Specific end use(s)

For use in industrial installations and professional treatment only.

### **SECTION 8: Exposure controls/personal protection**

All exposure relevant information (human health and environment) is summarised in annexes to this safety data sheet.

#### 8.1 Control parameters

Occupational exposure limit values:

Туре	Limit value
Europe: IOELV: STEL	16 mg/m <sup>3</sup> ; 4 ppm (may be absorbed through the skin)
Europe: IOELV: TWA	8 mg/m <sup>3</sup> ; 2 ppm (may be absorbed through the skin)
Great Britain: WEL-STEL	16 mg/m <sup>3</sup> ; 4 ppm (may be absorbed through the skin)
Great Britain: WEL-TWA	7.8 mg/m <sup>3</sup> ; 2 ppm (may be absorbed through the skin)
Ireland: 15 minutes	16 mg/m <sup>3</sup> ; 4 ppm (may be absorbed through the skin)
Ireland: 8 hours	8 mg/m <sup>3</sup> ; 2 ppm (may be absorbed through the skin)

Biological limit values:

Туре	Limit value	Parameter	Material	Time of sampling
Europe: BLV	120 mg/g creatinine	phenol	urine	no restriction
Additional information: All exposure relevant information (human health and environment) is summarised in annexes to this safety data sheet.				
DNEL/DMEL:	DNEL long-term, workers, ir		b/al	

DNEL long-term, workers, dermal: 1.23 mg/ kg bw/d

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PNEC water (freshwater): 0.0077 mg/L. PNEC water (marine water): 0.00077 mg/L. PNEC sediment (freshwater): 0.0915 mg/kg dwt. PNEC sediment (marine water): 0.00915 mg/kg dwt. PNEC soil: 0.136 mg/kg dwt.

#### 8.2 Exposure controls

Execute works under fume hood. Do not inhale substance. The substance should only be handled in closed apparatus or systems. Process exhaust through separator/filter as needed.

#### Personal protection equipment

#### Occupational exposure controls

All information for relevant exposure scenarios including operational conditions and risk management measures are listed in 'Annex I: worker exposure and risk assessment'.

Respiratory protection:	Respiratory protection must be worn whenever the WEL levels have been exceeded. Use filter type ABEK according to EN 14387.
Hand protection:	Protective gloves according to EN 374. Glove material: Neoprene, PVC Breakthrough time: 140 min. (Neoprene) 75 min. (PVC) Observe glove manufacturer's instructions concerning penetrability and breakthrough time.
Fue and diam.	
Eye protection:	Goggles (DIN EN 58211) or face protection shield.
Body protection:	Wear suitable protective clothing. Material: PVC safety shoes according to EN 345-347.
General protection and hy	giene measures: Take off immediately all contaminated clothing. When using do not eat, drink or smoke. Have eye wash bottle or eye rinse ready at work place. Keep away from food, drink and animal feedingstuffs. Preventive skin protection. Wash hands before breaks and immediately after handling the product. Then apply enough skin protecting cream.

Alternatives to the personal protective measures as mentioned can only be determined in agreement with a responsible safety expert.

#### **Environmental exposure controls**

All information for relevant exposure scenarios including operational conditions and risk management measures are listed in 'Annex II: Environmental Exposure and Risk Assessment' and 'Annex III: Environmental Exposure Calculation Tool'.

## **SECTION 9: Physical and chemical properties**

#### 9.1 Information on basic physical and chemical properties

Appearance:	Form: liquid (> 40.9 °C) solid (< 40.9 °C) Colour: colourless (liquid) white (solid)
Odour: Odour threshold:	stinging 0.022 - 22 mg/m³
pH value:	at 20 °C, 10 g/L: 4 - 5

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40.9 °C 181.9 °C (1013 hPa, DIN 510751)		
81 °C (DIN EN ISO 2719) No data available		
595 °C (VDE G1; EN T1) LEL (Lower Explosion Limit): 1.30 Vol-% UEL (Upper Explosive Limit): 9.00 Vol-%		
at 20 °C: 0.2 hPa at 50 °C: 3 hPa		
No data available at 25 °C: 1.13 g/cm <sup>3</sup> (DIN 51 757)		
at 20 °C: 84 g/L at 25 °C: 87 g/L at 68 °C: completely miscible		
1.47 log P(o/w) (CPC) Based on the n-octanol/water partition coefficient signific in organisms is not expected.	ant accumula	ation
No data available		
Product is not explosive. (VDE 1; EN II A) No data available		
	595 °C (VDE G1; EN T1) LEL (Lower Explosion Limit): 1.30 Vol-% UEL (Upper Explosive Limit): 9.00 Vol-% at 20 °C: 0.2 hPa at 50 °C: 3 hPa No data available at 25 °C: 1.13 g/cm <sup>3</sup> (DIN 51 757) at 20 °C: 84 g/L at 25 °C: 87 g/L at 68 °C: completely miscible 1.47 log P(o/w) (CPC) Based on the n-octanol/water partition coefficient signific in organisms is not expected. No data available none at 50 °C: 3.437 mPa*s Product is not explosive. (VDE 1; EN II A)	595 °C (VDE G1; EN T1) LEL (Lower Explosion Limit): 1.30 Vol-% UEL (Upper Explosive Limit): 9.00 Vol-% at 20 °C: 0.2 hPa at 50 °C: 3 hPa No data available at 25 °C: 1.13 g/cm <sup>3</sup> (DIN 51 757) at 20 °C: 84 g/L at 25 °C: 87 g/L at 68 °C: completely miscible 1.47 log P(o/w) (CPC) Based on the n-octanol/water partition coefficient significant accumula in organisms is not expected. No data available none at 50 °C: 3.437 mPa*s Product is not explosive. (VDE 1; EN II A)

#### 9.2 Other information

Ignition temperature: 599 Additional information: Mo

595 °C (DIN 51 794) Molar mass: 94.11 g/mol Relative vapour density at 20 °C (air=1): 3.2

## **SECTION 10: Stability and reactivity**

#### **10.1 Reactivity**

hygroscopic

#### **10.2 Chemical stability**

Product is stable under normal storage conditions.

#### 10.3 Possibility of hazardous reactions

No dangerous reactions are known.

#### 10.4 Conditions to avoid

No decomposition when used properly. It may react to form catechol, hydroquinone, as a result of radical formation. Protect from moisture contamination.

#### 10.5 Incompatible materials

Oxidizing agents, aldehydes, isocyanates, nitrites, nitrides, Friedel-Crafts catalysts. Avoid ignitable vapour-air-mixtures. Unsuitable materials Metals, Rubber, various plastics, alloys

#### **10.6 Hazardous decomposition products**

In case of fire may be liberated: carbon monoxide and carbon dioxide.

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## **SECTION 11: Toxicological information**

	-
11.1 Informati	on on toxicological effects
Acute toxicity:	LD50 Rat, oral: 340 mg/kg bw (OECD 401) LDLo human, oral: 140 mg/kg bw LD50 Rat, dermal: 660 mg/kg bw (OECD 402) LC50 Rat, inhalative: > 900 mg/m <sup>3</sup> /8h
Toxicological effects:	Acute toxicity (oral): Acute Tox. 3; H301 = Toxic if swallowed. Toxic if swallowed.
	Acute toxicity (dermal): Acute Tox. 3; H311 = Toxic in contact with skin. Toxic in contact with skin.
	Acute toxicity (inhalative): Acute Tox. 3; H331 = Toxic if inhaled. Toxic if inhaled.
	Skin corrosion/irritation: Skin Corr. 1B; H314 = Causes severe skin burns and eye damage. Causes severe skin burns and eye damage.
	Serious eye damage/irritation: Lack of data.
	Sensitisation to the respiratory tract: Lack of data.
	Skin sensitisation: Based on available data, the classification criteria are not met. Not known to cause sensitization.
	Germ cell mutagenicity/Genotoxicity: Muta. 2; H341 = Suspected of causing genetic defects. Bacterial mutagenicity: negative. Chromosomal aberrations in-vitro: positive. Micronucleus test: in-vitro: positive. Gene-mutations mammalian cells in-vitro: positive. Sister chromatid exchange in-vitro: positive. Micronucleus test: in-vivo: weak positive.
	Carcinogenicity: Based on available data, the classification criteria are not met. Specific symptoms in animal studies: None carcinogenic effect.
	Reproductive toxicity: Based on available data, the classification criteria are not met. Specific symptoms in animal studies: No reproductive hazards have been observed.
	Effects on or via lactation: Lack of data.
	Specific target organ toxicity (single exposure): Based on available data, the classification criteria are not met.
	Specific target organ toxicity (repeated exposure): STOT RE 2; H373 = May cause damage to organs through prolonged or repeated exposure. May cause damage to organs through prolonged or repeated exposure. Organs affected: nervous system, skin, liver, kidneys
	Aspiration hazard: Based on available data, the classification criteria are not met.
Symptoms	
	In case of inhalation: Mucous membrane irritation, cough, shortage of breath, damage of respiratory tract. After contact with skin: Strong skin absorption as main danger of phenol poisoning at the workplace with paralysis of the central nervous system (with lethal consequences in severe cases) as well as liver and kidney damage

After eye contact: burns

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## **SECTION 12: Ecological information**

#### 12.1 Toxicity

Aquatic toxicity:

Toxic to aquatic life with long lasting effects. Algae toxicity: EC50 Pseudokirchneriella subcapitata (green algae), (freshwater, cell number): 61.1 mg/L/96h. EC50 Entomoneis cf punctulata, (marine water, growth rate): 76 mg/L/72h. Bacterial toxicity: IC50 Nitrosomonas sp: 21 mg/L/24h. Daphnia toxicity: EC50 Ceriodaphnia dubia: 3.1 mg/L/48h. Fish toxicity: LC50 Oncorhynchus mykiss: 8.9 mg/L/96h. Longterm fish toxicity: 60 d NOEC (Cirrhina mrigala): 0.077 mg/L. Long-term daphnia toxicity: 16 d EC10 (Daphnia magna, growth): 0.46 mg/L. Additional information: EC50 Lemna minor (little duckweed): 61.82 mg/L/7d. LC50 eisenis foetida: 401 mg/kg soil/14d. EC50 Lactuca sativa: 79 mg/kg soil/14d. EC10 Effects on soil microorganisms. 100 mg/kg soil/14d.

#### 12.2 Persistence and degradability

Further details

Abiotic degradation: Air (Indirect photodegradation by reaction with OH radicals.): half-life time (DT50) approx. 14d Water: Not susceptible to hydrolysis. Biodegradation: Activated sludge: 62 %/100h, readily biodegradable (OECD 301C). Activated sludge (anaerobic): 80.1 %/50d, rapidly biodegradable under anaerobic conditions (ECETOC method). Water: 86 - 96 % / 20d, easily bio-degradable (BOD-test APHA). COD: 2.3 g/g ThOD: 2.26 mg/L

#### 12.3 Bioaccumulative potential

Significant bioaccumulation potential is not to be expected.

Bioconcentration factor (BCF): 17.5 (fish: Danio rerio)

#### 12.4 Mobility in soil

Adsorption coefficient:

Koc: 82.8 L/kg, at 20 °C (calculated as log Pow)

The soil sorption coefficient indicates a low sorption of phenol onto soil organic matter.

Evaporation rate (Volatilisation) at 20°C: H=0.022 Pa\* m<sup>3</sup>/mol.

The calculated Henry's Law constant indicates a low to moderate volatility from aqueous solution.

#### 12.5 Results of PBT and vPvB assessment

This substance does not meet the PBT/vPvB criteria of REACH, Annex XIII.

#### 12.6 Other adverse effects

General information: Do not allow to enter into ground-water, surface water or drains.

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No. 2015/830

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## **SECTION 13: Disposal considerations**

#### 13.1 Waste treatment methods

#### Product

Waste key number:	07 01 99 = Wastes from the manufacture, formulation, supply and use (MFSU) of basic organic chemicals MFSU = manufacture, formulation, supply and use
Recommendation:	Possible alternatives: ASN070108*: other still bottoms and reaction residues ASN070101*: aqueous washing liquids and mother liquors
	Incinerate according to applicable local, state and federal regulations. Discharge into the environment must be avoided.

#### Contaminated packaging

Recommendation: Dispose of waste according to applicable legislation. Handle contaminated packages in the same way as the substance itself. Non-contaminated packages may be recycled.

## **SECTION 14: Transport information**

#### 14.1 UN number

solid (< 40.9 °C)	liquid (> 40.9 °C)
UN 1671	UN 2312

### 14.2 UN proper shipping name

solid (< 40.9 °C)	liquid (> 40.9 °C)
UN 1671, PHENOL, SOLID	UN 2312, PHENOL, MOLTEN

### 14.3 Transport hazard class(es)

	solid (< 40.9 °C)	liquid (> 40.9 °C)	
ADR/RID, ADN:	Class 6.1, Code: T2	Class 6.1, Code: T1	
IMDG:	Class 6.1, Subrisk -	Class 6.1, Subrisk -	
IATA-DGR:	Class 6.1	Class 6.1	

### 14.4 Packing group

	solid (< 40.9 °C)	liquid (> 40.9 °C)
ADR/RID, ADN, IMDG:	ll	II
IATA-DGR:	II	

### 14.5 Environmental hazards

	solid (< 40.9 °C)	liquid (> 40.9 °C)	
Marine pollutant	yes	yes	

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#### 14.6 Special precautions for user

#### Land transport (ADR/RID)

	solid (< 40.9 °C)	liquid (> 40.9 °C)
Warning board:	Kemmler-number 60, UN number 1671	Kemmler-number 60, UN number 2312
Limited quantities:	500 g	0
EQ:	E4	E0

#### Inland waterway craft (ADN)

	solid (< 40.9 °C)	liquid (> 40.9 °C)
Hazard label:	6.1	6.1
Limited quantities:	500 g	0
EQ:	E4	E0

#### Sea transport (IMDG)

	solid (< 40.9 °C)	liquid (> 40.9 °C)
EmS:	F-A, S-A	F-A, S-A
Limited quantities:	500 g	0
EQ:	E4	E0

#### Air transport (IATA)

	solid (< 40.9 °C)	liquid (> 40.9 °C)
Passenger Ltd.Qty.:	Pack.Instr. Y644 - Max. Net Qty/Pkg. 1 kg	Forbidden
Passenger:	Pack.Instr. 669 - Max. Net Qty/Pkg. 25 kg	Forbidden
Cargo:	Pack.Instr. 676 - Max. Net Qty/Pkg. 100 kg	Forbidden
EQ:	E4	E0

#### 14.7 Transport in bulk according to Annex II of Marpol and the IBC Code

Pollution category: Y Vessel type: 2 Product name: Phenol

## **SECTION 15: Regulatory information**

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

#### National regulations - Great Britain

Hazchem-Code:

No data available

#### National regulations - EC member states

2X

Volatile organic compounds (VOC):

100 % by weight

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## Labelling of packaging with <= 125mL content

		$\vee$ $\vee$ $\vee$
Signal word:	Danger	• • •
Hazard statements:	H301	Toxic if swallowed.
	H311	Toxic in contact with skin.
	H314	Causes severe skin burns and eye damage.
	H331	Toxic if inhaled.
	H341	Suspected of causing genetic defects.
	H373	May cause damage to organs through prolonged or repeated exposure.
Precautionary statements:	P202	Do not handle until all safety precautions have been read and understood.
	P261	Avoid breathing dust/fume/gas/mist/vapours/spray.
	P262	Do not get in eyes, on skin, or on clothing.
	P280	Wear protective gloves/protective clothing/eye protection/face protection.
	P301+P310	IF SWALLOWED: Immediately call a POISON CENTER/doctor.
	P302+P352	IF ON SKIN: Wash with plenty of water/soap.
	P305+P351+P338	
		IF IN EYES: Rinse cautiously with water for several minutes. Remove
		contact lenses, if present and easy to do. Continue rinsing.
	P307+P311	IF exposed: Call a POISON CENTER or doctor/physician.
	P311	Call a POISON CENTER/doctor.
	P330	Rinse mouth.
	P361	Take off immediately all contaminated clothing.
Eurther regulations, limitati	P405	Store locked up.
Further regulations, limitation		12/18/EU on the control of major-accident hazards involving dangerous
		[Seveso-III-Directive] H2, P5c and E2
		on according to REACH annex XVII, no.: 40
		on the market and the use of the substance is not permitted in decorative

The placing on the market and the use of the substance is not permitted in decorative articles, games and fun games.

#### **15.2 Chemical Safety Assessment**

For this substance a chemical safety assessment has been carried out.

SECTION 16:	Other	information
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#### **Further information**

Literature:REACH Registration Dossier Phenol. P&D-REACH Consortium, 2010Reason of change:Changes in section 1.4: emergency phone number<br/>Changes in section 4.1: Description of first aid measures<br/>Changes in section 5.1: extinguishing media<br/>19/11/2010

#### Department issuing data sheet

Contact person: see section 1: Dept. responsible for information

For abbreviations and acronyms, see: ECHA Guidance on information requirements and chemical safety assessment, chapter R.20 (Table of terms and abbreviations).

The information in this data sheet has been established to our best knowledge and was up-to-date at time of revision. It does not represent a guarantee for the properties of the product described in terms of the legal warranty regulations.

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No. 2015/830

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## **Exposure Scenario 0:** Generic exposure scenario (GES): Industrial Processes relevant for phenol and phenol containing products (ES 1 - 8)

#### List of use descriptors SU3: Industrial uses Sectors of use [SU]: Application Activities and processes: Generic exposure scenario, applies to all contributing exposure scenarios related to exposure scenario 1 - 8: industrial uses ES1 - Manufacture, processing and distribution of substances and mixtures ES2 - Use in laboratories ES3 - Uses in coatings ES4 - Use in binders and release agents ES5 - Rubber production and processing ES6 - Polymer manufacturing ES7 - Polymer processing ES8 - Phenolic resin processing Use of phenolic resins uses of downstream users (DU) Use in closed process, no likelihood of exposure Contributing Scenarios: 1 General exposures (closed systems) (worker) 2 Use in closed process, no likelihood of exposure General exposures (closed systems) (worker) 3 Use in closed, continuous process with occasional controlled exposure General exposures (closed systems) (worker) Use in closed, continuous process with occasional controlled exposure 4 General exposures (closed systems) (worker) 5 Use in closed batch process (synthesis or formulation) General exposures (closed systems) (worker) Use in closed batch process (synthesis or formulation) 6 General exposures (closed systems) (worker) 7 Use in closed batch process (synthesis or formulation) General exposures (closed systems) (worker) 8 Use in closed batch process (synthesis or formulation) General exposures (closed systems) (worker) 9 Use in batch and other process (synthesis) where opportunity for exposure arises Process sampling (open systems) (worker) 10 Use in batch and other process (synthesis) where opportunity for exposure arises Process sampling (open systems) (worker) 11 Use in batch and other process (synthesis) where opportunity for exposure arises Process sampling (open systems) (worker) Mixing or blending in batch processes for formulation of preparations 12 and articles (multistage and/or significant contact) Mixing operations (open systems) (worker) 13 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) Mixing operations (open systems) (worker)

14 Mixing or blending in batch processes for formulation of preparations Page 24 and articles (multistage and/or significant contact) Mixing operations (open systems) (worker)

15 Mixing or blending in batch processes for formulation of preparations Page 25 and articles (multistage and/or significant contact) Mixing operations (open systems) (worker)



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	27	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities Bulk transfers (worker)	Page 33
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		<ul> <li>Dipping, immersion and pouring (worker)</li> <li>Treatment of articles by dipping and pouring Dipping, immersion and pouring (worker)</li> </ul>	Page 4	41
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		Production of preparations or articles by tabletting, compression, extrusion, pelletisation (worker)	Page 4	42
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#### Contributing exposure scenario 1

## Use in closed process, no likelihood of exposure General exposures (closed systems) (worker)

#### List of use descriptors

Process categories [PROC]:

PROC1: Use in closed process, no likelihood of exposure

#### **Operational conditions**

Duration and frequency of use: Inhalation exposure: occasional exposure < 58 °C = low volatility Other relevant operational conditions: No special measures are required.

#### **Exposure prediction**

Exposure estimation and reference to its source: inhalative: 0.01 ppm dermal: not applicable for corrosive mixtures, phenol resistant Personal Protective Equipment (PPE) is worn Risk characterisation ratio (RCR): RCR: 0.01 inhalative: 0.01 dermal: not applicable to corrosive mixtures all relevant routes: 0.01

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release: Sample via a closed loop or other system to avoid exposure. Handle substance within a closed system. Operational conditions and risk management measures: (closed systems); Process sampling; elevated temperature Conditions and measures related to personal protection, hygiene and health evaluation:

Use personal protective equipment as required.

Contributing exposure scenario 2

## Use in closed process, no likelihood of exposure General exposures (closed systems) (worker)

#### List of use descriptors

Process categories [PROC]:

PROC1: Use in closed process, no likelihood of exposure

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#### **Operational conditions**

Duration and frequency of use:

Inhalation exposure: occasional exposure < 58 °C = low volatility Other relevant operational conditions: Inhalation exposure: TRA concentration factor [%] : < 3 Dermal exposure: TRA concentration factor [%] : < 3

#### **Exposure prediction**

Exposure estimation and reference to its source: inhalative: 0.002 ppm dermal: 0.34 mg/kg/d Risk characterisation ratio (RCR): RCR: 0.28 inhalative: 0.00 dermal: 0.28 all relevant routes:0.28

#### Risk management measures

Technical conditions and measures at process level (source) to prevent release: Sample via a closed loop or other system to avoid exposure. Limit the substance in product to 3 %. Handle substance within a closed system. Operational conditions and risk management measures: (closed systems); Process sampling; elevated temperature Conditions and measures related to personal protection, hygiene and health evaluation: Use personal protective equipment as required.

Contributing exposure scenario 3

## Use in closed, continuous process with occasional controlled exposure General exposures (closed systems) (worker)

#### List of use descriptors

Process categories [PROC]:

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

#### **Operational conditions**

Duration and frequency of use: Inhalation exposure: occasional exposure < 58 °C = low volatility Other relevant operational conditions:

No special measures are required.

#### **Exposure prediction**

Exposure estimation and reference to its source:

inhalative: 1 ppm dermal: not applicable for corrosive mixtures, phenol resistant Personal Protective Equipment (PPE) is worn Risk characterisation ratio (RCR): RCR: 0.5 inhalative: 0.50 dermal: not applicable to corrosive mixtures all relevant routes: 0.50

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release: Sample via a closed loop or other system to avoid exposure. Handle substance within a closed system. Operational conditions and risk management measures: Continuous process, Process sampling; elevated temperature; (closed systems)

occasional exposure < 58 °C = low volatility

Conditions and measures related to personal protection, hygiene and health evaluation:

Use personal protective equipment as required.

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#### Contributing exposure scenario 4

#### Use in closed, continuous process with occasional controlled exposure General exposures (closed systems) (worker)

#### List of use descriptors

Process categories [PROC]

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

#### **Operational conditions**

Duration and frequency of use: Inhalation exposure: occasional exposure < 58 °C = low volatility Other relevant operational conditions: Inhalation exposure: TRA concentration factor [%] : < 3 Dermal exposure: TRA concentration factor [%] : < 3; Gloves

#### **Exposure prediction**

Exposure estimation and reference to its source: inhalative: 0.2 ppm dermal: 0.27 mg/kg/d Risk characterisation ratio (RCR): RCR: 0.32 inhalative: 0.10 dermal: 0.22

all relevant routes: 0.32

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release: Sample via a closed loop or other system to avoid exposure. Limit the substance in product to 3 %. Handle substance within a closed system.

Operational conditions and risk management measures: Continuous process, Process sampling; elevated temperature; (closed systems) occasional exposure < 58 °C = low volatilityConditions and measures related to personal protection, hygiene and health evaluation: Wear suitable gloves tested to EN374.

#### Contributing exposure scenario 5 Use in closed batch process (synthesis or formulation) General exposures (closed systems) (worker)

#### List of use descriptors

Process categories [PROC]:

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

#### **Operational conditions**

Duration and frequency of use: Inhalation exposure: occasional exposure < 58 °C = low volatility Other relevant operational conditions Inhalation exposure: local exhaust ventilation - efficiency of at least [%]: 90 Dermal exposure: local exhaust ventilation - efficiency of at least [%]: 99 **Exposure prediction** Exposure estimation and reference to its source: inhalative: 0.3 ppm

dermal: not applicable for corrosive mixtures, phenol resistant Personal Protective Equipment (PPE) is worn Risk characterisation ratio (RCR): RCR: 0.15 inhalative: 0.15 dermal: not applicable to corrosive mixtures all relevant routes: 0.15

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#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release:
Sample via a closed loop or other system to avoid exposure. Handle substance within a
closed system. Ensure material transfers are under containment or extract ventilation.
Operational conditions and risk management measures:
Batch process; Process sampling; with local exhaust ventilation
occasional exposure $< 58$ °C = low volatility
Conditions and measures related to personal protection, hygiene and health evaluation:
Use personal protective equipment as required.

