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

## 1.1 Product identifier

Trade name: Phenol, synthetic
REACH registration No.: 01-2119471329-32-XXXX
Location Germany: 01-2119471329-32-0000
Location Belgium: 01-2119471329-32-0004
Location Mobile: 01-2119471329-32-0002

CAS-Number: 108-95-2
EC-number: 203-632-7
EU index number: 604-001-00-2

## 1.2 Relevant identified 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 Nitrophenols.

Identified uses:

**Industrial use:**



**Professional use:**



* Examples for processing:
use as an intermediate,
use as a monomer etc.,
use as a solvent,
use for the manufacturing of resins

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

Company name: INEOS Phenol GmbH
Street/POB-No.: Dechenstraße 3
Postal Code, city: 45966 Gladbeck
Germany
WWW: www.ineosphenol.com
E-mail: msds.phenolde@ineos.com
Telephone: +49 (0)2043 / 9 58-0
Telefax: +49 (0)2043 / 9 58-900

Dept. responsible for information:
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 Germany: +49 (0)2043 / 9 58-233**
**Telephone Belgium: +32 3 730 14 44**
**or GIZ-Nord, Germany, Telephone: +49 (0)551-19240**

## SECTION 2: Hazards identification

### 2.1 Classification of the substance or mixture

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

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-classified according to ATP 2 (EC 286/2011):
Aquatic Chronic 2; H411: Toxic to aquatic life with long lasting effects.

Specific concentration limit (SCL):
Skin Corr. 1B; H314: C >= 3 %
Skin Irrit. 2; H315: 1 % <= C < 3 %
Eye. Irrit. 2; H319: 1 % <= C < 3 %

### 2.2 Label elements

**Labelling (CLP)**

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. |
| H411 | Toxic to aquatic life with long lasting effects. |

Precautionary statements:

| | |
|---|---|
| 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/face protection. |
| 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. |
| P405 | Store locked up. |
| P501 | Dispose of contents/container to hazardous or special waste collection 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

## 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.<br>storage temperature:<br>liquid: 50 °C up to 60 °C<br>solid: 15 °C up to 25 °C |

## 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 mouth-to-mouth resuscitation 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.
In case of contact with the skin, immediately wash with polyethylene glycol. Then wash with water.

After eye contact: Immediately flush eyes with plenty of flowing water for 10 to 15 minutes holding eyelids apart. 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 eye 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.

## SECTION 5: Firefighting measures

### 5.1 Extinguishing media

Suitable extinguishing media:

Extinguishing powder, alcohol resistant foam, carbon dioxide, water fog

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

Do not expose to high temperature. 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.

## 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.

Hints on joint storage: Do not store together with food. Do not store together with: Solvent, aluminium, aldehydes, halogens, hydrogen peroxide, oxidizing agents, strong acids, strong bases, formaldehyde, nitrites, nitrates, halogenates, peroxide compounds.

Further details: Reserved for industrial and professional use.

Storage class: 6.1 A = Combustible substances of acute toxicity, category 1 and 2 / very toxic substances

### 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:

| Type | Limit value |
|---|---|
| Europe: IOELV: STEL | 16 mg/m³; 4 ppm |
| Europe: IOELV: TWA | 8 mg/m³; 2 ppm |
| Great Britain: WEL-STEL | 16 mg/m³; 4 ppm |
| Great Britain: WEL-TWA | 7.8 mg/m³; 2 ppm |
| Ireland: 15 minutes | 16 mg/m³; 4 ppm |
| Ireland: 8 hours | 8 mg/m³; 2 ppm |

Biological limit values:

| Type | Limit value | Parameter | Material | Sample time |
|---|---|---|---|---|
| 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, inhalative: 8 mg/m³
DNEL long-term, workers, dermal: 1.23 mg/ kg bw/d

PNEC: 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.

