

SAFETY DATA SHEET

In accordance with Regulation (EC) 1907/2006 (REACH), Annex II

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

Trade name	Ureaformaldehyde resin – KFS1
Synonyms	Urea glue
REACH registration number:	KFS is exempted from Registration (article 2(9), REACH regulation)

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

Uses:	As an adhesive in wood and furniture industry after adding relevant hardeners Note: see annex for a complete list of uses covered by provided ES
Uses advised against:	Not known It is recommended that uses be limited to those listed in section 16.

1.3 Details of the supplier of the safety data sheet

Manufacturer:	NEOCHIM PLC
Address:	East Industrial Zone, Himkombinatska Str. 6403 Dimitrovgrad, Bulgaria
Tel.;fax:	+359 391 65 205; +359 391 60 555
URL website:	http:// www.neochim.bg
Email:	neochim@neochim.bg
Company e-mail for SDS	pto@neochim.bg

1.4 Emergency telephone number

NEOCHIM PLC	+359 2 809 20 30	24/24 h	7/7 d
European Emergency Number	112	24/24 h	7/7 d
National Toxicology Center - Pirogov	+ 359 2 915 42 33	24/24 h	7/7 d
	+ 359 2 915 43 46	24/24 h	7/7 d

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

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

Skin sensitizer, hazard category 1 (Skin Sens.), H317- May cause an allergic skin reaction.

2.1.2 Classification according to Directive 1999/45/EC (DPD)

Xi; R43 - May cause sensitization by skin contact.

2.2 Label elements

Labelling according to Regulation 1272/2008 (CLP)

Hazard pictogram(s):	
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Signal word	Warning
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Hazard	H317	May cause an allergic skin reaction.
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statement(s):		
Precautionary statement(s):	P260 P280 P302+P352 P333+P313 P363 P501	Do not breathe vapours. Wear impervious chemical resistant protective gloves and protective goggles. IF ON SKIN: Wash with plenty of soap and water. If skin irritation or rash occurs: Get medical advice/attention. Wash contaminated clothing before reuse. Dispose of contents/container in accordance with national and international regulations.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

3.2 Mixtures - hazardous substance Formaldehyde

CAS №	EO №	Index №	REACH registration №	Content, % (w/w)	Name	Classification according to 67/548/EEC	Classification according to Regulation (EC) No 1272/2008 (CLP)
50-00-0	200-001-8	605-001-00-5	01-2119488953-20-XXXX	0.4÷1	formaldehyde	T; R23/24/25 C; R34 R43 Carc. Cat.3; R40 Specific Conc. Limits: ≥25 % T; R23/24/25 C; R34 ≥5-<25.0 Xn; R20/21/22 Xi; R 36/37/38 ≥0.2 R34	Acute tox. 3 ;H301 Acute tox. 3 ;H311 Acute tox. 3 ;H331 Skin corr. 1B; H314 Skin. Sens. 1; H317 Carc. 2; H351 Specific Conc. Limits: ≥25 % Skin corr. 1B ≥5-<25.0 Skin Irrit. 2 Eye Irrit. 2 ≥5.0 STOT Single Exp. 3A ≥0.2 Skin Sens.1

For full text of R- phrases, H and EU statements: see section 16

SECTION 4: FIRST- AID MEASURES

4.1 Description of first aid measures

General information	Can cause sensitization after long time contact with skin.
Eye contact:	Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
Skin contact:	Wash affected skin area thoroughly with plenty of water and soap. If irritation persists: Get medical advice/attention.
Ingestion:	Do NOT induce vomiting. Wash out mouth with plenty of water and give to victim plenty of water to drink. Consult a physician.
Inhalation:	Remove the victim to the fresh air. If discomfort occurs and breathing is difficult, seek medical advice.

4.2 Most important symptoms and effects, both acute and delayed

Acute effects	Not known
Delayed effects	Not known

4.3 Indication of any immediate medical attention and special treatment needed

Treat symptomatically

SECTION 5: FIRE - FIGHTING MEASURES

5.1 Extinguishing media

Suitable:	Water spray, carbon dioxide or dry chemical.
Not suitable:	Not known

5.2 Special hazards arising from the substance or mixture

Evacuate personnel not engaged in fire fighting. Keep containers cooled by spraying with large amounts of water from a safe distance.

Hazardous combustion products: carbon dioxide, carbon oxide and nitrogen oxides.