Contributing exposure scenario 6

#### Use in closed batch process (synthesis or formulation) General exposures (closed systems) (worker)

#### List of use descriptors

Process categories [PROC]:

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

#### **Operational conditions**

Duration and frequency of use: Inhalation exposure: 1 - 4 hours occasional exposure < 58 °C = low volatility Other relevant operational conditions:

No special measures are required.

#### **Exposure prediction**

Exposure estimation and reference to its source:

inhalative: 1.8 ppm dermal: not applicable for corrosive mixtures, phenol resistant Personal Protective Equipment (PPE) is worn Risk characterisation ratio (RCR): RCR: 0.9 inhalative: 0.90 dermal: not applicable to corrosive mixtures all relevant routes: 0.90

#### **Risk management measures**

•
Technical conditions and measures at process level (source) to prevent release:
Sample via a closed loop or other system to avoid exposure. Handle substance within a
closed system. Avoid carrying out activities involving exposure for more than 4 h.
Operational conditions and risk management measures:
Batch process; (closed systems); elevated temperature
occasional exposure $< 58 \text{ °C} = low volatility$
Conditions and measures related to personal protection, hygiene and health evaluation:
Use personal protective equipment as required.

Contributing exposure scenario 7

### Use in closed batch process (synthesis or formulation) General exposures (closed systems) (worker)

#### List of use descriptors

Process categories [PROC]:

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

#### **Operational conditions**

Duration and frequency of use:			
Inhalation exposure:			
occasional exposure $< 58 \text{ °C} = \text{low volatility}$			
Other relevant operational conditions:			
Inhalation exposure: TRA concentration factor [%]: 5 - 25 Dermal exposure: TRA concentration factor [%]: 5 - 25			

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#### Exposure prediction

Exposure estimation and reference to its source:

inhalative: 1.8 ppm dermal: not applicable for corrosive mixtures, phenol resistant Personal Protective Equipment (PPE) is worn Risk characterisation ratio (RCR): RCR: 0.9 inhalative: 0.90 dermal: not applicable to corrosive mixtures all relevant routes: 0.90

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release: Sample via a closed loop or other system to avoid exposure. Limit the substance in product to 25 %. Handle substance within a closed system. Operational conditions and risk management measures: Batch process; (closed systems); elevated temperature occasional exposure < 58 °C = low volatility Conditions and measures related to personal protection, hygiene and health evaluation: Use personal protective equipment as required.

Contributing exposure scenario 8

#### Use in closed batch process (synthesis or formulation) General exposures (closed systems) (worker)

#### List of use descriptors

Process categories [PROC]:

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

#### **Operational conditions**

Duration and frequency of use: Inhalation exposure: occasional exposure < 58 °C = low volatility Other relevant operational conditions: Inhalation exposure: TRA concentration factor [%] : < 3

Dermal exposure: TRA concentration factor [%]: < 3

#### **Exposure prediction**

Exposure estimation and reference to its source: inhalative: 0.6 ppm dermal: 0.34 mg/kg/d Risk characterisation ratio (RCR): RCR: 0.58

inhalative: 0.30 dermal:0.28 all relevant routes:0.58

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release:

Sample via a closed loop or other system to avoid exposure. Limit the substance in product to 3 %. Handle substance within a closed system. Operational conditions and risk management measures:

Batch process; (closed systems); elevated temperature

occasional exposure < 58 °C = low volatility

Conditions and measures related to personal protection, hygiene and health evaluation: Use personal protective equipment as required.

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#### Contributing exposure scenario 9

## Use in batch and other process (synthesis) where opportunity for exposure arises Process sampling (open systems) (worker)

#### List of use descriptors

Process categories [PROC]:

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

#### **Operational conditions**

Duration and frequency of use:

Inhalation exposure: occasional exposure < 58 °C = low volatility Other relevant operational conditions: Inhalation exposure: local exhaust ventilation - efficiency of at least [%]: 90 Dermal exposure: local exhaust ventilation - efficiency of at least [%]: 99; TRA concentration factor [%]: > 25

#### **Exposure prediction**

Exposure estimation and reference to its source:

inhalative: 0.5 ppm dermal: not applicable for corrosive mixtures, phenol resistant Personal Protective Equipment (PPE) is worn Risk characterisation ratio (RCR): RCR: 0.25

inhalative: 0.25 dermal: not applicable to corrosive mixtures all relevant routes: 0.25

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release: Ensure material transfers are under containment or extract ventilation. Operational conditions and risk management measures: with local exhaust ventilation; elevated temperature occasional exposure < 58 °C = low volatility Conditions and measures related to personal protection, hygiene and health evaluation: Use personal protective equipment as required.

Contributing exposure scenario 10

## Use in batch and other process (synthesis) where opportunity for exposure arises Process sampling (open systems) (worker)

#### List of use descriptors

Process categories [PROC]:

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

#### **Operational conditions**

Duration and frequency of use: Inhalation exposure: 15 min - 1h occasional exposure < 58 °C = low volatility Other relevant operational conditions: Dermal exposure: concentration factor [%]: 5 - 25

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#### Exposure prediction

Exposure estimation and reference to its source:

inhalative: 1 ppm dermal: not applicable for corrosive mixtures, phenol resistant Personal Protective Equipment (PPE) is worn Risk characterisation ratio (RCR): RCR: 0.5 inhalative: 0.50 dermal: not applicable to corrosive mixtures all relevant routes: 0.50

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release:

Avoid carrying out activities involving exposure for more than 1 h.

Operational conditions and risk management measures:

elevated temperature

Conditions and measures related to personal protection, hygiene and health evaluation:

Use personal protective equipment as required.

#### Contributing exposure scenario 11 Use in batch and other process (synthesis) where opportunity for exposure arises Process sampling (open systems) (worker)

#### List of use descriptors

Process categories [PROC]:\_

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

#### **Operational conditions**

Duration and frequency of use:

Other relevant operational conditions: Inhalation exposure: local exhaust ventilation - efficiency of at least [%]: 90;

Dermal exposure: TRA concentration factor [%]: 5 - 25

#### **Exposure prediction**

Exposure estimation and reference to its source:

inhalative: 2 ppm

dermal: not applicable for corrosive mixtures, phenol resistant Personal Protective Equipment (PPE) is worn

Risk characterisation ratio (RCR): RCR: 1

inhalative: 1.00 dermal: not applicable to corrosive mixtures all relevant routes: 1.00

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release: Avoid carrying out activities involving exposure for more than 1 h. Operational conditions and risk management measures: with local exhaust ventilation; elevated temperature occasional exposure < 58 °C = low volatility Conditions and measures related to personal protection, hygiene and health evaluation: Use personal protective equipment as required.

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#### Contributing exposure scenario 12

## Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) Mixing operations (open systems) (worker)

#### List of use descriptors

Process categories [PROC]:

PROC5: Mixing or blending in batch processes

#### **Operational conditions**

Duration and frequency of use: Inhalation exposure: occasional exposure < 58 °C = low volatility Other relevant operational conditions: Inhalation exposure: local exhaust ventilation - efficiency of at least [%]: 90 Dermal exposure: local exhaust ventilation - efficiency of at least [%]: 99.5; TRA concentration factor > 25 %

#### **Exposure prediction**

Exposure estimation and reference to its source:

inhalative: 0.5 ppm dermal: not applicable for corrosive mixtures, phenol resistant Personal Protective Equipment (PPE) is worn Risk characterisation ratio (RCR): RCR: 0.25

inhalative: 0.25 dermal: not applicable to corrosive mixtures all relevant routes: 0.25

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release: Ensure material transfers are under containment or extract ventilation. Operational conditions and risk management measures: Batch process; Process sampling; with local exhaust ventilation occasional exposure < 58 °C = low volatility Conditions and measures related to personal protection, hygiene and health evaluation: Use personal protective equipment as required.

Contributing exposure scenario 13 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) Mixing operations (open systems) (worker)

#### List of use descriptors

Process categories [PROC]:

PROC5: Mixing or blending in batch processes

#### **Operational conditions**

Duration and frequency of use: Inhalation exposure: 15 min - 1h occasional exposure < 58 °C = low volatility Other relevant operational conditions: No special measures are required.

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No. 2015/830

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Exposure prediction			

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#### Exposure estimation and reference to its source:

inclusion and reference to its source

inhalative: 1 ppm dermal: not applicable for corrosive mixtures, phenol resistant Personal Protective Equipment (PPE) is worn Risk characterisation ratio (RCR): RCR: 0.5 inhalative:0.50 dermal: not applicable to corrosive mixtures all relevant routes: 0.50

#### Risk management measures

Technical conditions and measures at process level (source) to prevent release: Avoid carrying out activities involving exposure for more than 1 h. Operational conditions and risk management measures: Batch process; Process sampling; elevated temperature occasional exposure < 58 °C = low volatility Conditions and measures related to personal protection, hygiene and health evaluation: Use personal protective equipment as required.

Contributing exposure scenario 14

## Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) Mixing operations (open systems) (worker)

#### List of use descriptors

Process categories [PROC]:

PROC5: Mixing or blending in batch processes

#### **Operational conditions**

Duration and frequency of use

Other relevant operational conditions: Inhalation exposure: TRA concentration factor [%] : < 3

Dermal exposure: TRA concentration factor [%] : < 3; gloves-intensive controls

#### **Exposure prediction**

Exposure estimation and reference to its source:

inhalative: 1 ppm dermal: 0.27 mg/kg/d Risk characterisation ratio (RCR): RCR: 0.72 inhalative: 0.50 dermal: 0.22 all relevant routes: 0.72

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release: Limit the substance in product to 3 %. Operational conditions and risk management measures: Batch process; Process sampling; elevated temperature occasional exposure < 58 °C = low volatility Conditions and measures related to personal protection, hygiene and health evaluation: Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls.

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No. 2015/830

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#### Contributing exposure scenario 15

## Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) Mixing operations (open systems) (worker)

#### List of use descriptors

Process categories [PROC]:

PROC5: Mixing or blending in batch processes

#### **Operational conditions**

Duration and frequency of use: Inhalation exposure: 15 min - 1h occasional exposure < 114.5 °C = medium volatility Other relevant operational conditions: Inhalation exposure: local exhaust ventilation - efficiency of at least [%]: 90 Dermal exposure: local exhaust ventilation - efficiency of at least [%]: 99.5

#### **Exposure prediction**

Exposure estimation and reference to its source:

inhalative: 1 ppm dermal: not applicable for corrosive mixtures, phenol resistant Personal Protective Equipment (PPE) is worn Risk characterisation ratio (RCR): RCR: 0.5

RCR: 0.5 inhalative: 0.50 dermal: not applicable to corrosive mixtures all relevant routes: 0.50

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release: Ensure material transfers are under containment or extract ventilation.

Avoid carrying out activities involving exposure for more than 1 h. Operational conditions and risk management measures: Batch process; Process sampling; with local exhaust ventilation occasional exposure < 114.5 °C = medium volatility Conditions and measures related to personal protection, hygiene and health evaluation: Use personal protective equipment as required.

Contributing exposure scenario 16 Calendering operations Calendering (including Banburys) (worker)

#### List of use descriptors

Process categories [PROC]:

PROC6: Calendering operations

#### **Operational conditions**

Duration and frequency of use:

Inhalation exposure: occasional exposure < 58 °C = low volatility Other relevant operational conditions: Inhalation exposure: local exhaust ventilation - efficiency of at least [%]: 90 Dermal exposure: local exhaust ventilation - efficiency of at least [%]: 95

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No. 2015/830

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## Exposure prediction

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Exposure estimation and reference to its source:

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inhalative: 0.5 ppm dermal: not applicable for corrosive mixtures, phenol resistant Personal Protective Equipment (PPE) is worn Risk characterisation ratio (RCR): RCR: 0.25 inhalative: 0.25 dermal: not applicable to corrosive mixtures all relevant routes: 0.25

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release:

Ensure material transfers are under containment or extract ventilation.

Operational conditions and risk management measures: With local exhaust ventilation occasional exposure < 58 °C = low volatility Conditions and measures related to personal protection, hygiene and health evaluation:

Use personal protective equipment as required.

#### Contributing exposure scenario 17 Calendering operations Calendering (including Banburys) (worker)

#### List of use descriptors

Process categories [PROC]:

PROC6: Calendering operations

#### **Operational conditions**

Duration and frequency of use: Inhalation exposure: occasional exposure < 58 °C = low volatility Other relevant operational conditions: Inhalation exposure: TRA concentration factor [%] : < 3 Dermal exposure: local exhaust ventilation - efficiency of at least [%]: 95; TRA concentration factor [%] : < 3; Gloves

#### **Exposure prediction**

Exposure estimation and reference to its source:

inhalative: 1 ppm dermal: 0.27 mg/kg/d Risk characterisation ratio (RCR): RCR: 0.72 inhalative: 0.50 dermal: 0.22 all relevant routes: 0.50

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release:

Limit the substance in product to 3 %.

Ensure material transfers are under containment or extract ventilation.

Operational conditions and risk management measures:

occasional exposure  $< 58 \text{ }^{\circ}\text{C} = \text{low volatility}$ Conditions and measures related to personal protection, hygiene and health evaluation:

Wear suitable gloves tested to EN374.

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No. 2015/830

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#### Contributing exposure scenario 18 Calendering operations Calendering (including Banburys) (worker)

List of use descriptors Process categories [PROC]:

PROC6: Calendering operations

#### **Operational conditions**

Duration and frequency of use: Inhalation exposure: 15 min - 1h occasional exposure < 58 °C = 10

 $\label{eq:constraint} \begin{array}{l} \text{occasional exposure} < 58\ ^{\circ}\text{C} = \text{low volatility} \\ \text{Other relevant operational conditions:} \end{array}$ 

Inhalation exposure: local exhaust ventilation - efficiency of at least [%]: 90 Dermal exposure: local exhaust ventilation - efficiency of at least [%]: 95

#### **Exposure prediction**

Exposure estimation and reference to its source:

inhalative: 1 ppm dermal: not applicable for corrosive mixtures, phenol resistant Personal Protective Equipment (PPE) is worn Risk characterisation ratio (RCR): RCR: 0.5 inhalative: 0.50 dermal: not applicable to corrosive mixtures all relevant routes: 0.50

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release: Ensure material transfers are under containment or extract ventilation. Avoid carrying

out activities involving exposure for more than 1 h. Operational conditions and risk management measures: With local exhaust ventilation occasional exposure < 114.5 °C = medium volatility Conditions and measures related to personal protection, hygiene and health evaluation: Use personal protective equipment as required.

Contributing exposure scenario 19 Industrial spraying Spraying/fogging by machine application (worker)

#### List of use descriptors

Process categories [PROC]:

PROC7: Industrial spraying

#### **Operational conditions**

Duration and frequency of use: Inhalation exposure: 15 min - 1h occasional exposure < 58 °C = low volatility Other relevant operational conditions: Inhalation exposure: local exhaust ventilation - efficiency of at least [%]: 95 Dermal exposure: local exhaust ventilation - efficiency of at least [%]: 99

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No. 2015/830

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#### Exposure prediction

Exposure estimation and reference to its source:

inhalative: 1 ppm dermal: not applicable for corrosive mixtures, phenol resistant Personal Protective Equipment (PPE) is worn Risk characterisation ratio (RCR): RCR: 0.5 inhalative: 0.50 dermal: not applicable to corrosive mixtures all relevant routes: 0.50

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release:

Ensure material transfers are under containment or extract ventilation. Avoid carrying out activities involving exposure for more than 1 h.

Operational conditions and risk management measures:

with local exhaust ventilation Conditions and measures related to personal protection, hygiene and health evaluation: Use personal protective equipment as required.

#### Contributing exposure scenario 20 Industrial spraying Spraying/fogging by machine application (worker)

#### List of use descriptors

Process categories [PROC]:

PROC7: Industrial spraying

#### **Operational conditions**

Duration and frequency of use: Inhalation exposure: occasional exposure < 58 °C = low volatility Other relevant operational conditions: Inhalation exposure: Respiratory protection mask; efficiency of 90% Dermal exposure: local exhaust ventilation - efficiency of at least [%]: 99

#### **Exposure prediction**

Exposure estimation and reference to its source: inhalative: 0.5 ppm dermal: not applicable for corrosive mixtures, phenol resistant Personal Protective Equipment (PPE) is worn Risk characterisation ratio (RCR): RCR: 0.25 inhalative: 0.25 dermal: not applicable to corrosive mixtures all relevant routes: 0.25

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release: Ensure material transfers are under containment or extract ventilation. Operational conditions and risk management measures: with local exhaust ventilation Conditions and measures related to personal protection, hygiene and health evaluation: Wear a respirator conforming to EN140 with Type A filter or better.

Contributing exposure scenario 21 Industrial spraying Spraying/fogging by machine application (worker)

#### List of use descriptors

Process categories [PROC]

PROC7: Industrial spraying

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No. 2015/830

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#### Operational conditions

Duration and frequency of use: Inhalation exposure: occasional exposure < 58 °C = low volatility Other relevant operational conditions: Inhalation exposure: TRA concentration factor [%] : < 3

Dermal exposure: local exhaust ventilation - efficiency of at least [%]: 99; TRA concentration factor [%]: < 3

#### Exposure prediction

Exposure estimation and reference to its source: inhalative: 1 ppm dermal: 0.14 mg/kg/d Risk characterisation ratio (RCR):

RCR: 0.61 inhalative: 0.50 dermal: 0,11 all relevant routes: 0.61

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release: Limit the substance in product to 3 %. Ensure material transfers are under containment or extract ventilation. Operational conditions and risk management measures: with local exhaust ventilation Conditions and measures related to personal protection, hygiene and health evaluation: Use personal protective equipment as required.

Contributing exposure scenario 22

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

#### List of use descriptors

Process categories [PROC]:

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

#### **Operational conditions**

Duration and frequency of use:

Inhalation exposure: occasional exposure < 58 °C = low volatility Other relevant operational conditions: Inhalation exposure: Respiratory protection mask; efficiency of 90% Dermal exposure: local exhaust ventilation - efficiency of at least [%]: 99

#### Exposure prediction

Exposure estimation and reference to its source:

inhalative: 1 ppm dermal: not applicable for corrosive mixtures, phenol resistant Personal Protective Equipment (PPE) is worn Risk characterisation ratio (RCR): RCR: 0.5 inhalative: 0.50

dermal: not applicable to corrosive mixtures all relevant routes: 0.50

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No. 2015/830

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#### Risk management measures

Technical conditions and measures at process level (source) to prevent release: Ensure material transfers are under containment or extract ventilation. Operational conditions and risk management measures: Non-dedicated facility; Transfer from/pouring from containers; with local exhaust ventilation occasional exposure < 58 °C = low volatility Conditions and measures related to personal protection, hygiene and health evaluation: Use personal protective equipment as required.

Contributing exposure scenario 23

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

#### List of use descriptors

Process categories [PROC]:

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

#### **Operational conditions**

Duration and frequency of use: Inhalation exposure: 15 min - 1h occasional exposure < 58 °C = low volatility Other relevant operational conditions: Inhalation exposure: TRA concentration factor [%]: 5 - 25 Dermal exposure: TRA concentration factor [%]: 5 - 25

#### **Exposure prediction**

Exposure estimation and reference to its source:

inhalative: 1.2 ppm dermal: not applicable for corrosive mixtures, phenol resistant Personal Protective Equipment (PPE) is worn Risk characterisation ratio (RCR): RCR: 0.6 inhalative: 0.60 dermal: not applicable to corrosive mixtures all relevant routes: 0.60

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release: Limit the substance in product to 25 %. Operational conditions and risk management measures: Non-dedicated facility; Transfer from/pouring from containers; elevated temperature occasional exposure < 58 °C = low volatility Conditions and measures related to personal protection, hygiene and health evaluation: Avoid carrying out activities involving exposure for more than 1 h.

Contributing exposure scenario 24

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

#### List of use descriptors

Process categories [PROC]:

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

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#### **Operational conditions**

Duration and frequency of use:

Inhalation exposure: occasional exposure < 58 °C = low volatility Other relevant operational conditions: Inhalation exposure: Respiratory protection mask

#### Exposure prediction

Exposure estimation and reference to its source: inhalative: 1 ppm, Respiratory protection mask occasional exposure < 58 °C = low volatility dermal: not applicable for corrosive mixtures, phenol resistant Personal Protective Equipment (PPE) is worn Risk characterisation ratio (RCR): RCR: 0.5 inhalative: 0.50 dermal: not applicable to corrosive mixtures all relevant routes: 0.50 **Risk management measures** 

Technical conditions and measures at process level (source) to prevent release: No specific measures identified. Operational conditions and risk management measures Non-dedicated facility; Transfer from/pouring from containers; elevated temperature occasional exposure < 58 °C = low volatility Conditions and measures related to personal protection, hygiene and health evaluation: Wear a respirator conforming to EN140 with Type A filter or better.

Contributing exposure scenario 25

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

#### List of use descriptors

Process categories [PROC]

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

#### **Operational conditions**

Duration and frequency of use: Inhalation exposure: 15 min - 1h occasional exposure < 58 °C = low volatility Other relevant operational conditions Inhalation exposure: TRA concentration factor [%] : < 3 Dermal exposure: TRA concentration factor [%] : < 3; gloves-specific training

#### **Exposure prediction**

Exposure estimation and reference to its source:

inhalative: 0.4 ppm dermal: 0.69 mg/kg/d Risk characterisation ratio (RCR): RCR: 0.76 inhalative: 0.20 dermal: 0.56 all relevant routes: 0.76

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No. 2015/830

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Risk management measures				

#### Technical conditions and measures at process level (source) to prevent release: Limit the substance in product to 3 %. Avoid carrying out activities involving exposure for more than 1 h. Operational conditions and risk management measures: Non-dedicated facility; Transfer from/pouring from containers; elevated temperature occasional exposure < 58 °C = low volatility Conditions and measures related to personal protection, hygiene and health evaluation: Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.

Contributing exposure scenario 26

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

### List of use descriptors

#### Process categories [PROC]:

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

#### **Operational conditions**

Duration and frequency of use: Inhalation exposure: 15 min - 1h occasional exposure < 114.5 °C = medium volatility Other relevant operational conditions: Inhalation exposure: local exhaust ventilation - efficiency of at least [%]: 90 Dermal exposure: local exhaust ventilation - efficiency of at least [%]: 99 Exposure prediction Exposure estimation and reference to its source: inhalative: 1 ppm dermal: for corrosive mixtures, phenol resistant Personal Protective Equipment (PPE) is worn Risk characterisation ratio (RCR): RCR: 0.5 inhalative: 0.50 dermal: not applicable to corrosive mixtures all relevant routes: 0.50 **Risk management measures** Technical conditions and measures at process level (source) to prevent release: Ensure material transfers are under containment or extract ventilation. Avoid carrying out activities involving exposure for more than 1 h. Operational conditions and risk management measures: Non-dedicated facility; Transfer from/pouring from containers; with local exhaust

ventilation

occasional exposure < 114.5 °C = medium volatility

Conditions and measures related to personal protection, hygiene and health evaluation:

Use personal protective equipment as required.

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#### Contributing exposure scenario 27

# Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities Bulk transfers (worker)

#### List of use descriptors

Process categories [PROC]:

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

#### **Operational conditions**

Duration and frequency of use:

Other relevant operational conditions: Inhalation exposure: local exhaust ventilation - efficiency of at least [%]: 97 Dermal exposure: local exhaust ventilation - efficiency of at least [%]: 99

#### **Exposure prediction**

Exposure estimation and reference to its source:

inhalative: 0.15 ppm dermal: for corrosive mixtures, phenol resistant Personal Protective Equipment (PPE) is worn Risk characterisation ratio (RCR): RCR: 0.08

inhalative: 0.08 dermal: not applicable to corrosive mixtures all relevant routes: 0.08

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release: Ensure material transfers are under containment or extract ventilation. Operational conditions and risk management measures: Dedicated facility; Transfer from/pouring from containers; with local exhaust ventilation occasional exposure < 58 °C = low volatility Conditions and measures related to personal protection, hygiene and health evaluation: Use personal protective equipment as required.

Contributing exposure scenario 28

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

#### Bulk transfers (worker)

#### List of use descriptors

Process categories [PROC]:

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

#### **Operational conditions**

Duration and frequency of use:

Inhalation exposure: 15 min - 1h occasional exposure < 58 °C = low volatility Other relevant operational conditions: No special measures are required.