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 hygiene 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)<br>solid (< 40.9 °C)<br>Colour: colourless (liquid)<br>white (solid) |
| Odour: | stinging |
| Odour threshold: | 0.022 - 22 mg/m³ |
| pH value: | at 20 °C, 10 g/L: 4 - 5 |
| Melting point/freezing point: | 40.9 °C |
| Initial boiling point and boiling range: | 181.9 °C (1013 hPa, DIN 510751) |
| Flash point/flash point range: | 81 °C (DIN EN ISO 2719) |
| Evaporation rate: | no data available |
| Flammability: | 595 °C (VDE G1; EN T1) |

| | |
|---|---|
| Explosion limits: | LEL (Lower Explosion Limit): 1.30 Vol-%<br>UEL (Upper Explosive Limit): 9.00 Vol-% |
| Vapour pressure: | at 20 °C: 0.2 hPa<br>at 50 °C: 3 hPa |
| Vapour density: | no data available |
| Density: | at 25 °C: 1.13 g/cm³ (DIN 51 757) |
| Water solubility: | at 20 °C: 84 g/L<br>at 25 °C: 87 g/L<br>at 68 °C: completely miscible |
| Partition coefficient: n-octanol/water: | 1.47 log P(o/w) (CPC)<br>Appreciable bio-accumulation is not to be expected (log P(o/w) 1-3). |
| Auto-ignition temperature: | no data available |
| Thermal decomposition: | none |
| Viscosity, dynamic: | at 50 °C: 3.437 mPa*s |
| Explosive properties: | Product is not explosive. (VDE 1; EN II A) |
| Oxidizing characteristics: | no data available |

### 9.2 Other information

| | |
|---|---|
| Ignition temperature: | 595 °C (DIN 51 794) |
| Additional information: | Molar mass: 94.11 g/mol<br>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.

Thermal decomposition: none

# SECTION 11: Toxicological information

## 11.1 Information 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/m³/8h

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, eye damage/irritation: Skin Corr. 1B; H314 = Causes severe skin burns and eye damage. Causes severe skin burns and eye damage.

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

# 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* m³/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.

## 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 | 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: | II | II |
| IATA-DGR: | II | |

### 14.5 Environmental hazards

| | solid (< 40.9 °C) | liquid (> 40.9 °C) |
|---|---|---|
| Marine pollutant | Yes | Yes |

### 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 UN 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 73/78 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: 2X
No data available

#### National regulations - EC member states

Volatile organic compounds (VOC):
100 % by weight

### 15.2 Chemical Safety Assessment

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

## SECTION 16: Other information

### Further information

Literature: REACH Registration Dossier Phenol. P&D-REACH Consortium, 2010

Reason of change: Changes in section 14.7: Marpol, IBC: General revision
Date of first version: 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.

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

## List of use descriptors

Sector of uses [SU]: SU3: Industrial uses

## 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)

Contributing Scenarios:

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

### 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.

---

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 volatility

Conditions 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

### 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 °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 °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: 1.8 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.

---

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

### 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
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 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 [%]: 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.

---

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 for formulation of preparations and articles (multistage and/or significant contact)

### 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 for formulation of preparations and articles (multistage and/or significant contact)

### 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: 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 for formulation of preparations and articles (multistage and/or significant contact)

### 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-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.

---

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 for formulation of preparations and articles (multistage and/or significant contact)

### 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
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

### 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
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 °C = low volatility

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

Wear suitable gloves tested to EN374.

---

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 = 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

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

### 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

### 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

### 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

### 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

### 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.

---

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:

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

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.

### 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:

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 29

## 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: 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

### 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 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 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 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

#### Exposure prediction

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 release:

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 preparation 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.

---

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 preparation into small containers (dedicated filling line, including weighing)

### 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

### 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 preparation 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

#### 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 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

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

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

### 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.

---

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

### 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
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 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.