5.3 Advice for firefighter

Self-contained breathing apparatus and a chemical protective suit.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Immediately take out the staff that is not occupied with the accident from the area. Stop the leak if safe to do so. Isolate every releasing container. Prevent contact with skin and do not breathe fumes. Ensure adequate ventilation. Use personal protective equipment.

6.2 Environmental precautions

Do not discharge directly to a water sources. If accidental spillage or washings enter drains or watercourses contact local authority.

6.3 Methods and material for containment and cleaning up

Small spills - absorb with inert material (eg dry sand). Collect large spills by pumping into a spare container suitably labeled. Wash spill area with water. Do not discharge into drains or watercourses.

6.4 Reference to other sections

See section 8 for personal protective equipment and section 13 for waste disposal.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

Ensure adequate ventilation of the stores and work areas. Handle in accordance with good industrial hygiene and safety practice. Handle in a closed system.

7.2 Conditions for safe storage, including any incompatibilities

Technical measures/ conditions:	Storage	Do not heat the resin with steam. Heat it using hot water only. Store in tightly covered warehouses at temperatures from 20°C to 30°C.
Suitable packaging materials:		Stainless steel 1.4301 (V2), High density polyethylene (HDPE), Low density polyethylene (LDPE), Stainless steel 1.4401, aluminum
Unsuitable packaging materials:		Paper, board, glass
7.2 Specific end use(s)		See exposure scenario(s) in the attachment to this safety data sheet.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Regulated occupational exposure limit values:	Workplace exposure limits for formaldehyde according to EH40/2005 8 hours - 2.5 mg/m ³ 15 minutes - 2.5 mg/m ³
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<p>Recommended occupational and consumer exposure limit values (following from the performed CSA of the formaldehyde)</p>	<p><u>DNEL – Derived No Effect Level</u> worker: Short-term exposure: - local effects, Inhalation: 1 mg/m³, 0.8 ppm</p> <p>worker: Long- term exposure: - systemic effects, Inhalation: 9 mg/m³ - local effects, Inhalation: 0.5 mg/m³</p> <p>worker: Long- term exposure: - systemic effects, dermal: 240 mg/kg bw/day - local effects, dermal: 0.037 mg/cm²</p> <p>consumer: Long-term exposure- systemic effects, oral: 4.1 mg/kg bw/day</p> <p>consumer: Long-term exposure- systemic effects, dermal: 102 mg/kg bw/day</p> <p>consumer: Long-term exposure - local effects, dermal: 0.012 mg/cm²</p> <p>consumer: Long-term exposure- systemic effects, Inhalation: 3.2 mg/m³</p> <p>consumer: Long-term exposure - local effects, Inhalation: 0.1 mg/m³</p>
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	<p><u>PNEC - Predicted No Effect Concentration</u> freshwater: 0.47 mg/l marine water: 0.47 mg/l intermittent release: 4.7 mg/l sediment (freshwater): 2.44 mg/kg sediment (marine water): 2.44 mg/kg soil: 0.21 mg/kg STP: 0.19 mg/l</p>
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8.2 Exposure controls

Appropriate engineering controls:	Use adequate ventilation is good industrial practice.
Environmental exposure controls:	Avoid uncontrolled discharge of rinse water in surface water or sanitary sewer system. Dispose of rinse water in accordance with local and national regulations.

Individual protection measures, such as personal protective equipment (PPE)

Respiratory protection:	Suitable respiratory protection for lower concentrations or short-term effect: Gas filter for gases/vapours of inorganic compounds (e.g. EN 14387 Type B) Suitable respiratory protection for higher concentrations or long-term effect: Self-contained breathing apparatus.
Hand protection:	Protective gloves
Eye protection:	Protective goggles
Skin and body protection:	Protective clothes
Hygiene measures:	Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Wash contaminated clothing before reusing.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance:	Milky white homogeneous suspension without impurities
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Odour:	Specific odour of formaldehyde
Melting/Freezing temperature:	Not applicable
Boiling temperature:	No information available
Flash-point:	No information available
Flammability:	Hardly flammable
Explosive properties:	No explosive properties
Vapour pressure:	Not applicable
Relative density (D4 (20)):	1.290 - 1.310 g/cm ³ at 20 °C
Partition coefficient n-octanol/water:	No information available
Viscosity:	2000-4000 mPa.s at 20 °C
Auto ignition temperature:	No information available
Jelling time at 100°C, s	1-3h
Mixing of resin with water in proportion 1:2 at 20°C ± 1°C	Fully
pH of 50% aqueous solution of the resin at 20 ° C	7.5 - 8.5

9.2 Other information

Not available

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity

Stable under recommended storage and handling conditions (see section 7, handling and storage).