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No. 2015/830

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Exposure predict	tion		
Exposure estimation and		Protective	
Risk characterisation ratio			
Risk managemer	nt measures		
Technical conditions and	measures at process level (source) to prevent release: Avoid carrying out activities involving exposure for more than 1 h.		
Operational conditions and	d risk management measures: Dedicated facility; Transfer from/pouring from containers; elevated tempe	erature	
Conditions and measures	occasional exposure $< 58 \text{ °C} = \text{low volatility}$ related to personal protection, hygiene and health evaluation: Use personal protective equipment as required.		
Bulk transfers ( List of use descr Process categories [PROC	iptors		
	PROC8b: Transfer of substance or preparation (charging/discharging) from	om/to	
	PROC8b: Transfer of substance or preparation (charging/discharging) from vessels/large containers at dedicated facilities	om/to	
Operational conc Duration and frequency of	PROC8b: Transfer of substance or preparation (charging/discharging) fro vessels/large containers at dedicated facilities ditions fuse: Inhalation exposure: 1 - 4 hours	om/to	
Operational cond	PROC8b: Transfer of substance or preparation (charging/discharging) fro vessels/large containers at dedicated facilities ditions <sup>fuse:</sup> Inhalation exposure: 1 - 4 hours occasional exposure < 58 °C = low volatility I conditions: Inhalation exposure: TRA concentration factor [%]: 5 - 25	om/to	
<b>Operational conc</b> Duration and frequency of Other relevant operational	PROC8b: Transfer of substance or preparation (charging/discharging) from vessels/large containers at dedicated facilities ditions fuse: Inhalation exposure: 1 - 4 hours occasional exposure < 58 °C = low volatility I conditions: Inhalation exposure: TRA concentration factor [%]: 5 - 25 Dermal exposure: TRA concentration factor [%]: 5 - 25	om/to	
Operational conc Duration and frequency of Other relevant operational Exposure predic	PROC8b: Transfer of substance or preparation (charging/discharging) from vessels/large containers at dedicated facilities ditions Tuse: Inhalation exposure: 1 - 4 hours occasional exposure < 58 °C = low volatility I conditions: Inhalation exposure: TRA concentration factor [%]: 5 - 25 Dermal exposure: TRA concentration factor [%]: 5 - 25 tion	om/to	
Operational conc Duration and frequency of Other relevant operational Exposure predic Exposure estimation and t	PROC8b: Transfer of substance or preparation (charging/discharging) frevessels/large containers at dedicated facilities  ditions  fuse: Inhalation exposure: 1 - 4 hours occasional exposure < 58 °C = low volatility I conditions: Inhalation exposure: TRA concentration factor [%]: 5 - 25 Dermal exposure: TRA concentration factor [%]: 5 - 25 tion reference to its source: inhalative: 1.8 ppm dermal: not applicable for corrosive mixtures, phenol resistant Personal I Equipment (PPE) is worn		
Operational conc Duration and frequency of Other relevant operational Exposure predic	PROC8b: Transfer of substance or preparation (charging/discharging) frevessels/large containers at dedicated facilities  ditions  fuse: Inhalation exposure: 1 - 4 hours occasional exposure < 58 °C = low volatility I conditions: Inhalation exposure: TRA concentration factor [%]: 5 - 25 Dermal exposure: TRA concentration factor [%]: 5 - 25 tion reference to its source: inhalative: 1.8 ppm dermal: not applicable for corrosive mixtures, phenol resistant Personal I Equipment (PPE) is worn		
Operational conc Duration and frequency of Other relevant operational Exposure predic Exposure estimation and t	PROC8b: Transfer of substance or preparation (charging/discharging) frevessels/large containers at dedicated facilities  ditions  fuse: Inhalation exposure: 1 - 4 hours occasional exposure < 58 °C = low volatility I conditions: Inhalation exposure: TRA concentration factor [%]: 5 - 25 Dermal exposure: TRA concentration factor [%]: 5 - 25 tion reference to its source: inhalative: 1.8 ppm dermal: not applicable for corrosive mixtures, phenol resistant Personal I Equipment (PPE) is worn o(RCR): RCR: 0.9 inhalative: 0.90		
Operational conc Duration and frequency of Other relevant operational Exposure predic Exposure estimation and the Risk characterisation ratio	PROC8b: Transfer of substance or preparation (charging/discharging) frevessels/large containers at dedicated facilities  ditions  fuse: Inhalation exposure: 1 - 4 hours occasional exposure < 58 °C = low volatility I conditions: Inhalation exposure: TRA concentration factor [%]: 5 - 25 Dermal exposure: TRA concentration factor [%]: 5 - 25 tion reference to its source: inhalative: 1.8 ppm dermal: not applicable for corrosive mixtures, phenol resistant Personal I Equipment (PPE) is worn 0 (RCR): RCR: 0.9 inhalative: 0.90 dermal: not applicable to corrosive mixtures all relevant routes: 0.90 nt measures measures at process level (source) to prevent release:	Protective	
Operational conc Duration and frequency of Other relevant operational Exposure predic Exposure estimation and the Risk characterisation ratio Risk managemer Technical conditions and the	PROC8b: Transfer of substance or preparation (charging/discharging) frevessels/large containers at dedicated facilities ditions fuse: Inhalation exposure: 1 - 4 hours occasional exposure < 58 °C = low volatility conditions: Inhalation exposure: TRA concentration factor [%]: 5 - 25 Dermal exposure: TRA concentration factor [%]: 5 - 25 tion reference to its source: inhalative: 1.8 ppm dermal: not applicable for corrosive mixtures, phenol resistant Personal I Equipment (PPE) is worn o(RCR): RCR: 0.9 inhalative: 0.90 dermal: not applicable to corrosive mixtures all relevant routes: 0.90 ht measures	Protective	sure
Operational cond Duration and frequency of Other relevant operational Exposure predict Exposure estimation and the Risk characterisation ratio Risk managemer Technical conditions and the Operational conditions and	PROC8b: Transfer of substance or preparation (charging/discharging) frevessels/large containers at dedicated facilities <b>ditions</b> Fuse: Inhalation exposure: 1 - 4 hours occasional exposure < 58 °C = low volatility I conditions: Inhalation exposure: TRA concentration factor [%]: 5 - 25 Dermal exposure: TRA concentration factor [%]: 5 - 25 tion reference to its source: inhalative: 1.8 ppm dermal: not applicable for corrosive mixtures, phenol resistant Personal I Equipment (PPE) is worn 0(RCR): RCR: 0.9 inhalative: 0.90 dermal: not applicable to corrosive mixtures all relevant routes: 0.90 <b>ht measures</b> measures at process level (source) to prevent release: Limit the substance in product to 25 %. Avoid carrying out activities involt for more than 4 h.	Protective ving expos	sure

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#### Contributing exposure scenario 30

# Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities Bulk transfers (worker)

#### List of use descriptors

Process categories [PROC]:

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

#### **Operational conditions**

Duration and frequency of use:

Inhalation exposure: occasional exposure < 58 °C = low volatility Other relevant operational conditions: Inhalation exposure: TRA concentration factor [%] : < 3; Dermal exposure: TRA concentration factor [%] : < 3; gloves-specific training

#### **Exposure prediction**

Exposure estimation and reference to its source:

inhalative: 1 ppm; dermal: 0.34 mg/kg/d Risk characterisation ratio (RCR): RCR: 0.78 inhalative: 0.50 dermal: 0.28 all relevant routes:0.78

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release:

Limit the substance in product to 3 %. Operational conditions and risk management measures: Dedicated facility; Transfer from/pouring from containers; elevated temperature

 $ccasional exposure < 58 \text{ }^{\circ}\text{C} = low volatility$ Conditions and measures related to personal protection, hygiene and health evaluation:

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.

Contributing exposure scenario 31

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

#### Bulk transfers (worker)

#### List of use descriptors

Process categories [PROC]:

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

#### **Operational conditions**

Duration and frequency of use: Inhalation exposure: occasional exposure < 114.5 °C = medium volatility Other relevant operational conditions: Inhalation exposure: local exhaust ventilation - efficiency of at least [%]: 97; TRA concentration factor [%]: 5 - 25 Dermal exposure: local exhaust ventilation - efficiency of at least [%]: 99; TRA concentration factor [%]: 5 - 25

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#### Exposure prediction

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Exposure estimation and reference to its source:

inhalative: 0.9 ppm dermal: not applicable for corrosive mixtures, phenol resistant Personal Protective Equipment (PPE) is worn Risk characterisation ratio (RCR): RCR: 0.45 inhalative: 0.45 dermal: not applicable to corrosive mixtures all relevant routes:0.45

#### Risk management measures

Technical conditions and measures at process level (source) to prevent releases

Limit the substance in product to 25 %. Ensure material transfers are under containment or extract ventilation.

Operational conditions and risk management measures:

Dedicated facility; Transfer from/pouring from containers; with local exhaust ventilation occasional exposure < 114.5 °C = medium volatility Conditions and measures related to personal protection, hygiene and health evaluation:

Use personal protective equipment as required.

Contributing exposure scenario 32

#### Transfer of substance or preparation into small containers (dedicated filling line, including weighing) Small package filling (worker)

#### List of use descriptors

Process categories [PROC]:

PROC9: Transfer of substance or mixture into small containers (dedicated filling line, including weighing)

#### **Operational conditions**

Duration and frequency of use Inhalation exposure: occasional exposure < 58 °C = low volatility Other relevant operational conditions Inhalation exposure: local exhaust ventilation - efficiency of at least [%]: 90 Dermal exposure: local exhaust ventilation - efficiency of at least [%]: 99

#### Exposure prediction

Exposure estimation and reference to its source: inhalative: 0.5 ppm dermal: 0.69 mg/kg/d Risk characterisation ratio (RCR): RCR: 0.81 inhalative: 0.25 dermal: 0.56 all relevant routes: 0.81

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release:

Ensure material transfers are under containment or extract ventilation.

Operational conditions and risk management measures:

Dedicated facility; Transfer from/pouring from containers; with local exhaust ventilation occasional exposure < 58 °C = low volatility

Conditions and measures related to personal protection, hygiene and health evaluation:

Use personal protective equipment as required.

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### Contributing exposure scenario 33 Transfer of substance or preparation into small containers (dedicated filling line, including weighing) Small package filling (worker)

#### List of use descriptors

Process categories [PROC]:

PROC9: Transfer of substance or mixture into small containers (dedicated filling line, including weighing)

### **Operational conditions**

Duration and frequency of use:
Inhalation exposure: 1 - 4 hours
occasional exposure $< 58 \text{ °C} = \text{low volatility}$
Other relevant operational conditions:
Inhalation exposure: TRA concentration factor [%]: 5 - 25
Dermal exposure: TRA concentration factor [%]: 5 - 25
· · · ·

### Exposure prediction

Exposure estimation and reference to its source:

inhalative: 1.8 ppm dermal: not applicable for corrosive mixtures, phenol resistant Personal Protective Equipment (PPE) is worn Risk characterisation ratio (RCR):

RCR: 0.9

inhalative: 0.90 dermal: not applicable to corrosive mixtures all relevant routes: 0.90

#### Risk management measures

Technical conditions and measures at process level (source) to prevent release: Limit the substance in product to 25 %. Avoid carrying out activities involving exposure for more than 4 h. Operational conditions and risk management measures: Dedicated facility; Transfer from/pouring from containers; elevated temperature occasional exposure < 58 °C = low volatility Conditions and measures related to personal protection, hygiene and health evaluation: Use personal protective equipment as required.

Contributing exposure scenario 34

## Transfer of substance or preparation into small containers (dedicated filling line, including weighing) Small package filling (worker)

### List of use descriptors

Process categories [PROC]:

PROC9: Transfer of substance or mixture into small containers (dedicated filling line, including weighing)

### **Operational conditions**

Duration and frequency of use: Inhalation exposure: occasional exposure < 58 °C = low volatility Other relevant operational conditions: Inhalation exposure: TRA concentration factor [%] : < 3; Dermal exposure: TRA concentration factor [%] : < 3; gloves-specific training

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Exposure estimation and reference to its source: inhalative: 1 ppm dermal: 0.34 mg/kg/d Risk characterisation ratio (RCR): RCR: 0.78 inhalative: 0.50 dermal:0.28 all relevant routes: 0.78

### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release: Limit the substance in product to 3 %. Operational conditions and risk management measures: Dedicated facility; Transfer from/pouring from containers; elevated temperature occasional exposure < 58 °C = low volatility Conditions and measures related to personal protection, hygiene and health evaluation: Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.

### Contributing exposure scenario 35 **Roller application or brushing** Rolling, Brushing (worker)

### List of use descriptors

Process categories [PROC]:

PROC10: Roller application or brushing

### **Operational conditions**

Duration and frequency of use: Inhalation exposure: occasional exposure < 58 °C = low volatility Other relevant operational conditions: Inhalation exposure: local exhaust ventilation - efficiency of at least [%]: 90 Dermal exposure: local exhaust ventilation - efficiency of at least [%]: 95

### Exposure prediction

Exposure estimation and reference to its source: inhalative: 1 ppm dermal: not applicable for corrosive mixtures, phenol resistant Personal Protective Equipment (PPE) is worn Bisk characterisation ratio (BCB) RCR: 0.5 inhalative: 0.50 dermal: not applicable to corrosive mixtures all relevant routes: 0.50

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release: Ensure material transfers are under containment or extract ventilation. Operational conditions and risk management measures: with local exhaust ventilation: elevated temperature Conditions and measures related to personal protection, hygiene and health evaluation:

Use personal protective equipment as required.

#### Contributing exposure scenario 36 **Roller application or brushing** Rolling, Brushing (worker)

## List of use descriptors

Process categories [PROC]:

PROC10: Roller application or brushing

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according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No. 2015/830

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### **Operational conditions**

Duration and frequency of use:

Inhalation exposure: 15 min - 1h occasional exposure < 58 °C = low volatility Other relevant operational conditions:

No special measures are required.

#### Exposure prediction

Exposure estimation and reference to its source: inhalative: 2 ppm dermal: not applicable for corrosive mixtures, phenol resistant Personal Protective Equipment (PPE) is worn Risk characterisation ratio (RCR) RCR: 1 inhalative: 1.00 dermal: not applicable to corrosive mixtures all relevant routes:1.00

### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release: Avoid carrying out activities involving exposure for more than 1 h. Operational conditions and risk management measures: elevated temperature Conditions and measures related to personal protection, hygiene and health evaluation: Use personal protective equipment as required.

Contributing exposure scenario 37

### Roller application or brushing Equipment cleaning and maintenance (worker)

### List of use descriptors

Process categories [PROC]:

PROC10: Roller application or brushing

### **Operational conditions**

Duration and frequency of use Inhalation exposure: 1 - 4 hours equipment prewashed/rinsed automatically Other relevant operational conditions Inhalation exposure: TRA concentration factor [%] : < 3 Dermal exposure: TRA concentration factor [%] : < 3; gloves-intensive controls

#### Exposure prediction

Exposure estimation and reference to its source: inhalative: 1.2 ppm dermal: 0.11 mg/kg/d Risk characterisation ratio (RCR): RCR: 0.86 inhalative: 0.60 dermal: 0.26 all relevant routes: 0.86

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release:

Limit the substance in product to 5 %. Drain or remove substance from equipment prior to break-in or maintenance Avoid carrying out activities involving exposure for more than 4 h.

Operational conditions and risk management measures: elevated temperature

equipment prewashed/rinsed automatically Conditions and measures related to personal protection, hygiene and health evaluation

Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls.

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No. 2015/830

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### Contributing exposure scenario 38 Treatment of articles by dipping and pouring Dipping, immersion and pouring (worker)

### List of use descriptors

Process categories [PROC]:

PROC13: Treatment of articles by dipping and pouring

### **Operational conditions**

Duration and frequency of use: Inhalation exposure: occasional exposure < 58 °C = low volatility Other relevant operational conditions: Inhalation exposure: local exhaust ventilation - efficiency of at least [%]: 90 Dermal exposure: local exhaust ventilation - efficiency of at least [%]: 90

#### **Exposure prediction**

Exposure estimation and reference to its source:

inhalative: 1 ppm dermal: not applicable for corrosive mixtures, phenol resistant Personal Protective Equipment (PPE) is worn

Risk characterisation ratio (RCR):

RCR: 0.5 inhalative: 0.50 dermal: not applicable to corrosive mixtures all relevant routes:0.50

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release: Ensure material transfers are under containment or extract ventilation. Operational conditions and risk management measures: with local exhaust ventilation; elevated temperature occasional exposure < 58 °C = low volatility Conditions and measures related to personal protection, hygiene and health evaluation: Use personal protective equipment as required.

#### Contributing exposure scenario 39 Treatment of articles by dipping and pouring Dipping, immersion and pouring (worker)

#### List of use descriptors

Process categories [PROC]:

PROC13: Treatment of articles by dipping and pouring

### Operational conditions

Duration and frequency of use: Inhalation exposure: 15 min - 1 h occasional exposure < 58 °C = low volatility Other relevant operational conditions: Inhalation exposure: TRA concentration factor [%]: 5 - 25; Dermal exposure: TRA concentration factor [%]: 5 - 25

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No. 2015/830

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### Exposure prediction

Exposure estimation and reference to its source:

inhalative: 1.2 ppm dermal: not applicable for corrosive mixtures, phenol resistant Personal Protective Equipment (PPE) is worn Risk characterisation ratio (RCR): RCR: 0.6 inhalative: 0.60 dermal: not applicable to corrosive mixtures all relevant routes: 0.60

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release:

Limit the substance in product to 25 %. Avoid carrying out activities involving exposure for more than 1 h.

Operational conditions and risk management measures

elevated temperature

Use personal protective equipment as required.

Contributing exposure scenario 40

### Treatment of articles by dipping and pouring Dipping, immersion and pouring (worker)

#### List of use descriptors

Process categories [PROC]:

PROC13: Treatment of articles by dipping and pouring

### **Operational conditions**

Duration and frequency of use: Inhalation exposure: 1 - 4 hours occasional exposure < 58 °C = low volatility Other relevant operational conditions: Inhalation exposure: TRA concentration factor [%] : < 3 Dermal exposure: TRA concentration factor [%] : < 3; gloves-intensive controls

#### **Exposure prediction**

Exposure estimation and reference to its source:

inhalative: 1.2 ppm dermal: 0.27 mg/kg/d Risk characterisation ratio (RCR): RCR: 0.82 inhalative: 0.60

dermal: 0.22 all relevant routes: 0.82

#### Risk management measures

Technical conditions and measures at process level (source) to prevent release: Limit the substance in product to < 3 %. Avoid carrying out activities involving exposure for more than 4 h. Operational conditions and risk management measures: elevated temperature occasional exposure < 58 °C = low volatility Conditions and measures related to personal protection, hygiene and health evaluation: Use personal protective equipment as required.

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No. 2015/830

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### Contributing exposure scenario 41

# Production of preparations or articles by tabletting, compression, extrusion, pelletisation (worker)

### List of use descriptors

Process categories [PROC]:

PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelletisation

### **Operational conditions**

Duration and frequency of use:

Inhalation exposure: occasional exposure < 58 °C = low volatility Other relevant operational conditions: Inhalation exposure: local exhaust ventilation - efficiency of at least [%]: 90 Dermal exposure: local exhaust ventilation - efficiency of at least [%]: 90

#### **Exposure prediction**

Exposure estimation and reference to its source:

inhalative: 0.5 ppm dermal: not applicable for corrosive mixtures, phenol resistant Personal Protective Equipment (PPE) is worn Risk characterisation ratio (RCR): RCR: 0.25

inhalative: 0.25 dermal: not applicable to corrosive mixtures all relevant routes: 0.25

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release: Ensure material transfers are under containment or extract ventilation. Operational conditions and risk management measures: with local exhaust ventilation; elevated temperature occasional exposure < 58 °C = low volatility Conditions and measures related to personal protection, hygiene and health evaluation: Use personal protective equipment as required.

#### Contributing exposure scenario 42 **Production of preparations or articles by tabletting, compression, extrusion, pelletisation** (worker)

### List of use descriptors

Process categories [PROC]:

PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelletisation

### **Operational conditions**

Duration and frequency of use: Inhalation exposure: 1 - 4 hours occasional exposure < 58 °C = low volatility Other relevant operational conditions: Inhalation exposure: TRA concentration factor [%]: 5 - 25; Dermal exposure: TRA concentration factor [%]: 5 - 25

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No. 2015/830

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### Exposure prediction

Exposure estimation and reference to its source:

inhalative: 1.8 ppm dermal: not applicable for corrosive mixtures, phenol resistant Personal Protective Equipment (PPE) is worn Risk characterisation ratio (RCR): RCR: 0.9 inhalative: 0.90 dermal: not applicable to corrosive mixtures all relevant routes: 0.90

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release:

Limit the substance in product to 25 %. Avoid carrying out activities involving exposure for more than 4 h.

Operational conditions and risk management measures:

elevated temperature

Use personal protective equipment as required.

#### Contributing exposure scenario 43

## Production of preparations or articles by tabletting, compression, extrusion, pelletisation (worker)

### List of use descriptors

Process categories [PROC]:

PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelletisation

#### **Operational conditions**

Duration and frequency of use: Inhalation exposure: occasional exposure < 58 °C = low volatility Other relevant operational conditions: Inhalation exposure: TRA concentration factor [%] : < 3 Dermal exposure: TRA concentration factor [%] : < 3; gloves - basic training

#### **Exposure prediction**

Exposure estimation and reference to its source:

inhalative: 1 ppm dermal: 0.34 mg/kg/d

Risk characterisation ratio (RCR):

RCR: 0.78 inhalative: 0.50 dermal: 0.28

all relevant routes: 0.78

#### Risk management measures

Technical conditions and measures at process level (source) to prevent release: Limit the substance in product to 3 %. Operational conditions and risk management measures:

elevated temperature

occasional exposure < 58 °C = low volatilityConditions and measures related to personal protection, hygiene and health evaluation:

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No. 2015/830

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### Contributing exposure scenario 44

# Production of preparations or articles by tabletting, compression, extrusion, pelletisation (worker)

### List of use descriptors

Process categories [PROC]:

PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelletisation

### **Operational conditions**

Duration and frequency of use:

Inhalation exposure: 1 - 4 hours occasional exposure < 114.5 °C = medium volatility Other relevant operational conditions: Inhalation exposure: Local exhaust ventilation - efficiency of at least [%]: 90; TRA concentration factor [%]: 5 - 25 Dermal exposure: Local exhaust ventilation - efficiency of at least [%]: 90; TRA concentration factor [%]: 5 - 25

### **Exposure prediction**

Exposure estimation and reference to its source:

inhalative: 1.8 ppm

dermal: not applicable for corrosive mixtures, phenol resistant Personal Protective Equipment (PPE) is worn

Risk characterisation ratio (RCR):

RCR): RCR: 0.9 inhalative: 0.90 dermal: not applicable to corrosive mixtures all relevant routes: 0.90

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release: Limit the substance in product to 25 %. Ensure material transfers are under containment or extract ventilation. Avoid carrying out activities involving exposure for more than 4 h. Operational conditions and risk management measures: with local exhaust ventilation; elevated temperature occasional exposure < 114.5 °C = medium volatility Conditions and measures related to personal protection, hygiene and health evaluation: Use personal protective equipment as required.

Contributing exposure scenario 45

### Use in laboratory reagents (small scale) Laboratory activities (worker)

#### List of use descriptors

Process categories [PROC]:

PROC15: Use as laboratory reagent

### **Operational conditions**

Duration and frequency of use: Inhalation exposure: occasional exposure < 58 °C = low volatility Other relevant operational conditions: Inhalation exposure: local exhaust ventilation - efficiency of at least [%]: 90 Dermal exposure: local exhaust ventilation - efficiency of at least [%]: 90

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sure prediction		

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#### **Exposure prediction** Exposure estimation and reference to its source:

 Exposure estimation and reference to its source: inhalative: 0.5 ppm dermal: not applicable for corrosive mixtures, phenol resistant Personal Protective Equipment (PPE) is worn
 Risk characterisation ratio (RCR): RCR: 0.25 inhalative: 0.25 dermal: not applicable to corrosive mixtures all relevant routes: 0.25

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release: Ensure material transfers are under containment or extract ventilation. Operational conditions and risk management measures: with local exhaust ventilation occasional exposure < 58 °C = low volatility Conditions and measures related to personal protection, hygiene and health evaluation: Use personal protective equipment as required.