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

### 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
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 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 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 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: 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

### 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
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

# Exposure scenario 1: Manufacture, processing and distribution of substances and mixtures *

## List of use descriptors

Sector of uses [SU]: SU3: Industrial uses
SU3: Industrial uses

## Application

Activities and processes: Manufacture, Processing (see *), Formulating, Distribution of substance or mixture. 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

Remark: Process categories [PROC]
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/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<br>Applies to all contributing exposure scenarios related to exposure scenario 1: Manufacture, processing and distribution of substances and mixtures (environment) | Page 48 |
| 2 | General information<br>Applies to all contributing exposure scenarios related to exposure scenario 1: Manufacture, processing and distribution of substances and mixtures (worker) | Page 49 |

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 substances
ERC2: Formulation of preparations
ERC4: Industrial use of processing aids in processes and products, not becoming part of articles
ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates)

#### Operational conditions

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

Amounts used:
Annual site tonnage (tons/year): 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 municipal 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 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 for formulation of preparations and articles (multistage and/or significant contact)
PROC6: Calendering operations
PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
PROC10: Roller application or brushing
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:

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

'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

# Exposure scenario 2: Use in laboratories

## List of use descriptors

Sector of uses [SU]: SU3: Industrial uses

## Application

Activities and processes: Use of the substance within laboratory settings, including material transfers and equipment cleaning

Remark: 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]: 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/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:



Contributing exposure scenario 1

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

### Operational conditions

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

Amounts used:
Annual site tonnage (tons/year): 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):

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 municipal 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.

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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

### 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/phenol-derivatives-reach-consortium.aspx

# Exposure scenario 3: Uses in coatings

## List of use descriptors

Sector of uses [SU]: SU3: Industrial uses

## Application

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
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 the CEFIC website: http://cefic.org/templates/shwPublications.asp?HID=750

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 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:



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

### Operational conditions

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

Amounts used:
Annual site tonnage (tons/year): 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 municipal 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 for formulation of preparations and articles (multistage and/or significant contact)
PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
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

### 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/phenol-derivatives-reach-consortium.aspx

# Exposure scenario 4: Use in binders and release agents

## List of use descriptors

Sector of uses [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.

Remark: Process categories [PROC]
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/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:



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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

Environmental release categories [ERC]:
ERC4: Industrial use of processing aids in processes and products, not becoming part of articles

### Operational conditions

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

Amounts used:
Annual site tonnage (tons/year): 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 municipal 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 for formulation of preparations and articles (multistage and/or significant contact)
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 preparation 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.

### 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

'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:
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# Exposure scenario 5: Rubber production and processing

## List of use descriptors

Sector of uses [SU]: SU3: Industrial uses

## Application

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:



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]:

ERC6d: Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers

### Operational conditions

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

Amounts used:
Annual site tonnage (tons/year): 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 municipal 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.

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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 for formulation of preparations and articles (multistage and/or significant contact)
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 preparation 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.

### 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

'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

# Exposure scenario 6: Polymer manufacturing

## List of use descriptors

Sector of uses [SU]: SU3: Industrial uses

## Application

Activities and processes: 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.

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:



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 categories [ERC]:

ERC6d: Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers

### Operational conditions

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

Amounts used:
Annual site tonnage (tons/year): 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 municipal 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.

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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 for formulation of preparations and articles (multistage and/or significant contact)
PROC6: Calendering operations
PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
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.

### 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

'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

# Exposure scenario 7: Polymer processing

## List of use descriptors

Sector of uses [SU]: SU3: Industrial uses

## Application

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:



Contributing exposure scenario 1

## General information

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

### List of use descriptors

Environmental release categories [ERC]:

ERC6d: Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers

### Operational conditions

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

Amounts used:
Annual site tonnage (tons/year): 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 municipal 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.

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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 for formulation of preparations and articles (multistage and/or significant contact)
PROC6: Calendering operations
PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
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.

### 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

'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

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

## List of use descriptors

Sector of uses [SU]: SU3: Industrial 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, PROC7, 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]: 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:

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 of preparations
ERC4: Industrial use of processing aids in processes and products, not becoming part of articles
ERC6b: Industrial use of reactive processing aids
ERC6c: Industrial use of monomers for manufacture of thermoplastics
ERC6d: Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers

#### Operational conditions

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

Amounts used:
Annual site tonnage (tons/year): 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 municipal 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 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 for formulation of preparations and articles (multistage and/or significant contact)
PROC6: Calendering operations
PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
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.