10.2 Chemical stability

Stable under recommended storage and handling conditions (see section 7, handling and storage).

10.3 Possibility of hazardous reactions

Stable under recommended storage and handling conditions (see section 7, handling and storage).

10.4 Conditions to avoid

Heat, flame, ignition sources and incompatible substances.

10.5 Incompatible materials

Incompatible with strong acids and strong oxidizing agents

10.6 Hazardous decomposition product

Carbon dioxide, carbon monoxide, nitrogen oxides and formaldehyde.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

ACUTE TOXICITY

The product has not been tested. The statement that is toxic by inhalation, in contact with skin and if swallowed is based on properties of the **formaldehyde**.

Acute oral toxicity:

LD₅₀: 460-830 mg/kg bw ;(rat)

Acute dermal toxicity:

LD50: 270 mg/kg (rabbit)

Acute inhalation toxicity:

LC₅₀ (4 h) rat = 588 mg/m³ = 490 ppm

	LC ₅₀ (30 min) rat = 1000 mg/m ³ = 830 ppm
LOCAL EFFECTS	Depends on the concentration and duration of exposure, aqueous solutions can cause a strongly irritating or corrosive effect on the skin or eyes.
Skin irritation:	Corrosive (rabbit)
Eye irritation:	Irreversible damage (rabbit)
Skin sensitization:	Aqueous solutions can cause skin sensitization in animal experiments and in humans.
Carcinogenicity:	Formaldehyde is classified as carcinogenic category 2 (Carc. Cat.2), in accordance with Regulation 1272/2008 EC, Annex VI. After lifelong inhalation exposure to concentrations that were severely damaging to the nasal epithelium, nasal tumors were induced in rats; in other species these findings were not found or were considerably less pronounced. The International Agency for Research on Cancer (IARC) has classified formaldehyde as a Group 1 (known) human carcinogen based on epidemiological evidence linking formaldehyde exposure to occurrence of nasopharyngeal cancer and leukemia.
Toxicity to reproduction:	There is no evidence for adverse effects of formaldehyde on embryo and fetal development at dose levels inducing local maternal effects and secondary decrease in body weights and growth.

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

Substance name: **Formaldehyde**

Assessment of aquatic toxicity:

Acutely harmful for aquatic organisms. The inhibition of the degradation activity of activated sludge is not anticipated when introduced to biological treatment plants in appropriate low concentrations. The product has not been tested. The statement has been derived from products of a similar structure or composition.

Fish:	96h LC ₅₀ : 41 mg/l (Brachydanio rerio)
Aquatic invertebrates:	24h EC ₅₀ : 42 mg/l, Daphnia magna (DIN 38412 Part 11)
Aquatic plants:	192h 2.5 mg/l, Scenedesmus subspicatus Limit concentration test only (LIMIT test).
Microorganisms/Effect on activated sludge:	16-h 14 mg/l, Pseudomonas putida EC20 (5 h) > 1,995 mg/l (DIN EN ISO 8192-OECD 209-88/302/EEC,P. C) The inhibition of the degradation activity of activated sludge is not anticipated when introduced to biological treatment plants in appropriate low concentrations.

12.2 Persistence and degradability

Biodegradation:	On the basis of the data available concerning eliminability/degradation and bioaccumulation potential, longer-term harm to the environment is improbable.
Assessment of stability in water:	According to structural properties, hydrolysis is not expected.

12.3 Bioaccumulative potential

Insignificantly accumulate in organisms.

Octanol-water partition coefficient (K _{ow}):	Because of the n-octanol/water distribution coefficient (log Pow) accumulation in organisms is not to be expected.
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12.4 Mobility in soil

The substance will not evaporate into the atmosphere from the water surface.
Adsorption to solid soil phase is not expected.

12.5 Results of PBT and vPvB assessment

According to Annex XIII of Regulation 1907/2006(EC): not fulfilling vPvB criteria.

SECTION 13: DISPOSAL CONSIDERATIONS

Dispose of contents/container in accordance with national and international regulations.

SECTION 14: TRANSPORT INFORMATION

Not classified as dangerous goods according to international transport legislation (ADR, RID, IMDG).
Transport in clean and dry containers and comply with conditions of storage. Do not transport together with food and incompatible materials.
If spillage of the roadway, confined spill, absorb with inert material (e.g. sand) and wash spill area with water.