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

Exposure assessment and method: Shown are the result of the quantitative exposure and risk assessment prepared based on the 'GES Worker Chemical Safety Assessment (CSA) Template'. This tool can be downloaded from the CEFIC website: http://cefic.org/templates/shwPublications.asp?HID=750

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#### **Exposure Scenario 1:** Manufacture, processing and distribution of substances and mixtures \* List of use descriptors SU3: Industrial uses Sectors of use [SU]: SU3: Industrial uses Application Manufacture, Processing (see \*), Formulating, Distribution of substance or mixture. Activities and processes: Includes recycling/recovery, material transfers, storage, maintenance and loading (including marine vessel/barge, road/rail car and bulk container), sampling and associated laboratory activities. \* Examples for processing: use as an intermediate, use as a monomer etc., use as a solvent, use for the manufacturing of resins Process categories [PROC] Remark: PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC14, PROC15 Control of worker exposure: See section risk management measures Human Health, Worker exposure and risk assessment: Exposure assessment and method: Shown are the result of the quantitative exposure and risk assessment prepared based on the 'GES Worker Chemical Safety Assessment (CSA) Template'. This tool can be downloaded from the CEFIC website: http://cefic.org/templates/shwPublications.asp?HID=750 Examples for Environmental release categories [ERC]: ERC1, ERC2, ERC4, ERC6a Environment, ECT Phenol: Please use the 'ECT Phenol' to check your local conditions. The Excel-tool enables the performance of scaling calculation for specific local environmental conditions. It can be downloaded from the web page of the Phenol & Derivatives REACH-consortium: http://www.reachcentrum.eu/EN/consortium-management/consortia-under-reach/phenolderivatives-reach-consortium.aspx Guidance to check compliance with the exposure scenario: Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Contributing Scenarios: 1 General information Page 47 Applies to all contributing exposure scenarios related to exposure scenario 1: Manufacture, processing and distribution of substances and mixtures (environment) 2 General information Page 48 Applies to all contributing exposure scenarios related to exposure scenario 1: Manufacture, processing and distribution of substances and mixtures (worker)

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### Contributing exposure scenario 1 General information

### Applies to all contributing exposure scenarios related to exposure scenario 1: Manufacture, processing and distribution of substances and mixtures (environment)

#### List of use descriptors

Environmental release categories [ERC]:

ERC1: Manufacture of the substance ERC2: Formulation into mixture ERC4: Use of non-reactive processing aid at industrial site (no inclusion into or onto article) ERC6a: Use of intermediate

#### **Operational conditions**

Product characteristics: Substance is a unique structure, phenol, aromatic alcohol, biodegradable

Amounts used:

Annual site tonnage Please use the Excel-Tool 'ECT Phenol' to calculate your maxium tonnage/year.

Duration and frequency of use:

360 d/y Other relevant operational conditions:

Indoor/Outdoor use

#### **Exposure prediction**

Exposure estimation and reference to its source: ECT Phenol

Risk characterisation ratio (RCR):

ECT Phenol

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release:

Common practices vary across sites thus conservative process release estimates used. Typical technical measures are closed systems or scrubbers or charcoal adsorbers. Treat air emission to provide a typical removal efficiency of (%): 90

Operational conditions and risk management measures:

Common practices vary across sites thus conservative process release estimates used. Please use the 'ECT Phenol' to check your local conditions.

#### **Disposal considerations**

Conditions and measures related to sewage treatment plant:

Please use the Excel-Tool 'ECT Phenol' to check your local conditions.

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 treatment and disposal of waste should comply with applicable local and/or national regulations.

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No. 2015/830

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### Contributing exposure scenario 2 General information Applies to all contributing exposure scenarios related to exposure scenario 1: Manufacture, processing and distribution of substances and mixtures (worker)

### List of use descriptors

Process categories [PROC]: PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes PROC6: Calendering operations PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC10: Roller application or brushing PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelletisation PROC15: Use as laboratory reagent

#### PROCIS. Use as laboratory i

### **Operational conditions**

Product characteristics: liquid, vapour pressure < 0.5 kPa

liquid, vapour pressure 0.5 - 10 kPa

Concentration of the substance in a mixture:

Covers percentage substance in the product up to 3 - 100 % (unless stated differently). Duration and frequency of use:

Covers daily exposures up to 8h (unless stated differently).

Other relevant operational conditions:

Assumes a good basic standard of occupational hygiene is implemented.

### Exposure prediction

Exposure estimation and reference to its source:

refer to GES No. 0 industrial Risk characterisation ratio (RCR):

refer to GES No. 0 industrial

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release:

Control any potential exposure using measures such as contained or enclosed systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and clear transfer lines prior to breaking containment.; Drain down and flush equipment where possible prior to maintenance.

Operational conditions and risk management measures:

Where there is potential for exposure: Ensure relevant staff are informed of the nature of exposure and aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for risk based health surveillance; identify and implement corrective actions.

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No. 2015/830

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

'ECT Phenol': The Excel-tool enables the performance of scaling calculation for specific local environmental conditions. It can be downloaded from the web page of the Phenol & Derivatives REACH-consortium:

http://www.reachcentrum.eu/EN/consortium-management/consortia-under-reach/phenol-derivatives-reach-consortium.aspx

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No. 2015/830

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### **Exposure Scenario 2: Use in laboratories**

List of use desc	criptors	
Sectors of use [SU]: Application	SU3: Industrial uses	
Activities and processes: Remark:	Use of the substance within laboratory settings, including material transfers and equipment cleaning Process categories [PROC] PROC10, PROC15 Control of worker exposure:	
	See section risk management measures	
	Exposure assessment and method: Human Health, Worker exposure and risk assessment: Shown are the result of the quantitative exposure and risk assessment prepared based on the 'GES Worker Chemical Safety Assessment (CSA) Template'. This tool can be downloaded from the CEFIC website: http://cefic.org/templates/shwPublications.asp?HID=750	<b>)</b>
	Examples for Environmental release categories [ERC]: ERC4 Environment, ECT Phenol: Please use the 'ECT Phenol' to check your local conditions. The Excel-tool enables the performance of scaling calculation for specific local environmental conditions. It can be downloaded from the web page of the Phenol & Derivatives REACH-consortium: http://www.reachcentrum.eu/EN/consortium-management/consortia-under-reach/pher derivatives-reach-consortium.aspx	е
	Guidance to check compliance with the exposure scenario: Guidance is based on assumed operating conditions which may not be applicable to a sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.	ıll
Contributing Scenarios:	1 General information Pag Applies to all contributing exposure scenarios related to exposure scenario 2: Use in laboratories (environment)	je 50
		je 51

### General information Applies to all contributing exposure scenarios related to exposure scenario 2: Use in laboratories (environment)

### List of use descriptors

Environmental release categories [ERC]:

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

### **Operational conditions**

Product characteristics:	Substance is a unique structure, phenol, aromatic alcohol, biodegradable
	Amounts used:
	Annual site tonnage Please use the Excel-Tool 'ECT Phenol'
	to calculate your maxium tonnage/year.
Duration and frequency of	use:
	360 d/y
Other relevant operational	conditions:
	Indoor/Outdoor use

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No. 2015/830

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### Exposure prediction

Exposure estimation and reference to its source:

Please use the 'ECT Phenol' to check your local conditions.

Risk characterisation ratio (RCR): ECT Phenol

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release:

Common practices vary across sites thus conservative process release estimates used. Typical technical measures are closed systems or scrubbers or charcoal adsorbers. Treat air emission to provide a typical removal efficiency of (%): 90

Operational conditions and risk management measures:

Common practices vary across sites thus conservative process release estimates used. Please use the 'ECT Phenol' to check your local conditions.

#### **Disposal considerations**

Conditions and measures related to sewage treatment plant:

Please use the Excel-Tool 'ECT Phenol' to check your local conditions. 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 treatment and disposal of waste should comply with applicable local and/or national regulations.

### Contributing exposure scenario 2

### **General information** Applies to all contributing exposure scenarios related to exposure scenario 2: use in laboratories (worker)

### List of use descriptors

Process categories [PROC]:

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

### **Operational conditions**

Product characteristics: liquid, vapour pressure < 0.5 kPa

liquid, vapour pressure 0.5 - 10 kPa Concentration of the substance in a mixture:

Covers percentage substance in the product up to 3 - 100 % (unless stated differently). Duration and frequency of use:

Covers daily exposures up to 8h (unless stated differently).

Other relevant operational conditions:

Assumes a good basic standard of occupational hygiene is implemented.

#### **Exposure prediction**

Exposure estimation and reference to its source: refer to GES No. 0 industrial Risk characterisation ratio (RCR): refer to GES No. 0 industrial

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No. 2015/830

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#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release:

Control any potential exposure using measures such as contained or enclosed systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and clear transfer lines prior to breaking containment.; Drain down and flush equipment where possible prior to maintenance. Operational conditions and risk management measures:

Where there is potential for exposure: Ensure relevant staff are informed of the nature of exposure and aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available: clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for risk based health surveillance; identify and implement corrective actions.

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

'ECT Phenol': The Excel-tool enables the performance of scaling calculation for specific local environmental conditions. It can be downloaded from the web page of the Phenol & Derivatives REACH-consortium:

http://www.reachcentrum.eu/EN/consortium-management/consortia-under-reach/phenolderivatives-reach-consortium.aspx

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### **Exposure Scenario 3: Uses in coatings**

List of use des	criptors	
Sectors of use [SU]: Application	SU3: Industrial uses	
Activities and processes: Remark:	Covers the use in coatings (paints, inks, adhesives, etc), including exposures during (including materials receipt, storage, preparation and transfer from bulk and semi-bu application by spray, roller, spreader, dip, flow, fluidised bed on production lines and formation) and equipment cleaning and maintenance and associated laboratory activ Process categories [PROC]	lk, film
	PROC5, PROC8a, PROC10, PROC13 Process Categories (additionally): PROC1, PROC2, PROC3, PROC4, PROC7, PROC8b, PROC9, PROC15	
	Control of worker exposure: See section risk management measures	
	Exposure assessment and method: Human Health, Worker exposure and risk assessment: Shown are the result of the quantitative exposure and risk assessment prepared based on the 'GES Worker Chemical Safety Assessment (CSA) Template'. This tool can be downloaded from th CEFIC website: http://cefic.org/templates/shwPublications.asp?HID=750	ie
	Examples for Environmental release categories [ERC] : ERC4 Environmental release categories (additionally): ERC3, ERC5 Environment, ECT phenol: Please use the 'ECT Phenol' to check your local conditions. The Excel-tool enables t performance of scaling calculation for specific local environmental conditions. It can downloaded from the web page of the Phenol & Derivatives REACH-consortium: http://www.reachcentrum.eu/EN/consortium-management/consortia-under-reach/phe	be
	derivatives-reach-consortium.aspx	
	Guidance to check compliance with the exposure scenario: Guidance is based on assumed operating conditions which may not be applicable to sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.	all
Contributing Scenarios:	Applies to all contributing exposure scenarios related to exposure	ige 53
	scenario 3: Uses in coatings (environment) 2 General information Pa Applies to all contributing exposure scenarios related to exposure scenario 3: Uses in coatings (worker)	ige 54

#### Contributing exposure scenario 1

General information

## Applies to all contributing exposure scenarios related to exposure scenario 3: Uses in coatings (environment)

#### List of use descriptors

Environmental release categories [ERC]:

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

### **Operational conditions**

Product characteristics: Substance is a unique structure, phenol, aromatic alcohol, biodegradable

#### Amounts used:

Annual site tonnage Please use the Excel-Tool 'ECT Phenol' to calculate your maxium tonnage/year.

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No. 2015/830

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Revision date: 4/9/2018 Date of print: 9/10/2018 Language: en-GB,IE Version: 24 Page: 54 of 117 Duration and frequency of use: 360 d/v Other relevant operational conditions Indoor/Outdoor use Exposure prediction Exposure estimation and reference to its source: Please use the 'ECT Phenol' to check your local conditions. Risk characterisation ratio (RCR): Please use the 'ECT Phenol' to check your local conditions. **Risk management measures** Technical conditions and measures at process level (source) to prevent release: Common practices vary across sites thus conservative process release estimates used. Typical technical measures are closed systems or scrubbers or charcoal adsorbers. Treat air emission to provide a typical removal efficiency of (%): 90 Operational conditions and risk management measures: Common practices vary across sites thus conservative process release estimates used. Please use the 'ECT Phenol' to check your local conditions. **Disposal considerations** 

Conditions and measures related to sewage treatment plant:

Please use the Excel-Tool 'ECT Phenol' to check your local conditions. 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 treatment and disposal of waste should comply with applicable local and/or national regulations.

### Contributing exposure scenario 2 **General information** Applies to all contributing exposure scenarios related to exposure scenario 3: Uses in coatings (worker)

#### List of use descriptors

Process categories [PROC]:

PROC5: Mixing or blending in batch processes PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC10: Roller application or brushing PROC13: Treatment of articles by dipping and pouring

#### **Operational conditions**

Product characteristics: liquid, vapour pressure < 0.5 kPa liquid, vapour pressure 0.5 - 10 kPa Concentration of the substance in a mixture: Covers percentage substance in the product up to 3 - 100 % (unless stated differently). Other relevant operational conditions:

Assumes a good basic standard of occupational hygiene is implemented.

#### Exposure prediction

Exposure estimation and reference to its source: refer to GES No. 0 industrial Risk characterisation ratio (RCR): refer to GES No. 0 industrial

INEOS Phenol

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No. 2015/830

### Phenol. synthetic

## INEOS Phenol

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#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release:

Control any potential exposure using measures such as contained or enclosed systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and clear transfer lines prior to breaking containment.; Drain down and flush equipment where possible prior to maintenance. Operational conditions and risk management measures:

Where there is potential for exposure: Ensure relevant staff are informed of the nature of exposure and aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available: clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for risk based health surveillance; identify and implement corrective actions.

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

'ECT Phenol': The Excel-tool enables the performance of scaling calculation for specific local environmental conditions. It can be downloaded from the web page of the Phenol & Derivatives REACH-consortium:

http://www.reachcentrum.eu/EN/consortium-management/consortia-under-reach/phenolderivatives-reach-consortium.aspx

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No. 2015/830

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### Exposure Scenario 4: Use in binders and release agents

#### List of use descriptors Sectors of use [SU]: SU3: Industrial uses Application Activities and processes: Covers the use as binders and release agents including material transfers, mixing, application (including spraying and brushing), mould forming and casting and handling of waste. Process categories [PROC] Remark: PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13 Process Categories (additionally): PROC14 Control of worker exposure: See section risk management measures Exposure assessment and method: Human Health, Worker exposure and risk assessment: Shown are the result of the quantitative exposure and risk assessment prepared based on the 'GES Worker Chemical Safety Assessment (CSA) Template'. This tool can be downloaded from the CEFIC website: http://cefic.org/templates/shwPublications.asp?HID=750 Examples for Environmental release categories [ERC]: ERC5 Environmental release categories (additionally): ERC3 Environment, ECT Phenol: Please use the 'ECT Phenol' to check your local conditions. The Excel-tool enables the performance of scaling calculation for specific local environmental conditions. It can be downloaded from the web page of the Phenol & Derivatives REACH-consortium: http://www.reachcentrum.eu/EN/consortium-management/consortia-under-reach/phenolderivatives-reach-consortium.aspx Guidance to check compliance with the exposure scenario: Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Contributing Scenarios: General information Page 56 1 Applies to all contributing exposure scenarios related to exposure scenario 4: Use in binders and release agents (environment) 2 General information Page 57 Applies to all contributing exposure scenarios related to exposure scenario 4: Use in binders and release agents (worker)

#### Contributing exposure scenario 1

### General information Applies to all contributing exposure scenarios related to exposure scenario 4: Use in binders and release agents (environment)

### List of use descriptors

egories [ERC]: ERC4: Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
litions
Substance is a unique structure, phenol, aromatic alcohol, biodegradable
Amounts used: Annual site tonnage Please use the Excel-Tool 'ECT Phenol' to calculate your maxium tonnage/year.
use: 360 d/y

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No. 2015/830

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#### Other relevant operational conditions:

Indoor/Outdoor use

#### Exposure prediction

Version:

Exposure estimation and reference to its source:

Please use the 'ECT Phenol' to check your local conditions.

Risk characterisation ratio (RCR):

Please use the 'ECT Phenol' to check your local conditions.

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release:

Common practices vary across sites thus conservative process release estimates used. Typical technical measures are closed systems or scrubbers or charcoal adsorbers. Treat air emission to provide a typical removal efficiency of (%): 90

Operational conditions and risk management measures:

Common practices vary across sites thus conservative process release estimates used. Please use the 'ECT Phenol' to check your local conditions.

#### **Disposal considerations**

Conditions and measures related to sewage treatment plant:

Please use the Excel-Tool 'ECT Phenol' to check your local conditions. 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 treatment and disposal of waste should comply with applicable local and/or national regulations.

### Contributing exposure scenario 2 **General information** Applies to all contributing exposure scenarios related to exposure scenario 4: Use in binders and release agents (worker)

### List of use descriptors

Process categories [PROC]:

PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes PROC6: Calendering operations PROC7: Industrial spraying PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC10: Roller application or brushing PROC13: Treatment of articles by dipping and pouring

### **Operational conditions**

Product characteristics: liquid, vapour pressure < 0.5 kPa

liquid, vapour pressure 0.5 - 10 kPa

Concentration of the substance in a mixture:

Covers percentage substance in the product up to 3 - 100 % (unless stated differently).

Other relevant operational conditions:

Assumes a good basic standard of occupational hygiene is implemented.

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### Exposure prediction

Exposure estimation and reference to its source: refer to GES No. 0 industrial Risk characterisation ratio (RCR): refer to GES No. 0 industrial

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release:

Control any potential exposure using measures such as contained or enclosed systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and clear transfer lines prior to breaking containment.; Drain down and flush equipment where possible prior to maintenance.

Operational conditions and risk management measures:

Where there is potential for exposure: Ensure relevant staff are informed of the nature of exposure and aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for risk based health surveillance; identify and implement corrective actions.

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

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### **Exposure Scenario 5: Rubber production and processing**

### List of use descriptors

	•
Sectors of use [SU]: Application	SU3: Industrial uses
Activities and processes:	Manufacture of tyres and general rubber articles, including processing of raw (uncured) rubber, handling and mixing of rubber additives, vulcanising, cooling and finishing.
Remark:	Process categories [PROC] PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14
	Control of worker exposure: See section risk management measures
	Exposure assessment and method: Human Health, Worker exposure and risk assessment: Shown are the result of the quantitative exposure and risk assessment prepared based on the 'GES Worker Chemical Safety Assessment (CSA) Template'. This tool can be downloaded from the CEFIC website: http://cefic.org/templates/shwPublications.asp?HID=750
	Examples for Environmental release categories [ERC]: ERC6d Environment, ECT Phenol: Please use the 'ECT Phenol' to check your local conditions. The Excel-tool enables the performance of scaling calculation for specific local environmental conditions. It can be downloaded from the web page of the Phenol & Derivatives REACH-consortium: http://www.reachcentrum.eu/EN/consortium-management/consortia-under-reach/phenol- derivatives-reach-consortium.aspx
	Guidance to check compliance with the exposure scenario: Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Contributing Scenarios:	1 General information Page 59 Applies to all contributing exposure scenarios related to exposure scenario 5: Rubber production and processing (environment)
	2 General information Page 60 Applies to all contributing exposure scenarios related to exposure scenario 5: Rubber production and processing (worker)

### Contributing exposure scenario 1

## General information

## Applies to all contributing exposure scenarios related to exposure scenario 5: Rubber production and processing (environment)

### List of use descriptors

Environmental release categories [ERC]:

Environmental release ca	ERC6d: Use of reactive process regulators in polymerisation processes at industrial site (inclusion or not into/onto article)
Operational con	ditions
Product characteristics:	Substance is a unique structure, phenol, aromatic alcohol, biodegradable
	Amounts used:
	Annual site tonnage Please use the Excel-Tool 'ECT Phenol'
	to calculate your maxium tonnage/year.
Duration and frequency o	
	360 d/y
Other relevant operationa	
	Indoor/Outdoor use

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### Exposure prediction

Exposure estimation and reference to its source:

Please use the 'ECT Phenol' to check your local conditions.

Risk characterisation ratio (RCR):

Please use the 'ECT Phenol' to check your local conditions.

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release:

Common practices vary across sites thus conservative process release estimates used. Typical technical measures are closed systems or scrubbers or charcoal adsorbers. Treat air emission to provide a typical removal efficiency of (%): 90

Operational conditions and risk management measures:

Common practices vary across sites thus conservative process release estimates used. Please use the 'ECT Phenol' to check your local conditions.

#### **Disposal considerations**

Conditions and measures related to sewage treatment plant:

Please use the Excel-Tool 'ECT Phenol' to check your local conditions. 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 treatment and disposal of waste should comply with applicable local and/or national regulations.

### Contributing exposure scenario 2

### General information

# Applies to all contributing exposure scenarios related to exposure scenario 5: Rubber production and processing (worker)

#### List of use descriptors

Process categories [PROC]:

PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises

PROC5: Mixing or blending in batch processes

PROC6: Calendering operations

PROC7: Industrial spraying

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

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

PROC9: Transfer of substance or mixture into small containers (dedicated filling line, including weighing)

PROC10: Roller application or brushing

PROC13: Treatment of articles by dipping and pouring

PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelletisation

### **Operational conditions**

Product characteristics: liquid, vapour pressure < 0.5 kPa liquid, vapour pressure 0.5 - 10 kPa Concentration of the substance in a mixture: Covers percentage substance in the product up to 3 - 100 % (unless stated differently). Duration and frequency of use: Covers daily exposures up to 8h (unless stated differently). Other relevant operational conditions: Assumes a good basic standard of occupational hygiene is implemented.

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### Exposure prediction

Exposure estimation and reference to its source: refer to GES No. 0 industrial Risk characterisation ratio (RCR): refer to GES No. 0 industrial

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release:

Control any potential exposure using measures such as contained or enclosed systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and clear transfer lines prior to breaking containment.; Drain down and flush equipment where possible prior to maintenance.

Operational conditions and risk management measures:

Where there is potential for exposure: Ensure relevant staff are informed of the nature of exposure and aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for risk based health surveillance; identify and implement corrective actions.

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

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### Exposure Scenario 6: Polymer manufacturing

#### List of use descriptors Sectors of use [SU]: SU3: Industrial uses Application Manufacturing of formulated polymers including material transfers, additives handling Activities and processes: (e.g. pigments, stabilisers, fillers, plasticisers, etc.), moulding, curing and forming activities, material re-works, storage and associated maintenance. Process categories [PROC] Remark: PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PROC15 Control of worker exposure: See section risk management measures Exposure assessment and method: Human Health, Worker exposure and risk assessment: Shown are the result of the quantitative exposure and risk assessment prepared based on the 'GES Worker Chemical Safety Assessment (CSA) Template'. This tool can be downloaded from the CEFIC website: http://cefic.org/templates/shwPublications.asp?HID=750 Examples for Environmental release categories [ERC]: ERC6d Environment, ECT Phenol: Please use the 'ECT Phenol' to check your local conditions. The Excel-tool enables the performance of scaling calculation for specific local environmental conditions. It can be downloaded from the web page of the Phenol & Derivatives REACH-consortium: http://www.reachcentrum.eu/EN/consortium-management/consortia-under-reach/phenolderivatives-reach-consortium.aspx Guidance to check compliance with the exposure scenario: Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. General information Page 62 Contributing Scenarios: 1 Applies to all contributing exposure scenarios related to exposure scenario 6: Polymer manufacturing (environment) 2 General information Page 63 Applies to all contributing exposure scenarios related to exposure scenario 6: Polymer manufacturing (worker)

#### Contributing exposure scenario 1 General information Applies to all contributing exposure scenarios related to exposure scenario 6: Polymer manufacturing (environment)

#### List of use descriptors

Environmental release cat	tegories [ERC]: ERC6d: Use of reactive process regulators in polymerisation processes at industrial site (inclusion or not into/onto article)			
Operational cond	litions			
Product characteristics:	Substance is a unique structure, phenol, aromatic alcohol, biodegradable			
	Amounts used: Annual site tonnage Please use the Excel-Tool 'ECT Phenol' to calculate your maxium tonnage/year.			
Duration and frequency of	use:			
	360 d/y			
Other relevant operational conditions:				
	Indoor/Outdoor use			

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### Exposure prediction

Exposure estimation and reference to its source:

Please use the 'ECT Phenol' to check your local conditions.

Risk characterisation ratio (RCR):

Please use the 'ECT Phenol' to check your local conditions.

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release:

- Common practices vary across sites thus conservative process release estimates used. Typical technical measures are closed systems or scrubbers or charcoal adsorbers. Treat air emission to provide a typical removal efficiency of (%): 90
- Operational conditions and risk management measures:

Common practices vary across sites thus conservative process release estimates used. Please use the 'ECT Phenol' to check your local conditions.