#### 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

'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

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

## List of use descriptors

Sector of uses [SU]: SU22: Professional uses

## Application

Activities and processes: Generic exposure scenario, applies to all contributing exposure scenarios related to exposure scenario 11 - 16:
For use in industrial installations and professional treatment only.

ES11 - Use in laboratories
ES12 - Uses in coatings
ES13 - Use in binders and release agents
ES14 - Polymer manufacturing
ES15 - Polymer processing
ES16 - Phenolic resin processing Use of phenolic resins uses of downstream users (DU)

Contributing Scenarios:

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
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

### 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.
Ensure material transfers are under containment or extract ventilation.

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 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:

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:

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:

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.

---

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: 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: 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.
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 °C = 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.

---

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

### 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

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:

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.

---

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

### 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:

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 for formulation of preparations and articles (multistage and/or significant contact)

### 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 [%]: 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 °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 for formulation of preparations and articles (multistage and/or significant contact)

### 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 for formulation of preparations and articles (multistage and/or significant contact)

### 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

### 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. Avoid carrying out activities involving exposure for more than 4 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:

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

---

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: 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

Other relevant operational conditions:

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 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.

---

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: 1 - 4 h;
Respiratory protection mask occasional exposure < 114.5 °C = medium 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 < 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

## 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 < 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
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 %. 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:

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 [%]: 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:

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.

---

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

### 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.

---

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.

### 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 °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 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 preparation 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 °C = low volatility

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

Use personal protective equipment as required.

---

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

### 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

Risk characterisation ratio (RCR):

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.

---

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

### 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

---

Contributing exposure scenario 34

## 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: 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
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

### 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.

---

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

### 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:

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: 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.

---

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

# Exposure scenario 11: Use in laboratories

## List of use descriptors

Sector of uses [SU]: SU22: Professional uses

## Application

Activities and processes: Use of the substance within laboratory settings, including material transfers and equipment cleaning

Remark: 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:



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 (tons/year): 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 municipal 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.

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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

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. 10 industrial

Risk characterisation ratio (RCR):

refer to GES No. 10 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

'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:
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# Exposure scenario 12: Uses in coatings

## List of use descriptors

Sector of uses [SU]: SU22: Professional uses

## Application

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:



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 (tons/year): 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 municipal 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.

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

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.

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

## List of use descriptors

Sector of uses [SU]: SU22: Professional 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.

Remark: Process categories [PROC]
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/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:



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

### Operational conditions

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

Amounts used:
Annual site tonnage (tons/year): 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 municipal 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.

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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 for formulation of preparations and articles (multistage and/or significant contact)
PROC6: Calendering operations
PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
PROC10: Roller application or brushing
PROC11: Non industrial spraying

### 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.

## 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:
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# Exposure scenario 14: Polymer manufacturing

## List of use descriptors

Sector of uses [SU]: SU22: Professional uses

## Application

Activities and processes: 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.

Remark: 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:



Contributing exposure scenario 1

## General information

## Applies to all contributing exposure scenarios related to exposure scenario 14: Polymer manufacturing (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 (tons/year): 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 municipal 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.

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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 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.

## 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

# Exposure scenario 15: Polymer processing

## List of use descriptors

Sector of uses [SU]: SU22: Professional uses

## Application

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

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:



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 (tons/year): 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 municipal 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.

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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 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.

## 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:
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# Exposure scenario 16: Phenolic resin processing Use of phenolic resins uses of downstream users (DU)

## List of use descriptors

Sector of uses [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:

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 of preparations
ERC4: Industrial use of processing aids in processes and products, not becoming part of articles
ERC6b: Industrial use of reactive processing aids
ERC6c: Industrial use of monomers for manufacture of thermoplastics
ERC6d: Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers

#### Operational conditions

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

Amounts used:
Annual site tonnage (tons/year): 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 municipal 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 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 for formulation of preparations and articles (multistage and/or significant contact)
PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC9: Transfer of substance or preparation 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.

## 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