#### **Disposal considerations**

Conditions and measures related to sewage treatment plant:

Please use the Excel-Tool 'ECT Phenol' to check your local conditions. 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 treatment and disposal of waste should comply with applicable local and/or national regulations.

Contributing exposure scenario 2

### General information Applies to all contributing exposure scenarios related to exposure scenario 6: Polymer manufacturing (worker)

#### List of use descriptors

Process categories [PROC]:

PROC1: Use in closed process, no likelihood of exposure
PROC2: Use in closed, continuous process with occasional controlled exposure
PROC3: Use in closed batch process (synthesis or formulation)
PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises
PROC5: Mixing or blending in batch processes
PROC6: Calendering operations
PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC9: Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
PROC10: Roller application or brushing
PROC13: Treatment of articles by dipping and pouring

PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelletisation

PROC15: Use as laboratory reagent

### **Operational conditions**

Product characteristics: liquid, vapour pressure < 0.5 kPa liquid, vapour pressure 0.5 - 10 kPa Concentration of the substance in a mixture: Covers percentage substance in the product up to 3 - 100 % (unless stated differently). Duration and frequency of use: Covers daily exposures up to 8h (unless stated differently). Other relevant operational conditions: Assumes a good basic standard of occupational hygiene is implemented.

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No. 2015/830

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### Exposure prediction

Exposure estimation and reference to its source: refer to GES No. 0 industrial Risk characterisation ratio (RCR): refer to GES No. 0 industrial

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release:

Control any potential exposure using measures such as contained or enclosed systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and clear transfer lines prior to breaking containment.; Drain down and flush equipment where possible prior to maintenance.

Operational conditions and risk management measures:

Where there is potential for exposure: Ensure relevant staff are informed of the nature of exposure and aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for risk based health surveillance; identify and implement corrective actions.

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

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http://www.reachcentrum.eu/EN/consortium-management/consortia-under-reach/phenol-derivatives-reach-consortium.aspx

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### **Exposure Scenario 7: Polymer processing**

List of use des	criptors			
Sectors of use [SU]: Application	SU3: Industrial uses			
Activities and processes:	Processing of formulated polymers including incidental exposures during material transfers, additives handling (e.g. pigments, stabilisers, fillers, plasticisers, etc.), moulding, curing and forming activities, material re-works, storage and associated maintenance			
Remark:	Process categories [PROC] PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PROC15			
	Control of worker exposure: See section risk management measures			
	Exposure assessment and method: Human Health, Worker exposure and risk assessment: Shown are the result of the quantitative exposure and risk assessment prepared based on the 'GES Worker Chemical Safety Assessment (CSA) Template'. This tool can be downloaded from the CEFIC website: http://cefic.org/templates/shwPublications.asp?HID=750			
	Examples for Environmental release categories [ERC]: ERC6d			
	Environment, ECT Phenol: Please use the 'ECT Phenol' to check your local conditions. The Excel-tool enables the performance of scaling calculation for specific local environmental conditions. It can be downloaded from the web page of the Phenol & Derivatives REACH-consortium: http://www.reachcentrum.eu/EN/consortium-management/consortia-under-reach/phenol derivatives-reach-consortium.aspx			
	Guidance to check compliance with the exposure scenario: Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.			
Contributing Scenarios:	1 General information Page Applies to all contributing exposure scenarios related to exposure scenario 7: Polymer processing (environment)			
	2 General information Page Applies to all contributing exposure scenarios related to exposure scenario 7: Polymer processing (worker)			

# Applies to all contributing exposure scenarios related to exposure scenario 7: Polymer processing (environment)

### List of use descriptors

Environmental release cat	Egories [ERC]: ERC6d: Use of reactive process regulators in polymerisation processes at industrial site (inclusion or not into/onto article)			
Operational cond	litions			
Product characteristics:	Substance is a unique structure, phenol, aromatic alcohol, biodegradable			
	Amounts used: Annual site tonnage Please use the Excel-Tool 'ECT Phenol' to calculate your maxium tonnage/year.			
Duration and frequency of use:				
	360 d/y			

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#### Other relevant operational conditions:

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Indoor/Outdoor use

#### Exposure prediction

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Exposure estimation and reference to its source:

Please use the 'ECT Phenol' to check your local conditions.

Risk characterisation ratio (RCR):

Please use the 'ECT Phenol' to check your local conditions.

#### Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Common practices vary across sites thus conservative process release estimates used. Typical technical measures are closed systems or scrubbers or charcoal adsorbers. Treat air emission to provide a typical removal efficiency of (%): 90

Operational conditions and risk management measures:

Common practices vary across sites thus conservative process release estimates used. Please use the 'ECT Phenol' to check your local conditions.

#### **Disposal considerations**

Conditions and measures related to sewage treatment plant:

Please use the Excel-Tool 'ECT Phenol' to check your local conditions. 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 treatment and disposal of waste should comply with applicable local and/or national regulations.

### Contributing exposure scenario 2 General information Applies to all contributing exposure scenarios related to exposure scenario 7: Polymer processing (worker)

### List of use descriptors

Process categories [PROC]:

PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes PROC6: Calendering operations PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC10: Roller application or brushing PROC13: Treatment of articles by dipping and pouring PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelletisation PROC15: Use as laboratory reagent

### **Operational conditions**

Product characteristics: liquid, vapour pressure < 0.5 kPa liquid, vapour pressure 0.5 - 10 kPa Concentration of the substance in a mixture: Covers percentage substance in the product up to 3 - 100 % (unless stated differently). Duration and frequency of use:

Covers daily exposures up to 8h (unless stated differently).

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No. 2015/830

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Other relevant operational conditions:

Assumes a good basic standard of occupational hygiene is implemented.

### Exposure prediction

Exposure estimation and reference to its source: refer to GES No. 0 industrial Risk characterisation ratio (RCR):

refer to GES No. 0 industrial

#### Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Control any potential exposure using measures such as contained or enclosed systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and clear transfer lines prior to breaking containment.; Drain down and flush equipment where possible prior to maintenance.

Operational conditions and risk management measures:

Where there is potential for exposure: Ensure relevant staff are informed of the nature of exposure and aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for risk based health surveillance; identify and implement corrective actions.

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

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### Exposure Scenario 8: Phenolic resin processing Use of phenolic resins uses of downstream users (DU)

List of use descriptors				
Sectors of use [SU]:	SU3: Industrial uses			
Application				
Activities and processes: Remark:	<ul> <li>Use for the manufacturing of resins including material transfers, moulding and forming activities, material re-works and associated maintenance. Identified uses uses of downstream users (DU) e.g.: foundry adjuvants, adhesive, mineral wool, wood articles, abrasive, foam</li> <li>Process categories [PROC]</li> <li>PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9,</li> </ul>			
	PROC10, PROC13, PROC14, PROC15			
	Control of worker exposure: See section risk management measures			
	Exposure assessment and method: Human Health, Worker exposure and risk assessment: Shown are the result of the quantitative exposure and risk assessment prepared based on the 'GES Worker Chemical Safety Assessment (CSA) Template'. This tool can be downloaded from the CEFIC website: http://cefic.org/templates/shwPublications.asp?HID=750			
	Examples for Environmental release categories [ERC]: ERC2, ERC4, ERC6b, ERC ERC6d	C6c,		
	Environment, ECT Phenol: Please use the 'ECT Phenol' to check your local conditions. The Excel-tool enables performance of scaling calculation for specific local environmental conditions. It can downloaded from the web page of the Phenol & Derivatives REACH-consortium: http://www.reachcentrum.eu/EN/consortium-management/consortia-under-reach/ph derivatives-reach-consortium.aspx	n be		
	Guidance to check compliance with the exposure scenario: Guidance is based on assumed operating conditions which may not be applicable to sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.	o all		
Contributing Scenarios:	1 General information F Applies to all contributing exposure scenarios related to exposure	Page 68		
	<ul> <li>scenario 8: Use of phenolic resins (DU) (environment)</li> <li>General information</li> <li>Applies to all contributing exposure scenarios related to exposure scenario 8: Use of phenolic resins uses of downstream users (worker)</li> </ul>	Page 69		

Contributing exposure scenario 1

### General information Applies to all contributing exposure scenarios related to exposure scenario 8: Use of phenolic resins (DU) (environment)

### List of use descriptors

Environmental release categories [ERC]:

ERC2: Formulation into mixture

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

ERC6b: Use of reactive processing aid at industrial site (no inclusion into or onto article) ERC6c: Use of monomer in polymerisation processes at industrial site (inclusion or not into/onto article)

ERC6d: Use of reactive process regulators in polymerisation processes at industrial site (inclusion or not into/onto article)

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Operational cond	litions		
Product characteristics:	Substance is a unique structure, phenol, aromatic alcohol, biodegradab	le	
	Amounts used:		
	Annual site tonnage Please use the Excel-Tool 'ECT Phenol' to calculate your maxium tonnage/year.		
Duration and frequency of	use:		
Other relevant operational	360 d/y		
	Indoor/Outdoor use		
Exposure predict	ion		
Exposure estimation and r	eference to its source: Please use the 'ECT Phenol' to check your local conditions.		
Risk characterisation ratio	(RCR):		
	Please use the 'ECT Phenol' to check your local conditions.		
Risk managemer			
	neasures at process level (source) to prevent release: Common practices vary across sites thus conservative process release Typical technical measures are closed systems or scrubbers or charcoa Treat air emission to provide a typical removal efficiency of (%): 90		
Operational conditions and	risk management measures: Common practices vary across sites thus conservative process release Please use the 'ECT Phenol' to check your local conditions.	estimates	used.
Disposal conside			
Conditions and measures	related to sewage treatment plant: Please use the Excel-Tool 'ECT Phenol' to check your local conditions.		
Conditions and measures	related to external treatment of waste for disposal:		
	External treatment and disposal of waste should comply with applicable	local and/o	or
Conditions and measures	national regulations. related to external recovery of waste:		
	External treatment and disposal of waste should comply with applicable national regulations.	local and/o	or

### Applies to all contributing exposure scenarios related to exposure scenario 8: Use of phenolic resins uses of downstream users (worker)

### List of use descriptors

Process categories [PROC]:

PROC1: Use in closed process, no likelihood of exposure

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

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

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

PROC5: Mixing or blending in batch processes

PROC6: Calendering operations

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

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

PROC9: Transfer of substance or mixture into small containers (dedicated filling line, including weighing)

PROC10: Roller application or brushing

PROC13: Treatment of articles by dipping and pouring

PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelletisation

PROC15: Use as laboratory reagent

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according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No. 2015/830

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Operational co	nditions		
Product characteristics			
	liquid, vapour pressure 0.5 - 10 kPa		
Concentration of the su		stated differe	nthy)
Duration and frequency	Covers percentage substance in the product up to 3 - 100 % (unless	stated untere	nuy).
2 aradion and noquoney	Covers daily exposures up to 8h (unless stated differently).		
Other relevant operatio	nal conditions:		
	Assumes a good basic standard of occupational hygiene is impleme	nted.	
<b>Exposure predi</b>	iction		
Exposure estimation ar	nd reference to its source:		
	refer to GES No. 0 industrial		
Risk characterisation ra	itio (RCR): refer to GES No. 0 industrial		
Risk managem			
	ad measures at process level (source) to prevent release: Control any potential exposure using measures such as contained of properly designed and maintained facilities and a good standard of g Drain down systems and clear transfer lines prior to breaking contair and flush equipment where possible prior to maintenance.	eneral ventilat	tion.
Operational conditions	and risk management measures: Where there is potential for exposure: Ensure relevant staff are infor	med of the na	turo
	of exposure and aware of basic actions to minimise exposures; ensu personal protective equipment is available; clear up spills and dispose accordance with regulatory requirements; monitor effectiveness of co consider the need for risk based health surveillance; identify and imp actions.	re suitable e of waste in ontrol measure	es;

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

'ECT Phenol': The Excel-tool enables the performance of scaling calculation for specific local environmental conditions. It can be downloaded from the web page of the Phenol & Derivatives REACH-consortium:

http://www.reachcentrum.eu/EN/consortium-management/consortia-under-reach/phenolderivatives-reach-consortium.aspx

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### Exposure Scenario 10: Generic exposure scenario (GES): Professional Processes relevant for phenol and phenol containing products (ES 11 - 16)

### List of use descriptors

Sectors of use [SU]: Application	SU22: Professional uses	
Activities and processes:	Generic exposure scenario, applies to all contributing exposure scenarios related exposure scenario 11 - 16: For use in industrial installations and professional treatment only.	l to
	<ul> <li>ES11 - Use in laboratories</li> <li>ES12 - Uses in coatings</li> <li>ES13 - Use in binders and release agents</li> <li>ES14 - Polymer manufacturing</li> <li>ES15 - Polymer processing</li> <li>ES16 - Phenolic resin processing Use of phenolic resins uses of downstream use</li> </ul>	sers (DU)
Contributing Scenarios:	<ol> <li>Use in closed process, no likelihood of exposure General exposures (closed systems) (worker)</li> </ol>	Page 73
	2 Use in closed process, no likelihood of exposure General exposures (closed systems) (worker)	Page 73
	3 Use in closed, continuous process with occasional controlled exposure General exposures (closed systems) (worker)	Page 74
	4 Use in closed, continuous process with occasional controlled exposure General exposures (closed systems) (worker)	Page 74
	5 Use in closed, continuous process with occasional controlled exposure General exposures (closed systems) (worker)	Page 75
	6 Use in closed batch process (synthesis or formulation)	Page 76
	<ul> <li>General exposures (closed systems) (worker)</li> <li>Use in closed batch process (synthesis or formulation)</li> </ul>	Page 76
	<ul><li>General exposures (closed systems) (worker)</li><li>Use in closed batch process (synthesis or formulation)</li></ul>	Page 77
	<ul> <li>General exposures (closed systems) (worker)</li> <li>Use in batch and other process (synthesis) where opportunity for exposure arises</li> </ul>	Page 77
	<ul> <li>Process sampling (open systems) (worker)</li> <li>Use in batch and other process (synthesis) where opportunity for exposure arises</li> </ul>	Page 78
	Process sampling (open systems) (worker) 11 Use in batch and other process (synthesis) where opportunity for exposure arises	Page 79
	Process sampling (open systems) (worker) 12 Use in batch and other process (synthesis) where opportunity for exposure arises	Page 79
	<ul> <li>Process sampling (open systems) (worker)</li> <li>13 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)</li> </ul>	Page 80
	<ul> <li>Mixing operations (open systems) (worker)</li> <li>Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)</li> </ul>	Page 80
	Mixing operations (open systems) (worker) 15 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)	Page 81
	Mixing operations (open systems) (worker) 16 Calendering operations Calendering (including Banburys) (worker)	Page 82

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Contributing Scenarios	Scenarios:	17	Calendering operations		Page 82
			Calendering (including Banburys) (worker)		Ū
		18	Calendering operations		Page 83
			Calendering (including Banburys) (worker)		5 64
		19	Calendering operations		Page 84
		20	Calendering (including Banburys) (worker)	a/to	Page 84
		20	Transfer of substance or preparation (charging/discharging) from vessels/large containers at non-dedicated facilities	1/10	Page 84
			Bulk transfers (worker)		
		21	Transfer of substance or preparation (charging/discharging) from	n/to	Page 85
			vessels/large containers at non-dedicated facilities	1/10	r ago oo
			Bulk transfers (worker)		
		22	Transfer of substance or preparation (charging/discharging) from	n∕to	Page 86
			vessels/large containers at non-dedicated facilities		0
			Bulk transfers (worker)		
		23	Transfer of substance or preparation (charging/discharging) from	∩/to	Page 86
			vessels/large containers at dedicated facilities		
			Bulk transfers (worker)		_
		24	Transfer of substance or preparation (charging/discharging) from	ı∕to	Page 87
			vessels/large containers at dedicated facilities		
		05	Bulk transfers (worker)	- /1 -	D
		25	Transfer of substance or preparation (charging/discharging) from	1/to	Page 88
			vessels/large containers at dedicated facilities		
		26	Bulk transfers (worker) Transfer of substance or preparation (charging/discharging) from	n/to	Page 88
		20	vessels/large containers at dedicated facilities	1/10	i age oo
			Bulk transfers (worker)		
		27	Transfer of substance or preparation into small containers (dedi	cated	Page 89
			filling line, including weighing)		
			Bulk transfers (worker)		
		28	Roller application or brushing		Page 90
			Rolling, Brushing (worker)		
		29	Roller application or brushing		Page 90
		~ ~	Rolling, Brushing (worker)		5 6/
		30	Roller application or brushing		Page 91
		01	Rolling, Brushing (worker)		
		31	Roller application or brushing		Page 92
		32	Rolling, Brushing (worker) Non industrial spraying		Page 92
		52	Spraying/fogging by manual application (worker)		Tage 52
		33	Non industrial spraying		Page 93
		00	Spraying/fogging by manual application (worker)		i ugo oo
		34	Non industrial spraying		Page 94
			Spraying/fogging by manual application (worker)		0
		35	Treatment of articles by dipping and pouring		Page 94
			Dipping, immersion and pouring (worker)		
		36	Treatment of articles by dipping and pouring		Page 95
			Dipping, immersion and pouring (worker)		
		37	Treatment of articles by dipping and pouring		Page 96
		20	Dipping, immersion and pouring (worker)		Dage 00
		38	Production of preparations or articles by tabletting, compression	,	Page 96
		39	extrusion, pelletisation (worker) Production of preparations or articles by tabletting, compression		Page 97
		09	extrusion, pelletisation (worker)	J	i aye 37
		40	Use in laboratory reagents (small scale)		Page 98
			Laboratory activities (worker)		
			, ( ,		

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#### Contributing exposure scenario 1

## Use in closed process, no likelihood of exposure General exposures (closed systems) (worker)

#### List of use descriptors

Process categories [PROC]:

PROC1: Use in closed process, no likelihood of exposure

#### **Operational conditions**

Duration and frequency of use: Inhalation exposure: occasional exposure < 58  $^{\circ}C$  = low volatility Other relevant operational conditions:

No special measures are required.

#### **Exposure prediction**

Exposure estimation and reference to its source:

inhalative: 0.01 ppm dermal: not applicable for corrosive mixtures, phenol resistant Personal Protective Equipment (PPE) is worn Risk characterisation ratio (RCR): RCR: 0.01 inhalative:0.01 dermal: not applicable to corrosive mixtures all relevant routes: 0.01

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release: Sample via a closed loop or other system to avoid exposure.

Handle substance within a closed system. Operational conditions and risk management measures: (closed systems); Process sampling; elevated temperature occasional exposure < 58 °C = low volatility Conditions and measures related to personal protection, hygiene and health evaluation: Use personal protective equipment as required.

#### Contributing exposure scenario 2 Use in closed process, no likelihood of exposure General exposures (closed systems) (worker)

#### List of use descriptors

Process categories [PROC]

PROC1: Use in closed process, no likelihood of exposure

#### **Operational conditions**

Duration and frequency of use: Inhalation exposure: occasional exposure < 58 °C = low volatility Other relevant operational conditions: Inhalation exposure: TRA concentration factor [%] : < 3 Dermal exposure: TRA concentration factor [%] : < 3

#### **Exposure prediction**

Exposure estimation and reference to its source:

inhalative: 0.002 ppm; dermal: 0.07 mg/kg/d Risk characterisation ratio (RCR): RCR: 0.06 inhalative: 0.00 dermal: 0.06 all relevant routes: 0.06

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## Phenol, synthetic

Limit the Handle si Ensure m Operational conditions and risk managen (closed s occasion: Conditions and measures related to pers Use pers Contributing exposure scenario 3 Use in closed, continuou General exposures (close List of use descriptors Process categories [PROC]: PROC2: Operational conditions Duration and frequency of use: Inhalation Other relevant operational conditions: Inhalation Other relevant operational conditions: Exposure prediction Exposure prediction Exposure estimation and reference to its inhalative dermal: n Equipmen Risk characterisation ratio (RCR): RCR: 0.5 inhalative dermal: n all releva Risk management measure technical conditions and measures at pro Sample v Handle si Ensure m Operational conditions and risk managen Continuo occasion: Conditions and measures related to pers Use pers	beess level (source) to prevent release: ia a closed loop or other system to avoid exposure. substance in product to 3 %. ubstance within a closed system. haterial transfers are under containment or extract ventilation. hert measures: ystems); Process sampling; elevated temperature al exposure < 58 °C = low volatility onal protection, hygiene and health evaluation: onal protective equipment as required. Use process with occasional controlled exposure sed systems) (worker) Use in closed, continuous process with occasional controlled exposure n exposure: occasional exposure < 58 °C = low volatility exposure: local exhaust ventilation - efficiency of at least [%]: 80 xposure: local exhaust ventilation - efficiency of at least [%]: 90	
Technical conditions and measures at pro- Sample v Limit the Handle si Ensure m Operational conditions and risk managen (closed s occasion: Conditions and measures related to pers Use pers Contributing exposure scenario 3 Use in closed, continuou General exposures (close List of use descriptors Process categories [PROC]: PROC2: Operational conditions Duration and frequency of use: Inhalation Other relevant operational conditions: Inhalation Dermal e Exposure prediction Exposure estimation and reference to its inhalative dermal: n Equipme Risk characterisation ratio (RCR): RCR: 0.5 inhalative dermal: n all releva Risk management measure Technical conditions and measures at pro Sample v Handle si Ensure m Operational conditions and risk managen Contributing exposure scenario 4 Use in closed, continuo General exposures (close	beess level (source) to prevent release: ia a closed loop or other system to avoid exposure. substance in product to 3 %. ubstance within a closed system. naterial transfers are under containment or extract ventilation. tent measures: ystems); Process sampling; elevated temperature al exposure < 58 °C = low volatility onal protection, hygiene and health evaluation: onal protective equipment as required. us process with occasional controlled exposure sed systems) (worker) Use in closed, continuous process with occasional controlled exposure n exposure: occasional exposure < 58 °C = low volatility n exposure: local exhaust ventilation - efficiency of at least [%]: 80 xposure: local exhaust ventilation - efficiency of at least [%]: 90	
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PROC2: Operational conditions Duration and frequency of use: Inhalation Other relevant operational conditions: Inhalation Dermal e Exposure prediction Exposure estimation and reference to its inhalative dermal: n Equipmen Risk characterisation ratio (RCR): RCR: 0.5 inhalative dermal: n all releva Risk management measure Technical conditions and measures at pro- Sample v Handle si Ensure m Operational conditions and risk managen Contributing exposure scenario 4 Use in closed, continuon General exposures (close	n exposure: occasional exposure < 58 °C = low volatility n exposure: local exhaust ventilation - efficiency of at least [%]: 80 xposure: local exhaust ventilation - efficiency of at least [%]: 90 source: :: 1 ppm	
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Inhalatior Other relevant operational conditions: Inhalation Dermal e Exposure prediction Exposure estimation and reference to its inhalative dermal: n Equipmer Risk characterisation ratio (RCR): RCR: 0.5 inhalative dermal: n all releva Risk management measure Technical conditions and measures at pro Sample v Handle si Ensure m Operational conditions and risk managen Continuo occasion: Conditions and measures related to pers Use pers	n exposure: local exhaust ventilation - efficiency of at least [%]: 80 xposure: local exhaust ventilation - efficiency of at least [%]: 90 <sup>source:</sup> :: 1 ppm	
Inhalatior Dermal e Exposure prediction Exposure estimation and reference to its inhalative dermal: n Equipmen Risk characterisation ratio (RCR): RCR: 0.5 inhalative dermal: n all releva Risk management measure technical conditions and measures at pr Sample v Handle si Ensure m Operational conditions and risk managen Continuo occasion: Conditions and measures related to pers Use pers	xposure: local exhaust ventilation - efficiency of at least [%]: 90 <sup>source:</sup> :: 1 ppm	
Exposure prediction Exposure estimation and reference to its inhalative dermal: n Equipme Risk characterisation ratio (RCR): RCR: 0.5 inhalative dermal: n all releva Risk management measures rechnical conditions and measures at pro- Sample v Handle si Ensure m Operational conditions and risk managen Continuo occasion: Conditions and measures related to perse Use perse Contributing exposure scenario 4 Use in closed, continuon General exposures (close	source: :: 1 ppm	
Exposure estimation and reference to its inhalative dermal: n Equipmen Risk characterisation ratio (RCR): RCR: 0.5 inhalative dermal: n all releva <b>Risk management measure</b> Technical conditions and measures at pro- Sample v Handle si Ensure m Operational conditions and risk managen Contributions and measures related to pers Use pers Contributing exposure scenario 4 Use in closed, continuon General exposures (close	: 1 ppm	
inhalative dermal: n Equipmen Risk characterisation ratio (RCR): RCR: 0.5 inhalative dermal: n all releva <b>Risk management measure</b> Technical conditions and measures at pro- Sample v Handle si Ensure m Operational conditions and risk managen Contributions and measures related to pers Use pers Contributing exposure scenario 4 Use in closed, continuon General exposures (close	: 1 ppm	
Equipme Risk characterisation ratio (RCR): RCR: 0.5 inhalative dermal: n all releva <b>Risk management measure</b> <b>Risk management measure</b> Technical conditions and measures at pro- Sample v Handle so Ensure m Operational conditions and risk managen Contrinuo Occasion: Conditions and measures related to pers Use pers Use pers Contributing exposure scenario 4 Use in closed, continuou General exposures (closed)	ot applicable for corrosive mixtures, phenol resistant Personal Protective	
Risk characterisation ratio (RCR): RCR: 0.5 inhalative dermal: n all releva Risk management measure Technical conditions and measures at pr Sample v Handle si Ensure m Operational conditions and risk managen Contributions and measures related to pers Use pers Contributing exposure scenario 4 Use in closed, continuot General exposures (close		)
RCR: 0.5 inhalative dermal: n all releva <b>Risk management measure</b> Technical conditions and measures at pro- Sample v Handle si Ensure m Operational conditions and risk managen Contributions and measures related to pers Use pers Contributing exposure scenario 4 <b>Use in closed, continuon</b> <b>General exposures (close</b> )	nt (PPE) is worn	
dermal: n all releva Risk management measure Technical conditions and measures at pro Sample v Handle si Ensure m Operational conditions and risk managen Contrinuo occasion: Conditions and measures related to pers Use pers		
all releva <b>Risk management measure</b> Technical conditions and measures at pri- Sample v Handle si Ensure m Operational conditions and risk managen Contrinuo occasion: Conditions and measures related to pers Use pers Contributing exposure scenario 4 Use in closed, continuou General exposures (closed)	: 0.50	
Risk management measure Technical conditions and measures at pri- Sample v Handle si Ensure m Operational conditions and risk managen Contrinuo occasion: Conditions and measures related to pers Use pers Contributing exposure scenario 4 Use in closed, continuou General exposures (close	ot applicable to corrosive mixtures	
Technical conditions and measures at pro- Sample v Handle si Ensure m Operational conditions and risk managen Continuo occasions Conditions and measures related to perse Use pers Contributing exposure scenario 4 Use in closed, continuo General exposures (closed)	nt routes: 0.50	
Sample v Handle si Ensure m Operational conditions and risk managen Continuo occasion Conditions and measures related to pers Use pers Contributing exposure scenario 4 Use in closed, continuo General exposures (close		
Handle si Ensure m Operational conditions and risk managen Continuo occasion Conditions and measures related to pers Use pers Contributing exposure scenario 4 Use in closed, continuo General exposures (close		
Ensure m Operational conditions and risk managen Continuo occasion: Conditions and measures related to pers Use pers Contributing exposure scenario 4 Use in closed, continuo General exposures (close	ia a closed loop or other system to avoid exposure. ubstance within a closed system.	
Operational conditions and risk managen Continuo occasion: Conditions and measures related to pers Use pers Contributing exposure scenario 4 Use in closed, continuo General exposures (close	naterial transfers are under containment or extract ventilation.	
occasion: Conditions and measures related to pers Use pers Contributing exposure scenario 4 Use in closed, continuou General exposures (clos		
Conditions and measures related to pers Use pers Contributing exposure scenario 4 Use in closed, continuou General exposures (clos	us process, Process sampling; elevated temperature; (closed systems)	
Use pers Contributing exposure scenario 4 Use in closed, continuo General exposures (clos	al exposure $< 58 \text{ °C} = \text{low volatility}$	
Use in closed, continuo General exposures (clos	onal protective equipment as required.	
Use in closed, continuo General exposures (clos		
General exposures (clos	us process with accessional controlled expessive	
• •	us process with occasional controlled exposure	
	seu systems) (worker)	
List of use descriptors		
Process categories [PROC]: PROC2:	Use in closed, continuous process with occasional controlled exposure	
Operational conditions		
Duration and frequency of use:		
	ovnoguro: 15 min 1h	
	n exposure: 15 min - 1h al exposure < 58 °C – low volatility	<u> </u>
printed by INEOS Phenol Not	al exposure < 58 °C = low volatility	vs SUMD/
		,

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No. 2015/830

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Other relevant				
		lo special measures are required.		
Exposure	predicti	n		
Exposure estim	nation and re	rence to its source:		
·		nhalative: 1 ppm		
		ermal: not applicable for corrosive mixtures, phenol resistant Persona	I Protective	

Equipment (PPE) is worn Risk characterisation ratio (RCR): RCR: 0.5 inhalative: 0.50 dermal: not applicable to corrosive mixtures all relevant routes: 0.50

#### Risk management measures

Technical conditions and measures at process level (source) to prevent release:
Sample via a closed loop or other system to avoid exposure.
Handle substance within a closed system.
Avoid carrying out activities involving exposure for more than 1 h.
Operational conditions and risk management measures:
Continuous process, Process sampling; elevated temperature; (closed systems)
occasional exposure $< 58 \text{ °C} = \text{low volatility}$
Conditions and measures related to personal protection, hygiene and health evaluation: Use personal protective equipment as required.

#### Contributing exposure scenario 5

## Use in closed, continuous process with occasional controlled exposure General exposures (closed systems) (worker)

#### List of use descriptors

Process categories [PROC]:

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

## Operational conditions

Duration and frequency of use:
Inhalation exposure: occasional exposure < 58 °C = low volatility
Other relevant operational conditions:
Inhalation exposure: TRA concentration factor [%] : < 3
Dermal exposure: TRA concentration factor [%] : < 3

#### **Exposure prediction**

Exposure estimation and reference to its source: inhalative: 1 ppm

dermal: 0.27 mg/kg/d

Risk characterisation ratio (RCR):

RCR: 0.72 inhalative: 0.50 dermal: 0.22 all relevant routes: 0.72

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release: Sample via a closed loop or other system to avoid exposure. Limit the substance in product to 3 %. Handle substance within a closed system. Operational conditions and risk management measures: Continuous process, Process sampling; elevated temperature; (closed systems) occasional exposure < 58 °C = low volatility Conditions and measures related to personal protection, hygiene and health evaluation: Use personal protective equipment as required.

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#### Contributing exposure scenario 6

#### Use in closed batch process (synthesis or formulation) General exposures (closed systems) (worker)

#### List of use descriptors

Process categories [PROC]:

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

#### **Operational conditions**

Duration and frequency of use: Inhalation exposure: occasional exposure < 58 °C = low volatility Other relevant operational conditions: Inhalation exposure: local exhaust ventilation - efficiency of at least [%]: 80 Dermal exposure: local exhaust ventilation - efficiency of at least [%]: 90 **Exposure prediction** Exposure estimation and reference to its source: inhalative: 0.6 ppm dermal: not applicable for corrosive mixtures, phenol resistant Personal Protective

Equipment (PPE) is worn Risk characterisation ratio (RCR): RCR: 0.3 inhalative: 0.30

dermal: not applicable to corrosive mixtures all relevant routes: 0.30

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release:

Sample via a closed loop or other system to avoid exposure. Handle substance within a closed system. Ensure material transfers are under containment or extract ventilation. Operational conditions and risk management measures: Batch process; Process sampling; with local exhaust ventilation occasional exposure < 58 °C = low volatility Conditions and measures related to personal protection, hygiene and health evaluation: Use personal protective equipment as required.

#### Contributing exposure scenario 7 Use in closed batch process (synthesis or formulation) General exposures (closed systems) (worker)

#### List of use descriptors

Process categories [PROC]:

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

#### **Operational conditions**

Duration and frequency of use: Inhalation exposure: 1 - 4 hours occasional exposure < 58 °C = low volatility Other relevant operational conditions: No special measures are required. **Exposure prediction** Exposure estimation and reference to its source: inhalative: 1.8 ppm dermal: not applicable for corrosive mixtures, phenol resistant Personal Protective Equipment (PPE) is worn Risk characterisation ratio (RCR): RCR: 0.9 inhalative: 0.90 dermal: not applicable to corrosive mixtures all relevant routes: 0.90

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#### Risk management measures

Technical conditions and measures at process level (source) to prevent release: Sample via a closed loop or other system to avoid exposure. Handle substance within a closed system. Ensure operation is undertaken outdoors. Avoid carrying out activities involving exposure for more than 1 - 4 h. Operational conditions and risk management measures: Batch process; (closed systems); elevated temperature occasional exposure < 58 °C = low volatility Conditions and measures related to personal protection, hygiene and health evaluation: Use personal protective equipment as required.

Contributing exposure scenario 8

#### Use in closed batch process (synthesis or formulation) General exposures (closed systems) (worker)

#### List of use descriptors

Process categories [PROC]:

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

#### **Operational conditions**

Duration and frequency of use: Inhalation exposure: 1 - 4 hours occasional exposure < 58 °C = low volatility Other relevant operational conditions: Inhalation exposure: TRA concentration factor [%] : < 3 Dermal exposure: TRA concentration factor [%] : < 3

#### **Exposure prediction**

Exposure estimation and reference to its source: inhalative: 0.36 ppm dermal: 0,07 mg/kg/d Risk characterisation ratio (RCR): RCR: 0.24 inhalative: 0.18 dermal: 0.06 all relevant routes: 0.24

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release:

Sample via a closed loop or other system to avoid exposure. Limit the substance in product to 3 %. Handle substance within a closed system. Avoid carrying out activities involving exposure for more than 1 - 4 h. Operational conditions and risk management measures: Batch process; (closed systems); elevated temperature occasional exposure < 58 °C = low volatility Conditions and measures related to personal protection, hygiene and health evaluation: Use personal protective equipment as required.

Contributing exposure scenario 9

## Use in batch and other process (synthesis) where opportunity for exposure arises Process sampling (open systems) (worker)

### List of use descriptors

Process categories [PROC]:

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

#### **Operational conditions**

Duration and frequency of use:

Inhalation exposure: occasional exposure < 58 °C = low volatility

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Other relevant operational conditions:

Inhalation exposure: local exhaust ventilation - efficiency of at least [%]: 80 Dermal exposure: local exhaust ventilation - efficiency of at least [%]: 90

#### Exposure prediction

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Exposure estimation and reference to its source:

inhalative: 2 ppm dermal: not applicable for corrosive mixtures, phenol resistant Personal Protective Equipment (PPE) is worn Risk characterisation ratio (RCR): RCR: 1 inhalative: 1.00

dermal: not applicable to corrosive mixtures all relevant routes: 1.00

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release: Ensure material transfers are under containment or extract ventilation. Operational conditions and risk management measures: with local exhaust ventilation; elevated temperature occasional exposure < 58 °C = low volatility Conditions and measures related to personal protection, hygiene and health evaluation: Use personal protective equipment as required.

Contributing exposure scenario 10

#### Use in batch and other process (synthesis) where opportunity for exposure arises Process sampling (open systems) (worker)

### List of use descriptors

Process categories [PROC]:

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

#### **Operational conditions**

Duration and frequency of use:					
Inhalation exposure: < 15 minutes					
occasional exposure < 58 °C = low volatility					
Other relevant operational conditions:					
No special measures are required.					

#### **Exposure prediction**

Exposure estimation and reference to its source:

inhalative: 1 ppm

dermal: not applicable for corrosive mixtures, phenol resistant Personal Protective Equipment (PPE) is worn Risk characterisation ratio (RCR): RCR: 0.5 inhalative: 0.50

dermal: not applicable to corrosive mixtures all relevant routes: 0.50

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release:

Avoid carrying out activities involving exposure for more than 15 min.

Operational conditions and risk management measures:

elevated temperature occasional exposure < 58 °C = low volatility

Conditions and measures related to personal protection, hygiene and health evaluation:

Use personal protective equipment as required.

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#### Contributing exposure scenario 11

## Use in batch and other process (synthesis) where opportunity for exposure arises Process sampling (open systems) (worker)

#### List of use descriptors

Process categories [PROC]:

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

#### **Operational conditions**

Duration and frequency of use:

Inhalation exposure: occasional exposure < 114.5 °C = medium volatility Other relevant operational conditions: Inhalation exposure: local exhaust ventilation - efficiency of at least [%]: 97 Dermal exposure: local exhaust ventilation - efficiency of at least [%]: 90

#### **Exposure prediction**

Exposure estimation and reference to its source:

inhalative: 1.5 ppm dermal: not applicable for corrosive mixtures, phenol resistant Personal Protective Equipment (PPE) is worn Risk characterisation ratio (RCR): RCR: 0.75

inhalative: 0.75 dermal: not applicable to corrosive mixtures all relevant routes: 0.75

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release: Provide the operation with a properly sited receiving hood. Operational conditions and risk management measures: elevated temperature occasional exposure < 114.5 °C = medium volatility Conditions and measures related to personal protection, hygiene and health evaluation: Use personal protective equipment as required.

#### Contributing exposure scenario 12 Use in batch and other process (synthesis) where opportunity for exposure arises Process sampling (open systems) (worker)

#### List of use descriptors

Process categories [PROC]

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

#### **Operational conditions**

Duration and frequency of use: Inhalation exposure: 1 - 4 h occasional exposure < 58 °C = low volatility Other relevant operational conditions: Inhalation exposure: TRA concentration factor [%] : < 3 Dermal exposure: TRA concentration factor [%] : < 3; Gloves

#### Exposure prediction

Exposure estimation and reference to its source: inhalative: 1.2 ppm dermal: 0.27 mg/kg/d Risk characterisation ratio (RCR): RCR: 0.82 inhalative: 0.60 dermal: 0.22 all relevant routes: 0.82

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Risk mana	agement mea	asures		

## F

Technical conditions and measures at process level (source) to prevent release: Limit the substance in product to 3 %. Avoid carrying out activities involving exposure for more than 4 h. Operational conditions and risk management measures elevated temperature occasional exposure < 58 °C = low volatility Conditions and measures related to personal protection, hygiene and health evaluation: Wear suitable gloves tested to EN374.

Contributing exposure scenario 13

#### Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) Mixing operations (open systems) (worker)

#### List of use descriptors

Process categories [PROC]:

PROC5: Mixing or blending in batch processes

#### **Operational conditions**

Duration and frequency of use:

Inhalation exposure: 1 - 4 hours

occasional exposure < 58 °C = low volatilityOther relevant operational conditions:

Inhalation exposure: local exhaust ventilation - efficiency of at least [%]: 80 Dermal exposure: local exhaust ventilation - efficiency of at least [%]: 99.5

#### Exposure prediction

Exposure estimation and reference to its source:

inhalative: 1.2 ppm; dermal: not applicable for corrosive mixtures, phenol resistant Personal Protective Equipment (PPE) is worn

Risk characterisation ratio (RCR): RCR: 0.6 inhalative: 0.60 dermal: not applicable to corrosive mixtures all relevant routes: 0.60

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release:
Ensure material transfers are under containment or extract ventilation.
Avoid carrying out activities involving exposure for more than 4 h.
Operational conditions and risk management measures:
Batch process; Process sampling; with local exhaust ventilation
occasional exposure $< 58 \text{ °C} = \text{low volatility}$
Conditions and measures related to personal protection, hygiene and health evaluation:
Use personal protective equipment as required.

Contributing exposure scenario 14

#### Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) Mixing operations (open systems) (worker)

#### List of use descriptors

Process categories [PROC]:

PROC5: Mixing or blending in batch processes

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#### **Operational conditions**

Duration and frequency of use:

Inhalation exposure: < 15 minutes occasional exposure < 58 °C = low volatility Other relevant operational conditions:

No special measures are required.

#### **Exposure prediction**

Exposure estimation and reference to its source: inhalative: 1 ppm dermal: not applicable for corrosive mixtures, phenol resistant Personal Protective Equipment (PPE) is worn Risk characterisation ratio (RCR): RCR: 0.5 inhalative: 0.500 dermal: not applicable to corrosive mixtures all relevant routes: 0.500

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release: Avoid carrying out activities involving exposure for more than 15 min. Operational conditions and risk management measures: Batch process; Process sampling; elevated temperature occasional exposure < 58 °C = low volatility Conditions and measures related to personal protection, hygiene and health evaluation: Use personal protective equipment as required.

Contributing exposure scenario 15

## Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) Mixing operations (open systems) (worker)

#### List of use descriptors

Process categories [PROC]: PROC5: Mixing or blending in batch processes

#### **Operational conditions**

Duration and frequency of use: Inhalation exposure: 1 - 4 h occasional exposure < 58 °C = low volatility Other relevant operational conditions: Inhalation exposure: TRA concentration factor [%] : < 3 Dermal exposure: TRA concentration factor [%] : < 3; gloves - basic training

#### **Exposure prediction**

Exposure estimation and reference to its source: inhalative: 1.2 ppm dermal: 0.27 mg/kg/d

Risk characterisation ratio (RCR): RCR: 0.82 inhalative: 0.60 dermal: 0.22 all relevant routes: 0.82

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Revision date: 4/9/2 Version:	2018 24	DateLanguage: en-GB,IEPage	e of print: e:	9/10/2018 82 of 117
Risk managel	ment measures			
•	and measures at process le Limit the subs	evel (source) to prevent release: tance in product to 3 %. Ensure material transfers are under c ilation. Avoid carrying out activities involving exposure for mor		
Operational conditior	ns and risk management me Batch process			
Conditions and meas	sures related to personal pro	otection, hygiene and health evaluation: Illy resistant gloves (tested to EN374) in combination with 'bas	ic' emp	oloyee
Contributing exposur Calendering Calendering		ourys) (worker)		
List of use de	scriptors			
Process categories [		ndering operations		

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#### **Operational conditions**

Duration and frequency of use:

Inhalation exposure: 1 - 4 h

occasional exposure < 58 °C = low volatility

Other relevant operational conditions: Inhalation exposure: local exhaust ventilation - efficiency of at least [%]: 80 Dermal exposure: local exhaust ventilation - efficiency of at least [%]: 95

#### **Exposure prediction**

Exposure estimation and reference to its source:

inhalative: 1.2 ppm dermal: not applicable for corrosive mixtures, phenol resistant Personal Protective Equipment (PPE) is worn

Risk characterisation ratio (RCR):

RCR: 0.6 inhalative: 0.60 dermal: not applicable to corrosive mixtures all relevant routes: 0.60

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release: Ensure material transfers are under containment or extract ventilation. Avoid carrying out activities involving exposure for more than 4 h. Operational conditions and risk management measures: With local exhaust ventilation; elevated temperature occasional exposure < 58 °C = low volatility Conditions and measures related to personal protection, hygiene and health evaluation: Use personal protective equipment as required.

Contributing exposure scenario 17 **Calendering operations** Calendering (including Banburys) (worker)

#### List of use descriptors

Process categories [PROC]:

PROC6: Calendering operations

#### **Operational conditions**

Duration and frequency of use:

Inhalation exposure: < 15 minutes occasional exposure < 58 °C = low volatility

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Other relevant operationa	l conditions: Dermal exposure: local exhaust ventilation - efficiency of at leas	t [%]: 95
Exposure predic	tion	
Exposure estimation and		
Risk characterisation ratic	dermal: not applicable for corrosive mixtures, phenol resistant P Equipment (PPE) is worn (RCR): RCR: 0.5 inhalative: 0.50 dermal: not applicable to corrosive mixtures all relevant routes: 0.50	Personal Protective
Risk managemer	nt measures	
	measures at process level (source) to prevent release: Ensure material transfers are under containment or extract vent out activities involving exposure for more than 15 min. d risk management measures:	ilation. Avoid carrying
	Elevated temperature occasional exposure < 58 °C = low volatility related to personal protection, hygiene and health evaluation: Use personal protective equipment as required.	
• •	perations Including Banburys) (worker)	
List of use descr Process categories [PRO	•	
	PROC6: Calendering operations	
Operational cond		
Duration and frequency of	Inhalation exposure: 1 - 4 h;	
	Respiratory protection mask occasional exposure < 114.5 °C =	medium volatility
Other relevant operationa	I conditions: Inhalation exposure: local exhaust ventilation - efficiency of at le Dermal exposure: local exhaust ventilation - efficiency of at leas	
Exposure predic		
Exposure estimation and		Personal Protective
Risk characterisation ratic	Equipment (PPE) is worn	
	inhalative: 0.60 dermal: not applicable to corrosive mixtures all relevant routes: 0.60	
Risk managemer		
-	measures at process level (source) to prevent release:	
	Ensure material transfers are under containment or extract vent	ilation Avoid carrying

Ensure material transfers are under containment or extract ventilation. Avoid carrying out activities involving exposure for more than 4 h. Operational conditions and risk management measures: With local exhaust ventilation; elevated temperature Use personal protective equipment as required.

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#### Contributing exposure scenario 19 Calendering operations Calendering (including Banburys) (worker)

List of use descriptors

Process categories [PROC]: PROC6: Calendering operations

all relevant routes: 0.90

#### **Operational conditions**

Duration and frequency of use: Inhalation exposure: occasional exposure < 114.5 °C = medium volatility Other relevant operational conditions: Inhalation exposure: local exhaust ventilation - efficiency of at least [%]: 97; TRA concentration factor [%]: 5 - 25 Dermal exposure: local exhaust ventilation - efficiency of at least [%]: 95 **Exposure prediction** 

Exposure estimation and reference to its source:

inhalative: 1.8 ppm; dermal: not applicable for corrosive mixtures, phenol resistant Personal Protective Equipment (PPE) is worn Risk characterisation ratio (RCR): RCR: 0.9 inhalative: 0.90 dermal: not applicable to corrosive mixtures

**Risk management measures** 

Technical conditions and measures at process level (source) to prevent release: Limit the substance in product to 25 %. Provide the operation with a properly sited receiving hood. Operational conditions and risk management measures: With local exhaust ventilation; elevated temperature occasional exposure < 114.5 °C = medium volatility Conditions and measures related to personal protection, hygiene and health evaluation: Use personal protective equipment as required.

Contributing exposure scenario 20

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

#### List of use descriptors

Process categories [PROC]:

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

#### **Operational conditions**

Duration and frequency of use:

Other relevant operational conditions: Inhalation exposure: 15 min - 1 h; Other relevant operational conditions: Inhalation exposure: local exhaust ventilation - efficiency of at least [%]: 80 Dermal exposure: local exhaust ventilation - efficiency of at least [%]: 99

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#### Exposure prediction

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Exposure estimation and reference to its source:

inhalative: 1 ppm; dermal: TRA not applicable for corrosive mixtures, phenol resistant Personal Protective Equipment (PPE) is worn Risk characterisation ratio (RCR):

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RCR: 0.5 inhalative: 0.50 dermal: not applicable to corrosive mixtures all relevant routes: 0.50

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release: Ensure material transfers are under containment or extract ventilation. Avoid carrying out activities involving exposure for more than 1 h. Operational conditions and risk management measures: Non-dedicated facility; Transfer from/pouring from containers occasional exposure < 58 °C = low volatility Conditions and measures related to personal protection, hygiene and health evaluation: Use personal protective equipment as required.

Contributing exposure scenario 21

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

#### List of use descriptors

Process categories [PROC]:

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

#### **Operational conditions**

Duration and frequency of use: Inhalation exposure: occasional exposure < 114.5 °C = medium volatility Other relevant operational conditions: Inhalation exposure: local exhaust ventilation - efficiency of at least [%]: 99 Dermal exposure: local exhaust ventilation - efficiency of at least [%]: 99

#### **Exposure prediction**

Exposure estimation and reference to its source: inhalative: 1 ppm; dermal: TRA not applicable for corrosive mixtures, phenol resistant Personal Protective Equipment (PPE) is worn Risk characterisation ratio (RCR): RCR: 0.5 inhalative: 0.50 dermal: not applicable to corrosive mixtures all relevant routes: 0.50

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release:

Provide the operation with a properly sited receiving hood.

Operational conditions and risk management measures

Non-dedicated facility; Transfer from/pouring from containers; with local exhaust ventilation

occasional exposure < {dec 114,5 °C} = medium volatility

Conditions and measures related to personal protection, hygiene and health evaluation:

Use personal protective equipment as required.

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#### Contributing exposure scenario 22

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

#### List of use descriptors

Process categories [PROC]:

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

#### **Operational conditions**

Duration and frequency of use: Inhalation exposure: 15 min - 1 h (Respiratory protection mask); occasional exposure < 58 °C = low volatility Other relevant operational conditions:

Inhalation exposure: dilution ventilation effectiveness [%]: 30

#### **Exposure prediction**

Exposure estimation and reference to its source:

inhalative: 0.35 ppm; dermal: TRA not applicable for corrosive mixtures, phenol resistant Personal Protective Equipment (PPE) is worn Risk characterisation ratio (RCR): RCR: 0.18

inhalative: 0.18

dermal: not applicable to corrosive mixtures all relevant routes: 0.18

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release: Ensure operation is undertaken outdoors. Avoid carrying out activities involving exposure for more than 1 h. Operational conditions and risk management measures: Non-dedicated facility; Transfer from/pouring from containers; elevated temperature occasional exposure < 58 °C = low volatility Conditions and measures related to personal protection, hygiene and health evaluation: Wear a respirator conforming to EN140 with Type A filter or better.

#### Contributing exposure scenario 23

# Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities Bulk transfers (worker)

#### List of use descriptors

Process categories [PROC]:

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

#### **Operational conditions**

Duration and frequency of use: Inhalation exposure: occasional exposure < 58 °C = low volatility Other relevant operational conditions: Inhalation exposure: local exhaust ventilation - efficiency of at least [%]: 90 Dermal exposure: local exhaust ventilation - efficiency of at least [%]: 90

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No. 2015/830

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#### Exposure prediction

Exposure estimation and reference to its source:

inhalative: 1 ppm dermal: not applicable for corrosive mixtures, phenol resistant Personal Protective Equipment (PPE) is worn Risk characterisation ratio (RCR): RCR: 0.5 inhalative: 0.50 dermal: not applicable to corrosive mixtures all relevant routes: 0.50

#### Risk management measures

Technical conditions and measures at process level (source) to prevent release: Ensure material transfers are under containment or extract ventilation. Operational conditions and risk management measures: Dedicated facility; Transfer from/pouring from containers occasional exposure < 58 °C = low volatility Conditions and measures related to personal protection, hygiene and health evaluation: Use personal protective equipment as required.

Contributing exposure scenario 24

#### Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities Bulk transfers (worker)

List of use descriptors Process categories [PROC]:

PROC8b: Transfer of substance or preparation (charging/discharging) from/to

vessels/large containers at dedicated facilities

#### **Operational conditions**

Duration and frequency of use

Inhalation exposure: occasional exposure < 114.5 °C = medium volatility Other relevant operational conditions Inhalation exposure: local exhaust ventilation - efficiency of at least [%]: 99

Dermal exposure: local exhaust ventilation - efficiency of at least [%]: 90

#### Exposure prediction

Exposure estimation and reference to its source:

inhalative: 0.5 ppm

dermal: not applicable for corrosive mixtures, phenol resistant Personal Protective Equipment (PPE) is worn Risk characterisation ratio (RCR): RCR: 0.25

inhalative: 0.25 dermal: not applicable to corrosive mixtures all relevant routes: 0.25

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release: Provide the operation with a properly sited receiving hood. Operational conditions and risk management measures: Dedicated facility; Transfer from/pouring from containers occasional exposure < 114.5 °C = medium volatility Conditions and measures related to personal protection, hygiene and health evaluation: Use personal protective equipment as required.

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No. 2015/830

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#### Contributing exposure scenario 25

# Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities Bulk transfers (worker)

#### List of use descriptors

Process categories [PROC]:

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

#### **Operational conditions**

Duration and frequency of use:

Inhalation exposure: < 15 minutes occasional exposure < 58 °C = low volatility

Other relevant operational conditions:

Inhalation exposure: local exhaust ventilation - efficiency of at least [%]: 90

#### **Exposure prediction**

Exposure estimation and reference to its source:

inhalative: 1 ppm dermal: not applicable for corrosive mixtures, phenol resistant Personal Protective Equipment (PPE) is worn Risk characterisation ratio (RCR): RCR: 0.5 inhalative: 0.50

dermal: not applicable to corrosive mixtures all relevant routes: 0.50

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release: Avoid carrying out activities involving exposure for more than 15 min. Operational conditions and risk management measures: Dedicated facility; Transfer from/pouring from containers occasional exposure < 58 °C = low volatility Conditions and measures related to personal protection, hygiene and health evaluation: Use personal protective equipment as required.

Contributing exposure scenario 26

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

### Bulk transfers (worker)

#### List of use descriptors

Process categories [PROC]:

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

#### **Operational conditions**

Duration and frequency of use:

Inhalation exposure: Respiratory protection mask;

occasional exposure < 58 °C = low volatility

Other relevant operational conditions:

No special measures are required.

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No. 2015/830

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#### Exposure prediction

Exposure estimation and reference to its source:

inhalative: 1 ppm dermal: not applicable for corrosive mixtures, phenol resistant Personal Protective Equipment (PPE) is worn Risk characterisation ratio (RCR): RCR: 0.5 inhalative: 0.50 dermal: not applicable to corrosive mixtures all relevant routes: 0.50

#### **Risk management measures**

Operational conditions and risk management measures: Dedicated facility; Transfer from/pouring from containers

occasional exposure  $< 58 \,^{\circ}\text{C} = \text{low volatility}$ 

Conditions and measures related to personal protection, hygiene and health evaluation:

Wear a respirator conforming to EN140 with Type A filter or better.

Contributing exposure scenario 27

## Transfer of substance or preparation into small containers (dedicated filling line, including weighing) Bulk transfers (worker)

#### List of use descriptors

Process categories [PROC]:

PROC9: Transfer of substance or mixture into small containers (dedicated filling line, including weighing)

#### **Operational conditions**

Duration and frequency of use: Inhalation exposure: occasional exposure < 58 °C = low volatility Other relevant operational conditions: Inhalation exposure: local exhaust ventilation - efficiency of at least [%]: 80 Dermal exposure: local exhaust ventilation - efficiency of at least [%]: 90

#### **Exposure prediction**

Exposure estimation and reference to its source:

inhalative: 2 ppm

dermal: not applicable for corrosive mixtures, phenol resistant Personal Protective Equipment (PPE) is worn Risk characterisation ratio (RCR): RCR: 1 inhalative: 1.00 dermal: not applicable to corrosive mixtures all relevant routes: 1.00

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release:

Ensure material transfers are under containment or extract ventilation.

Operational conditions and risk management measures

Dedicated facility; Transfer from/pouring from containers; with local exhaust ventilation occasional exposure  $< 58 \text{ }^{\circ}\text{C} =$  low volatility

Conditions and measures related to personal protection, hygiene and health evaluation:

Use personal protective equipment as required.

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No. 2015/830

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#### Contributing exposure scenario 28 Roller application or brushing Rolling, Brushing (worker)

List of use descriptors

Process categories [PROC]:

PROC10: Roller application or brushing

#### **Operational conditions**

Duration and frequency of use:

Inhalation exposure: 15 min - 1 h; occasional exposure < 58 °C = low volatility

Other relevant operational conditions:

Inhalation exposure: local exhaust ventilation - efficiency of at least [%]: 80 Dermal exposure: local exhaust ventilation - efficiency of at least [%]: 95

#### **Exposure prediction**

Exposure estimation and reference to its source:

inhalative: 1 ppm dermal: not applicable for corrosive mixtures, phenol resistant Personal Protective Equipment (PPE) is worn Risk characterisation ratio (RCR): RCR: 0.5 inhalative: 0.50 dermal: not applicable to corrosive mixtures all relevant routes: 0.50

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release:

Ensure material transfers are under containment or extract ventilation. Avoid carrying out activities involving exposure for more than 1 h.
Operational conditions and risk management measures:
With local exhaust ventilation;
occasional exposure < 58 °C = low volatility
Conditions and measures related to personal protection, hygiene and health evaluation:
Use personal protective equipment as required.

#### Contributing exposure scenario 29 Roller application or brushing Rolling, Brushing (worker)

#### List of use descriptors

Process categories [PROC]:

PROC10: Roller application or brushing

#### **Operational conditions**

Duration and frequency of use: Inhalation exposure: occasional exposure < 58 °C = low volatility Other relevant operational conditions: Inhalation exposure: local exhaust ventilation - efficiency of at least [%]: 80; TRA

concentration factor [%] : < 3 Dermal exposure: local exhaust ventilation - efficiency of at least [%]: 95; TRA

concentration factor [%] : < 3

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No. 2015/830

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#### Exposure prediction

Exposure estimation and reference to its source: inhalative: 1 ppm dermal:0.27 mg/kg/d Risk characterisation ratio (RCR): RCR: 0.72 inhalative: 0.50 dermal: 0.22 all relevant routes: 0.72

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release: Limit the substance in product to 5 %. Ensure material transfers are under containment or extract ventilation. Operational conditions and risk management measures: Equipment cleaning and maintenance; with local exhaust ventilation; occasional exposure < 58 °C = low volatility Conditions and measures related to personal protection, hygiene and health evaluation: Use personal protective equipment as required.

#### Contributing exposure scenario 30 **Roller application or brushing** Rolling, Brushing (worker)

#### List of use descriptors

Process categories [PROC]

PROC10: Roller application or brushing

#### **Operational conditions**

Duration and frequency of use: Inhalation exposure: 15 min - 1 h; Equipment prewashed/rinsed automatically Other relevant operational conditions: Inhalation exposure: TRA concentration factor [%] : < 3 Dermal exposure: TRA concentration factor [%] : < 3; gloves-intensive controls

#### **Exposure prediction**

Exposure estimation and reference to its source: inhalative: 1 ppm dermal:0.11 mg/kg/d Bisk characterisation ratio (BCB): RCR: 0.59 inhalative: 0.50 dermal: 0.09 all relevant routes: 0.59

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release:

Limit the substance in product to 3 %. Drain or remove substance from equipment prior to break-in or maintenance Avoid carrying out activities involving exposure for more than 1 h. Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. Operational conditions and risk management measures: Equipment prewashed/rinsed automatically Conditions and measures related to personal protection, hygiene and health evaluation: Use personal protective equipment as required.

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No. 2015/830

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#### Contributing exposure scenario 31 Roller application or brushing Rolling, Brushing (worker)

List of use descriptors

Process categories [PROC]

PROC10: Roller application or brushing

#### **Operational conditions**

Duration and frequency of use: Inhalation exposure: 15 min - 1 h (Respiratory protection mask); occasional exposure < 58 °C = low volatility Other relevant operational conditions: Inhalation exposure: TRA concentration factor [%]: 5 - 25 Dermal exposure: TRA concentration factor [%]: 5 - 25

#### **Exposure prediction**

Exposure estimation and reference to its source:

inhalative: 0.3 ppm dermal: not applicable for corrosive mixtures, phenol resistant Personal Protective Equipment (PPE) is worn Risk characterisation ratio (RCR): RCR: 0.15 inhalative: 0.15 dermal: not applicable to corrosive mixtures

all relevant routes: 0.15 Risk management measures

Technical conditions and measures at process level (source) to prevent release: Limit the substance in product to 25 %. Avoid carrying out activities involving exposure for more than 1 h. Operational conditions and risk management measures: Occasional exposure < 58 °C = low volatility Conditions and measures related to personal protection, hygiene and health evaluation: Wear a respirator conforming to EN140 with Type A filter or better.

#### Contributing exposure scenario 32 Non industrial spraying Spraying/fogging by manual application (worker)

#### List of use descriptors

Process categories [PROC]:

PROC11: Non industrial spraying

#### **Operational conditions**

Duration and frequency of use: Inhalation exposure: 15 min - 1 h occasional exposure < 58 °C = low volatility Other relevant operational conditions: Inhalation exposure: Local exhaust ventilation - efficiency of at least [%]: 80; TRA concentration factor [%] : < 3 Dermal exposure: Local exhaust ventilation - efficiency of at least [%]: 98; TRA concentration factor [%] : < 3

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No. 2015/830

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#### Exposure prediction

Exposure estimation and reference to its source: inhalative: 0.8 ppm dermal:0.43 mg/kg/d Risk characterisation ratio (RCR): RCR: 0.75 inhalative: 0.40 dermal: 0.35 all relevant routes: 0.75

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release: Limit the substance in product to 5 %.

Ensure material transfers are under containment or extract ventilation.

Avoid carrying out activities involving exposure for more than 1 h.

Operational conditions and risk management measures:

With local exhaust ventilation;

Occasional exposure < 58 °C = low volatility

#### Contributing exposure scenario 33 Non industrial spraying Spraying/fogging by manual application (worker)

#### List of use descriptors

Process categories [PROC]:

PROC11: Non industrial spraying

### Operational conditions

Duration and frequency of use:

Inhalation exposure: < 15 minutes occasional exposure < 58 °C = low volatility

Other relevant operational conditions:

Inhalation exposure: Local exhaust ventilation - efficiency of at least [%]: 80; Dilution ventilation effectiveness [%]: 30; TRA concentration factor [%]: 5 - 25 Dermal exposure: Local exhaust ventilation - efficiency of at least [%]: 98; TRA concentration factor [%]: 5 - 25

#### **Exposure prediction**

Exposure estimation and reference to its source:

inhalative: 0.84 ppm

dermal: not applicable for corrosive mixtures, phenol resistant Personal Protective Equipment (PPE) is worn

Risk characterisation ratio (RCR):

RCR: 0.42 inhalative: 0.42 dermal: not applicable to corrosive mixtures all relevant routes: 0.42

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release: Limit the substance in product to 25 %. Ensure operation is undertaken outdoors. Ensure material transfers are under containment or extract ventilation. Avoid carrying out activities involving exposure for more than 15 min. Operational conditions and risk management measures: With local exhaust ventilation; Occasional exposure < 58 °C = low volatility

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#### Contributing exposure scenario 34 Non industrial spraying Spraying/fogging by manual application (worker)

List of use descriptors

Process categories [PROC]: PROC11: Non industrial spraving

#### **Operational conditions**

Duration and frequency of use: Inhalation exposure: 1 - 4 hours (Respiratory protection mask); occasional exposure < 58 °C = low volatility Other relevant operational conditions: Inhalation exposure: Local exhaust ventilation - efficiency of at least [%]: 80 Dermal exposure: Local exhaust ventilation - efficiency of at least [%]: 98

#### **Exposure prediction**

Exposure estimation and reference to its source:

inhalative: 1.2 ppm dermal: not applicable for corrosive mixtures, phenol resistant Personal Protective Equipment (PPE) is worn Risk characterisation ratio (RCR): RCR: 0.6 inhalative: 0.60 dermal: not applicable to corrosive mixtures

dermal: not applicable to corrosive mixt all relevant routes: 0.60

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release: Ensure material transfers are under containment or extract ventilation. Avoid carrying out activities involving exposure for more than 4 h. Operational conditions and risk management measures: With local exhaust ventilation; Occasional exposure < 58 °C = low volatility Conditions and measures related to personal protection, hygiene and health evaluation: Wear a respirator conforming to EN140 with Type A filter or better.

Contributing exposure scenario 35

## Treatment of articles by dipping and pouring Dipping, immersion and pouring (worker)

#### List of use descriptors

Process categories [PROC]:

PROC13: Treatment of articles by dipping and pouring

#### **Operational conditions**

Duration and frequency of use: Inhalation exposure: 1 - 4 hours occasional exposure < 58 °C = low volatility Other relevant operational conditions: Inhalation exposure: Local exhaust ventilation - efficiency of at least [%]: 80 Dermal exposure: Local exhaust ventilation - efficiency of at least [%]: 95

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No. 2015/830

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#### Exposure prediction

Exposure estimation and reference to its source:

inhalative: 1.2 ppm dermal: not applicable for corrosive mixtures, phenol resistant Personal Protective Equipment (PPE) is worn Risk characterisation ratio (RCR): RCR: 0.6 inhalative: 0.60 dermal: not applicable to corrosive mixtures all relevant routes: 0.60

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release: Ensure material transfers are under containment or extract ventilation. Avoid carrying out activities involving exposure for more than 4 h. Operational conditions and risk management measures: With local exhaust ventilation; Occasional exposure < 58 °C = low volatility Conditions and measures related to personal protection, hygiene and health evaluation: Use personal protective equipment as required.

Contributing exposure scenario 36

#### Treatment of articles by dipping and pouring Dipping, immersion and pouring (worker)

#### List of use descriptors

Process categories [PROC]:

PROC13: Treatment of articles by dipping and pouring

#### **Operational conditions**

Duration and frequency of use: Inhalation exposure: < 15 minutes occasional exposure < 58 °C = low volatility Other relevant operational conditions:

No special measures are required.

#### **Exposure prediction**

Exposure estimation and reference to its source:

inhalative: 1 ppm

dermal: not applicable for corrosive mixtures, phenol resistant Personal Protective Equipment (PPE) is worn

Risk characterisation ratio (RCR): RCR: 0.5

inhalative: 0.50 dermal: not applicable to corrosive mixtures all relevant routes: 0.50

#### Risk management measures

Technical conditions and measures at process level (source) to prevent release: Avoid carrying out activities involving exposure for more than 15 min. Operational conditions and risk management measures: Occasional exposure < 58 °C = low volatility Conditions and measures related to personal protection, hygiene and health evaluation: Use personal protective equipment as required.

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No. 2015/830

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Contributing exposure scenario 37

## Treatment of articles by dipping and pouring Dipping, immersion and pouring (worker)

### List of use descriptors

Process categories [PROC]:

PROC13: Treatment of articles by dipping and pouring

#### **Operational conditions**

Duration and frequency of use: Inhalation exposure: 1 - 4 hours occasional exposure < 58 °C = low volatility Other relevant operational conditions: Inhalation exposure: TRA concentration factor < 3 % Dermal exposure: TRA concentration factor < 3 %; gloves - basic training

#### **Exposure prediction**

Exposure estimation and reference to its source: inhalative: 1.2 ppm dermal:0.27 mg/kg/d Risk characterisation ratio (RCR): RCR: 0.82 inhalative: 0.60 dermal: 0.22 all relevant routes: 0.82

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release: Limit the substance in product to 3 %. Avoid carrying out activities involving exposure for more than 4 h. Operational conditions and risk management measures: Occasional exposure < 58 °C = low volatility Conditions and measures related to personal protection, hygiene and health evaluation: Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.

#### Contributing exposure scenario 38 Production of preparations or articles by tabletting, compression, extrusion, pelletisation (worker)

#### List of use descriptors

Process categories [PROC]:

PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelletisation

#### **Operational conditions**

Duration and frequency of use: Inhalation exposure: 1 - 4 h; occasional exposure < 58 °C = low volatility Other relevant operational conditions: Inhalation exposure: Local exhaust ventilation - efficiency of at least [%]: 80 Dermal exposure: Local exhaust ventilation - efficiency of at least [%]: 90

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#### Exposure prediction

Exposure estimation and reference to its source:

inhalative: 1.2 ppm dermal: not applicable for corrosive mixtures, phenol resistant Personal Protective Equipment (PPE) is worn Risk characterisation ratio (RCR): RCR: 0.6 inhalative: 0.60 dermal: not applicable to corrosive mixtures all relevant routes: 0.60

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release:

Ensure material transfers are under containment or extract ventilation.

Avoid carrying out activities involving exposure for more than 4 h.

Operational conditions and risk management measures:

With local exhaust ventilation; Occasional exposure < 58 °C = low volatility Conditions and measures related to personal protection, hygiene and health evaluation:

Use personal protective equipment as required.

#### Contributing exposure scenario 39 Production of preparations or articles by tabletting, compression, extrusion, pelletisation (worker)

#### List of use descriptors

Process categories [PROC]:

PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelletisation

#### **Operational conditions**

Duration and frequency of use:

Other relevant operational conditions: Inhalation exposure: Local exhaust ventilation - efficiency of at least [%]: 99

Inhalation exposure: Local exhaust ventilation - efficiency of at least [%]: 99 Dermal exposure: Local exhaust ventilation - efficiency of at least [%]: 90

#### **Exposure prediction**

Exposure estimation and reference to its source:

inhalative: 1 ppm

dermal: not applicable for corrosive mixtures, phenol resistant Personal Protective Equipment (PPE) is worn

Risk characterisation ratio (RCR):

RCR: 0.5 inhalative: 0.50 dermal: not applicable to corrosive mixtures all relevant routes: 0.50

#### Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Ensure material transfers are under containment or extract ventilation. Operational conditions and risk management measures:

With local exhaust ventilation;

occasional exposure < 114.5 °C = medium volatility

Conditions and measures related to personal protection, hygiene and health evaluation:

Use personal protective equipment as required.

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#### Contributing exposure scenario 40 Use in laboratory reagents (small scale) Laboratory activities (worker)

#### List of use descriptors

Process categories [PROC]:

PROC15: Use as laboratory reagent

#### **Operational conditions**

Duration and frequency of use: Inhalation exposure: occasional exposure < 58 °C = low volatility Other relevant operational conditions: Inhalation exposure: Local exhaust ventilation - efficiency of at least [%]: 80 Dermal exposure: Local exhaust ventilation - efficiency of at least [%]: 90 **Exposure prediction** Exposure estimation and reference to its source: inhalative: 1 ppm dermal: not applicable for corrosive mixtures, phenol resistant Personal Protective Equipment (PPE) is worn

Risk characterisation ratio (RCR):

RCR: 0.5 inhalative: 0.50 dermal: not applicable to corrosive mixtures all relevant routes: 0.50

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release: Ensure material transfers are under containment or extract ventilation. Operational conditions and risk management measures: With local exhaust ventilation; Occasional exposure < 58 °C = low volatility Conditions and measures related to personal protection, hygiene and health evaluation: Use personal protective equipment as required.

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

Exposure assessment and method: Shown are the result of the quantitative exposure and risk assessment prepared based on the 'GES Worker Chemical Safety Assessment (CSA) Template'. This tool can be downloaded from the CEFIC website: http://cefic.org/templates/shwPublications.asp?HID=750

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## **Exposure Scenario 11: Use in laboratories**

List of use des	criptors
Sectors of use [SU]: Application	SU22: Professional uses
Activities and processes: Remark:	Use of the substance within laboratory settings, including material transfers and equipment cleaning Process categories [PROC] PROC10, PROC15
	Control of worker exposure: See section risk management measures
	Exposure assessment and method: Human Health, Worker exposure and risk assessment: Shown are the result of the quantitative exposure and risk assessment prepared based on the 'GES Worker Chemical Safety Assessment (CSA) Template'. This tool can be downloaded from the CEFIC website: http://cefic.org/templates/shwPublications.asp?HID=750
	Examples for Environmental release categories [ERC]: ERC8a Environment, ECT Phenol: Please use the 'ECT Phenol' to check your local conditions. The Excel-tool enables the performance of scaling calculation for specific local environmental conditions. It can be downloaded from the web page of the Phenol & Derivatives REACH-consortium: http://www.reachcentrum.eu/EN/consortium-management/consortia-under-reach/phenol- derivatives-reach-consortium.aspx
	Guidance to check compliance with the exposure scenario: Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Contributing Scenarios:	1 General information Page 99 Applies to all contributing exposure scenarios related to exposure scenario 11: Use in laboratories (environment)
	2 General information Page 100 Applies to all contributing exposure scenarios related to exposure scenario 11: (worker)

#### Contributing exposure scenario 1 General information Applies to all contributing exposure scenarios related to exposure scenario 11: Use in laboratories (environment)

#### List of use descriptors

Environmental release categories [ERC]:

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

#### **Operational conditions**

Product characteristics:	Substance is a unique structure, phenol, aromatic alcohol, biodegradable
	Amounts used:
	Annual site tonnage Please use the Excel-Tool 'ECT Phenol'
	to calculate your maxium tonnage/year.
Duration and frequency of	use:
	360 d/y
Other relevant operational	conditions:
	Indoor/Outdoor use

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#### Exposure prediction

Exposure estimation and reference to its source: 'ECT Phenol'

Risk characterisation ratio (RCR): 'ECT Phenol'

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release:

Common practices vary across sites thus conservative process release estimates used. Typical technical measures are closed systems or scrubbers or charcoal adsorbers. Treat air emission to provide a typical removal efficiency of (%): 90

Operational conditions and risk management measures:

Common practices vary across sites thus conservative process release estimates used. Please use the 'ECT Phenol' to check your local conditions.

#### **Disposal considerations**

Conditions and measures related to sewage treatment plant:

Please use the Excel-Tool 'ECT Phenol' to check your local conditions. 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 treatment and disposal of waste should comply with applicable local and/or national regulations.

### Contributing exposure scenario 2

#### **General information**

## Applies to all contributing exposure scenarios related to exposure scenario 11: (worker)

## List of use descriptors

Process categories [PROC]:

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

#### **Operational conditions**

liquid, vapour pressure < 0.5 kPa
liquid, vapour pressure 0.5 - 10 kPa
ance in a mixture:
Covers percentage substance in the product up to 3 - 100 % (unless stated differently).
use:
Covers daily exposures up to 8h (unless stated differently).
conditions:
Assumes a good basic standard of occupational hygiene is implemented.
ion
eference to its source:
refer to GES No. 10 industrial
(RCR):
refer to GES No. 10 industrial
t measures
neasures at process level (source) to prevent release:
Control any potential exposure using measures such as contained or enclosed systems,
properly designed and maintained facilities and a good standard of general ventilation.
Drain down systems and clear transfer lines prior to breaking containment.; Drain down
and flush equipment where possible prior to maintenance.
risk management measures:
Where there is potential for exposure: Ensure relevant staff are informed of the nature
of exposure and aware of basic actions to minimise exposures; ensure suitable
personal protective equipment is available; clear up spills and dispose of waste in

accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for risk based health surveillance; identify and implement corrective actions.

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No. 2015/830

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

'ECT Phenol': The Excel-tool enables the performance of scaling calculation for specific local environmental conditions. It can be downloaded from the web page of the Phenol & Derivatives REACH-consortium:

http://www.reachcentrum.eu/EN/consortium-management/consortia-under-reach/phenol-derivatives-reach-consortium.aspx

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No. 2015/830

### Phenol, synthetic

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INEOS Phenol

## **Exposure Scenario 12: Uses in coatings**

List of use desc	criptors
Sectors of use [SU]: Application	SU22: Professional uses
Activities and processes:	Covers the use in coatings (paints, inks, adhesives, etc), including exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application by spray, roller, spreader, dip, flow, fluidised bed on production lines and film formation) and equipment cleaning and maintenance and associated laboratory activities.
Remark:	Process categories [PROC] PROC5, PROC8a, PROC10, PROC13 Phenol up to 3 %
	Control of worker exposure: See section risk management measures
	Exposure assessment and method: Human Health, Worker exposure and risk assessment: Shown are the result of the quantitative exposure and risk assessment prepared based on the 'GES Worker Chemical Safety Assessment (CSA) Template'. This tool can be downloaded from the CEFIC website: http://cefic.org/templates/shwPublications.asp?HID=750
	Examples for Environmental release categories [ERC] : ERC8a, ERC8c, ERCd, ERC8f
	Environment, ECT Phenol: Please use the 'ECT Phenol' to check your local conditions. The Excel-tool enables the performance of scaling calculation for specific local environmental conditions. It can be downloaded from the web page of the Phenol & Derivatives REACH-consortium: http://www.reachcentrum.eu/EN/consortium-management/consortia-under-reach/phenol- derivatives-reach-consortium.aspx
	Guidance to check compliance with the exposure scenario: Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Contributing Scenarios:	1 General information Page 102 Applies to all contributing exposure scenarios related to exposure scenario 12: Uses in coatings (environment)
	2 General information Page 103 Applies to all contributing exposure scenarios related to exposure scenario 12: Uses in coatings (worker)

#### Contributing exposure scenario 1

**General information** 

## Applies to all contributing exposure scenarios related to exposure scenario 12: Uses in coatings (environment)

#### List of use descriptors

Environmental release categories [ERC]:

ERC8a: wide dispersive indoor use of processing aids in open systems ERC8c: Wide dispersive indoor use resulting in inclusion into or onto a matrix ERC8d: wide dispersive outdoor use of processing aids in open systems ERC8f: Wide dispersive outdoor use resulting in inclusion into or onto a matrix

#### **Operational conditions**

Product characteristics: Substance is a unique structure, phenol, aromatic alcohol, biodegradable Amounts used:

Annual site tonnage Please use the Excel-Tool 'ECT Phenol' to calculate your maxium tonnage/year.

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No. 2015/830

## Phenol, synthetic

Revision date: 4/9/2018 Date of print: 9/10/2018 Language: en-GB,IE Version: 24 Page: 103 of 117 Duration and frequency of use: 360 d/v Other relevant operational conditions Indoor/Outdoor use Exposure prediction Exposure estimation and reference to its source: 'ECT Phenol' Risk characterisation ratio (RCR) 'ECT Phenol' **Risk management measures** Technical conditions and measures at process level (source) to prevent release: Common practices vary across sites thus conservative process release estimates used. Typical technical measures are closed systems or scrubbers or charcoal adsorbers. Treat air emission to provide a typical removal efficiency of (%): 90 Operational conditions and risk management measures: Common practices vary across sites thus conservative process release estimates used. Please use the 'ECT Phenol' to check your local conditions. **Disposal considerations** Conditions and measures related to sewage treatment plant: Please use the Excel-Tool 'ECT Phenol' to check your local conditions. 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 treatment and disposal of waste should comply with applicable local and/or national regulations.

#### Contributing exposure scenario 2 General information Applies to all contributing exposure scenarios related to exposure scenario 12: Uses in coatings (worker)

#### List of use descriptors

Process categories [PROC]:

PROC5: Mixing or blending in batch processes PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC10: Roller application or brushing PROC13: Treatment of articles by dipping and pouring

#### **Operational conditions**

Product characteristics:	liquid, vapour pressure < 0.5 kPa
	liquid, vapour pressure 0.5 - 10 kPa
Concentration of the subs	
	Covers percentage substance in the product up to 3 - 100 % (unless stated differently).
Duration and frequency of	use:
	Covers daily exposures up to 8h (unless stated differently).
Other relevant operational	conditions:
	Assumes a good basic standard of occupational hygiene is implemented.
Exposure predict	lion

Exposure estimation and reference to its source: refer to GES No. 0 industrial Risk characterisation ratio (RCR): refer to GES No. 0 industrial

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No. 2015/830

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#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release:

Control any potential exposure using measures such as contained or enclosed systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and clear transfer lines prior to breaking containment.; Drain down and flush equipment where possible prior to maintenance. Operational conditions and risk management measures:

Where there is potential for exposure: Ensure relevant staff are informed of the nature of exposure and aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available: clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for risk based health surveillance; identify and implement corrective actions.

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

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### Phenol, synthetic

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INEOS Phenol

## Exposure Scenario 13: Use in binders and release agents

#### List of use descriptors Sectors of use [SU]: SU22: Professional uses Application Covers the use as binders and release agents including material transfers, mixing, Activities and processes: application (including spraying and brushing), mould forming and casting and handling of waste. Process categories [PROC] Remark: PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC11 Process Categories (additionally): PROC14 Control of worker exposure: See section risk management measures Exposure assessment and method: Human Health, Worker exposure and risk assessment: Shown are the result of the quantitative exposure and risk assessment prepared based on the 'GES Worker Chemical Safety Assessment (CSA) Template'. This tool can be downloaded from the CEFIC website: http://cefic.org/templates/shwPublications.asp?HID=750 Examples for Environmental release categories [ERC]: ERC8a, ERC8b, ERC8c, ERCd, ERC8e, ERC8f Environmental release categories (additionally): ERC3 Environment, ECT Phenol: Please use the 'ECT Phenol' to check your local conditions. The Excel-tool enables the performance of scaling calculation for specific local environmental conditions. It can be downloaded from the web page of the Phenol & Derivatives REACH-consortium: http://www.reachcentrum.eu/EN/consortium-management/consortia-under-reach/phenolderivatives-reach-consortium.aspx Guidance to check compliance with the exposure scenario: Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. General information Contributing Scenarios: Page 105 1 Applies to all contributing exposure scenarios related to exposure scenario 13: Use in binders and release agents (environment) 2 General information Page 106 Applies to all contributing exposure scenarios related to exposure scenario 13: Use in binders and release agents (worker)

#### Contributing exposure scenario 1

#### General information

## Applies to all contributing exposure scenarios related to exposure scenario 13: Use in binders and release agents (environment)

#### List of use descriptors

Environmental release categories [ERC]:

ERC8a: wide dispersive indoor use of processing aids in open systems ERC8b: Wide dispersive indoor use of reactive substances in open systems ERC8c: Wide dispersive indoor use resulting in inclusion into or onto a matrix ERC8d: wide dispersive outdoor use of processing aids in open systems ERC8e: Wide dispersive outdoor use of reactive substances in open systems ERC8f: Wide dispersive outdoor use resulting in inclusion into or onto a matrix

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No. 2015/830

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Operational con	ditions		
Product characteristics:	Substance is a unique structure, phenol, aromatic alcohol, biodegradal	ole	
	Amounts used:		
	Annual site tonnage Please use the Excel-Tool 'ECT Phenol'		
	to calculate your maxium tonnage/year.		
Duration and frequency of			
Other relevant operationa	360 d/y al conditions: Indoor/Outdoor use		
Exposure predic	tion		
Exposure estimation and			
Risk characterisation rati	o (RCR): 'ECT Phenol'		
<b>Risk manageme</b>	nt measures		
	measures at process level (source) to prevent release: Common practices vary across sites thus conservative process release Typical technical measures are closed systems or scrubbers or charco Treat air emission to provide a typical removal efficiency of (%): 90 ad risk management measures:		
	Common practices vary across sites thus conservative process release Please use the 'ECT Phenol' to check your local conditions.	e estimates	used.

#### **Disposal considerations**

Conditions and measures related to sewage treatment plant:

Please use the Excel-Tool 'ECT Phenol' to check your local conditions.

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 treatment and disposal of waste should comply with applicable local and/or national regulations.

Contributing exposure scenario 2

### General information

## Applies to all contributing exposure scenarios related to exposure scenario 13: Use in binders and release agents (worker)

### List of use descriptors

Process categories [PROC]:

PROC1: Use in closed process, no likelihood of exposure

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

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

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

PROC5: Mixing or blending in batch processes

PROC6: Calendering operations

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

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

PROC9: Transfer of substance or mixture into small containers (dedicated filling line, including weighing)

PROC10: Roller application or brushing

PROC11: Non industrial spraying

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No. 2015/830

#### \_. . - -- -

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Operational con	ditions		
Product characteristics:	liquid, vapour pressure < 0.5 kPa		
	liquid, vapour pressure 0.5 - 10 kPa		
Concentration of the subs		tatad diffara	(، الحم
Duration and frequency of	Covers percentage substance in the product up to 3 - 100 % (unless s	tated differe	ntiy).
Duration and nequency o	Covers daily exposures up to 8h (unless stated differently).		
Other relevant operationa			
	Assumes a good basic standard of occupational hygiene is implement	ed.	
Exposure predic	tion		
Exposure estimation and	reference to its source:		
	refer to GES No. 0 industrial		
Risk characterisation ration			
	refer to GES No. 0 industrial		
Risk manageme	nt measures		
Technical conditions and	measures at process level (source) to prevent release: Control any potential exposure using measures such as contained or e properly designed and maintained facilities and a good standard of ge Drain down systems and clear transfer lines prior to breaking containn and flush equipment where possible prior to maintenance.	neral ventila	tion.
Operational conditions ar	d risk management measures:		
	Where there is potential for exposure: Ensure relevant staff are inform of exposure and aware of basic actions to minimise exposures; ensure personal protective equipment is available; clear up spills and dispose accordance with regulatory requirements; monitor effectiveness of cor consider the need for risk based health surveillance; identify and imple actions.	e suitable of waste in itrol measure	es;

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

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according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No. 2015/830

## Phenol, synthetic

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## **Exposure Scenario 14: Polymer manufacturing**

	criptors
Sectors of use [SU]: Application	SU22: Professional uses
Activities and processes: Remark:	Manufacturing of formulated polymers including material transfers, additives handling (e.g. pigments, stabilisers, fillers, plasticisers, etc.), moulding, curing and forming activities, material re-works, storage and associated maintenance. Process categories [PROC] PROC8a5 Process Categories (additionally): PROC1, PROC2, PROC8b, PROC9, PROC14
	Control of worker exposure: See section risk management measures
	Exposure assessment and method: Human Health, Worker exposure and risk assessment: Shown are the result of the quantitative exposure and risk assessment prepared based on the 'GES Worker Chemical Safety Assessment (CSA) Template'. This tool can be downloaded from the CEFIC website: http://cefic.org/templates/shwPublications.asp?HID=750
	Examples for Environmental release categories [ERC]: ERC8a, ERC8d, ERCc, ERC8f Environment, ECT Phenol: Please use the 'ECT Phenol' to check your local conditions. The Excel-tool enables the performance of scaling calculation for specific local environmental conditions. It can be downloaded from the web page of the Phenol & Derivatives REACH-consortium: http://www.reachcentrum.eu/EN/consortium-management/consortia-under-reach/phenol- derivatives-reach-consortium.aspx
	Guidance to check compliance with the exposure scenario: Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Contributing Scenarios:	1 General information Page 10 Applies to all contributing exposure scenarios related to exposure scenario 14: Polymer manufacturing (environment)
	2 General information Page 10 Applies to all contributing exposure scenarios related to exposure scenario 14: Polymer manufacturing (worker)

## Applies to all contributing exposure scenarios related to exposure scenario 14: Polymer manufacturing (environment)

#### List of use descriptors

egories [ERC]: ERC8a: wide dispersive indoor use of processing aids in open systems ERC8d: wide dispersive outdoor use of processing aids in open systems ERC8c: Wide dispersive indoor use resulting in inclusion into or onto a matrix ERC8d: wide dispersive outdoor use of processing aids in open systems
litions
Substance is a unique structure, phenol, aromatic alcohol, biodegradable
Amounts used:
Annual site tonnage Please use the Excel-Tool 'ECT Phenol'
to calculate your maxium tonnage/year.
360 d/y

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No. 2015/830

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#### Other relevant operational conditions:

Indoor/Outdoor use

#### Exposure prediction

Version:

Exposure estimation and reference to its source:

Please use the 'ECT Phenol' to check your local conditions.

Risk characterisation ratio (RCR):

Please use the 'ECT Phenol' to check your local conditions.

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release:

Common practices vary across sites thus conservative process release estimates used. Typical technical measures are closed systems or scrubbers or charcoal adsorbers. Treat air emission to provide a typical removal efficiency of (%): 90

Operational conditions and risk management measures:

Common practices vary across sites thus conservative process release estimates used. Please use the 'ECT Phenol' to check your local conditions.

#### **Disposal considerations**

Conditions and measures related to sewage treatment plant:

Please use the Excel-Tool 'ECT Phenol' to check your local conditions. 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 treatment and disposal of waste should comply with applicable local and/or national regulations.

#### Contributing exposure scenario 2 **General information** Applies to all contributing exposure scenarios related to exposure scenario 14: Polymer manufacturing (worker)

#### List of use descriptors

Process categories [PROC]:

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

#### **Operational conditions**

Product characteristics:	liquid, vapour pressure < 0.5 kPa
	liquid, vapour pressure 0.5 - 10 kPa
Concentration of the subst	
	Covers percentage substance in the product up to 3 - 100 % (unless stated differently).
Duration and frequency of	use:
	Covers daily exposures up to 8h (unless stated differently).
Other relevant operational	conditions:
	Assumes a good basic standard of occupational hygiene is implemented.
Exposure predict	ion

Exposure estimation and reference to its source: 'ECT Phenol'

Risk characterisation ratio (RCR): 'ECT Phenol'

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No. 2015/830

## Phenol, synthetic

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#### Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Control any potential exposure using measures such as contained or enclosed systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and clear transfer lines prior to breaking containment.; Drain down and flush equipment where possible prior to maintenance.

Where there is potential for exposure: Ensure relevant staff are informed of the nature of exposure and aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for risk based health surveillance; identify and implement corrective actions.

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according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No. 2015/830

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INEOS Phenol

## **Exposure Scenario 15: Polymer processing**

List of use des	criptors
Sectors of use [SU]: Application	SU22: Professional uses
Activities and processes:	Processing of formulated polymers including incidental exposures during material transfers, additives handling (e.g. pigments, stabilisers, fillers, plasticisers, etc.), moulding, curing and forming activities, material re-works, storage and associated maintenance
Remark:	Process categories [PROC] PROC8a Process Categories (additionally): PROC1, PROC2, PROC8b, PROC9, PROC14 Control of worker exposure: See section risk management measures
<ul> <li>Exposure assessment and method:</li> <li>Human Health, Worker exposure and risk assessment: Shown are the resul quantitative exposure and risk assessment prepared based on the 'GES Work Chemical Safety Assessment (CSA) Template'. This tool can be downloaded CEFIC website: http://cefic.org/templates/shwPublications.asp?HID=750</li> <li>Examples for Environmental release categories [ERC]: ERC8a, ERC8d, ERC Environment, ECT Phenol:</li> <li>Please use the 'ECT Phenol' to check your local conditions. The Excel-tool experimentate of scaling calculation for specific local environmental conditions downloaded from the web page of the Phenol &amp; Derivatives REACH-consort http://www.reachcentrum.eu/EN/consortium-management/consortia-under-rederivatives-reach-consortium.aspx</li> </ul>	
Contributing Scenarios:	1 General information Page 111 Applies to all contributing exposure scenarios related to exposure scenario 15: Polymer processing (environment)
	2 General information Page 112 Applies to all contributing exposure scenarios related to exposure scenario 15: Polymer processing (worker)

#### Contributing exposure scenario 1

#### **General information** Applies to all contributing exposure scenarios related to exposure scenario 15: Polymer processing (environment)

#### List of use descriptors

Environmental release categories [ERC]:

ERC8a: wide dispersive indoor use of processing aids in open systems ERC8d: wide dispersive outdoor use of processing aids in open systems ERC8c: Wide dispersive indoor use resulting in inclusion into or onto a matrix ERC8d: wide dispersive outdoor use of processing aids in open systems

#### **Operational conditions**

Product characteristics:

Substance is a unique structure, phenol, aromatic alcohol, biodegradable

#### Amounts used:

Annual site tonnage Please use the Excel-Tool 'ECT Phenol' to calculate your maxium tonnage/year.

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No. 2015/830

## Phenol, synthetic

Revision date: 4/9/2018 Date of print: 9/10/2018 Language: en-GB,IE Version: 24 Page: 112 of 117 Duration and frequency of use: 360 d/v Other relevant operational conditions Indoor/Outdoor use Exposure prediction Exposure estimation and reference to its source: Please use the 'ECT Phenol' to check your local conditions. Risk characterisation ratio (RCR): Please use the 'ECT Phenol' to check your local conditions. **Risk management measures** Technical conditions and measures at process level (source) to prevent release: Common practices vary across sites thus conservative process release estimates used. Typical technical measures are closed systems or scrubbers or charcoal adsorbers. Treat air emission to provide a typical removal efficiency of (%): 90 Operational conditions and risk management measures: Common practices vary across sites thus conservative process release estimates used. Please use the 'ECT Phenol' to check your local conditions. **Disposal considerations** Conditions and measures related to sewage treatment plant: Please use the Excel-Tool 'ECT Phenol' to check your local conditions. 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 treatment and disposal of waste should comply with applicable local and/or national regulations.

### Contributing exposure scenario 2 General information Applies to all contributing exposure scenarios related to exposure scenario 15: Polymer processing (worker)

#### List of use descriptors

Process categories [PROC]:

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

#### **Operational conditions**

Product characteristics:	liquid, vapour pressure < 0.5 kPa
	liquid, vapour pressure 0.5 - 10 kPa
Concentration of the subs	tance in a mixture:
	Covers percentage substance in the product up to 3 - 100 % (unless stated differently).
Duration and frequency of	use:
	Covers daily exposures up to 8h (unless stated differently).
Other relevant operational	conditions:

Assumes a good basic standard of occupational hygiene is implemented.

#### Exposure prediction

Exposure estimation and reference to its source:

'ECT Phenol' Risk characterisation ratio (RCR): 'ECT Phenol'

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No. 2015/830

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#### Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Control any potential exposure using measures such as contained or enclosed systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and clear transfer lines prior to breaking containment.; Drain down and flush equipment where possible prior to maintenance.

Where there is potential for exposure: Ensure relevant staff are informed of the nature of exposure and aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for risk based health surveillance; identify and implement corrective actions.

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

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## Exposure Scenario 16: Phenolic resin processing Use of phenolic resins uses of downstream users (DU)

#### List of use descriptors Sectors of use [SU]: SU22: Pro

se [SU]: SU22: Professional uses

#### Application

Activities and processes: Use for the manufacturing of resins including material transfers, moulding and forming activities, material re-works and associated maintenance. Identified uses uses of downstream users (DU) e.g.: foundry adjuvants, adhesive, mineral wool, wood articles, abrasive, foam

Remark:

Process categories [PROC] PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC14, PROC15

Control of worker exposure:

See section risk management measures

Exposure assessment and method:

Human Health, Worker exposure and risk assessment: Shown are the result of the quantitative exposure and risk assessment prepared based on the 'GES Worker Chemical Safety Assessment (CSA) Template'. This tool can be downloaded from the CEFIC website: http://cefic.org/templates/shwPublications.asp?HID=750

Examples for Environmental release categories [ERC]: ERC2, ERC4, ERC6b, ERC6c, ERC6d

Environment, ECT Phenol:

Please use the 'ECT Phenol' to check your local conditions. The Excel-tool enables the performance of scaling calculation for specific local environmental conditions. It can be downloaded from the web page of the Phenol & Derivatives REACH-consortium: http://www.reachcentrum.eu/EN/consortium-management/consortia-under-reach/phenol-derivatives-reach-consortium.aspx

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

Contributing Scenarios: 1 General information Applies to all contributing exposure scenarios related to exposure scenario 16: Use of phenolic resins uses of downstream users (DU)

(environment)
 2 General information
 Applies to all contributing exposure scenarios related to exposure scenario 16: Use of phenolic resins uses of downstream users (DU) (worker)

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#### Contributing exposure scenario 1 General information Applies to all contributing exposure scenarios related to exposure scenario 16: Use of phenolic resins uses of downstream users (DU) (environment)

#### List of use descriptors

Environmental release categories [ERC]:

ERC2: Formulation into mixture

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

ERC6b: Use of reactive processing aid at industrial site (no inclusion into or onto article) ERC6c: Use of monomer in polymerisation processes at industrial site (inclusion or not into/onto article)

ERC6d: Use of reactive process regulators in polymerisation processes at industrial site (inclusion or not into/onto article)

#### **Operational conditions**

Product characteristics: Substance is a unique structure, phenol, aromatic alcohol, biodegradable

Amounts used:

Annual site tonnage Please use the Excel-Tool 'ECT Phenol'

to calculate your maxium tonnage/year.

Duration and frequency of use: 360 d/y

Other relevant operational conditions:

Indoor/Outdoor use

#### **Exposure prediction**

Exposure estimation and reference to its source:

Please use the 'ECT Phenol' to check your local conditions.

Risk characterisation ratio (RCR):

Please use the 'ECT Phenol' to check your local conditions.

#### Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Common practices vary across sites thus conservative process release estimates used. Typical technical measures are closed systems or scrubbers or charcoal adsorbers. Treat air emission to provide a typical removal efficiency of (%): 90

Operational conditions and risk management measures:

Common practices vary across sites thus conservative process release estimates used. Please use the 'ECT Phenol' to check your local conditions.

#### **Disposal considerations**

Conditions and measures related to sewage treatment plant:

Please use the Excel-Tool 'ECT Phenol' to check your local conditions.

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 treatment and disposal of waste should comply with applicable local and/or national regulations.

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No. 2015/830

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#### Contributing exposure scenario 2 General information Applies to all contributing exposure scenarios related to exposure scenario 16: Use of phenolic resins uses of downstream users (DU) (worker)

#### List of use descriptors

Process categories [PROC]:

PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC10: Roller application or brushing PROC11: Non industrial spraying PROC13: Treatment of articles by dipping and pouring PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelletisation PROC15: Use as laboratory reagent

#### **Operational conditions**

Product characteristics: liquid, vapour pressure < 0.5 kPa

liquid, vapour pressure 0.5 - 10 kPa

Concentration of the substance in a mixture:

Covers percentage substance in the product up to 3 - 100 % (unless stated differently). Duration and frequency of use:

Covers daily exposures up to 8h (unless stated differently).

Other relevant operational conditions:

Assumes a good basic standard of occupational hygiene is implemented.

#### **Exposure prediction**

Exposure estimation and reference to its source:

'ECT Phenol' Risk characterisation ratio (RCR):

'ECT Phenol'

#### **Risk management measures**

Technical conditions and measures at process level (source) to prevent release:

Control any potential exposure using measures such as contained or enclosed systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and clear transfer lines prior to breaking containment.; Drain down and flush equipment where possible prior to maintenance.

Operational conditions and risk management measures

Where there is potential for exposure: Ensure relevant staff are informed of the nature of exposure and aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for risk based health surveillance; identify and implement corrective actions.

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No. 2015/830

## Phenol, synthetic

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INEOS Phenol

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

'ECT Phenol': The Excel-tool enables the performance of scaling calculation for specific local environmental conditions. It can be downloaded from the web page of the Phenol & Derivatives REACH-consortium:

http://www.reachcentrum.eu/EN/consortium-management/consortia-under-reach/phenol-derivatives-reach-consortium.aspx