SECTION 15: REGULATORY INFORMATION

15.1 Safety, health and environmental regulation/legislation specific for the substance or mixture:	Regulation EC 1907/2006 (REACH), Directive 67/548/EEC and 1999/45/EC , Regulation EC 1272/2008 (CLP), Regulation (EC) 453/2010,
15.2 Chemical safety assessment:	In accordance with REACH Article 14, a Chemical Safety Assessment has been carried out for formaldehyde.

РАЗДЕЛ 16: ДРУГА ИНФОРМАЦИЯ

The information above is on the basis of our knowledge about the product and represents the data currently available to us at the moment of safety data sheet issue. This document is intended as guidance for the appropriate precautionary handling with the product by a properly trained person using this product, and does not legally bind in no way manufacturer with guarantee for specific properties, qualities and applications. Neochim PLC does not grant, guarantee or implies any warranties of merchantability, fitness for a particular purpose with respect to the information set forth herein or the product to which the information refers. Neochim PLC does not carry any liability for damages resulting from the product use or reliance upon this information, data and recommendations for it. Users are responsible to make their own investigations to determine the suitability of the information and the product for their particular purposes, and to comply with applicable laws.

Full texts of all R-phrases and H-hazards used in Section 3

H statement

H301: Toxic if swallowed.
H311: Toxic in contact with skin.
H314: Causes severe skin burns and eye damage.
H317: May cause an allergic skin reaction.
H331: Toxic if inhaled.
H351: Suspected of causing cancer if inhaled.

R phrases

R23/24/25: Toxic by inhalation, in contact with skin and if swallowed.
R34: Causes burns.
R43: May cause sensitization by skin contact.
R40: Limited evidence of a carcinogenic effect.

List of abbreviations

PBT – persistent, bioaccumulative and toxic
vPvB - very persistent and very bioaccumulative
NOAEL - no observed adverse effect level
NOAEC - no observed adverse effect concentration
DNEL - derived no-effect level
PNEC - predicted no-effect concentration
PEC - predicted environmental concentration
LOEC - lowest observed effect concentration
NOEC - no observed effect concentration
OECD - Organisation for Economic Cooperation and Development
LC_x - lethal concentration
EC_x - effective concentration
LD_x - lethal dose

List of attached exposure scenarios

ES 1: Industrial use of products containing formaldehyde up to 1.5%: production of adhesives, foams, bonded particulates (casting, molding), use in coatings, rubber production and processing, production of firelighters, use in leather tanning, finishing, impregnation

ES 2: Industrial use of products containing formaldehyde up to 1%: production of wood based materials (panels, bricks, etc), impregnated paper, paper, use in textile finishing, production of bonded fibers or fiber mats

ES 3: Professional use of products containing formaldehyde up to 1.5%: adhesives, foams, coatings, firelighters and cleaning agents

ES 4: Professional use of products containing formaldehyde up to 1%: resins in wood applications (eg. glues)

ES 5: Consumer use of formaldehyde based products: adhesives, coatings, firelighters and cleaning agents

Version:	4.0
Creation date:	1.12.2010
Revision date:	3/26.02.2007
Release info:	This version replaces all previous documents

1. Short title of exposure scenario (ES 1) - Industrial use of products containing formaldehyde up to 1.5%: production of adhesives, foams, bonded particulates (casting, molding), use in coatings, rubber production and processing, production of firelighters, use in leather tanning, finishing, impregnation

Use descriptors related to the life cycle stage	Sector of end use: SU2a, SU3, SU5, SU8, SU9, SU10, SU11, SU12, SU13, SU14, SU17, SU19 Process category: PROC1/2/3/4/5/6/7/8a/8b/9/10/13/14/16/21/22/23/24/25 Environmental release category: ERC/2/3/5/6d
Name of contributing environmental scenario (1) and corresponding ERC	<ol style="list-style-type: none"> 1 Formulation of mixture (ERC2) 2 Formulation in materials (ERC3) 3 Industrial use resulting in inclusion into or onto a matrix (ERC5) 4 Industrial use of process regulators for polymerization processes in production of resins, rubbers, polymers (ERC6d)
List of names of contributing worker scenarios (2) and corresponding PROC	<ol style="list-style-type: none"> 1 Use in closed process, no likelihood of exposure (<i>PROC1</i>) 2 Use in closed, continuous process with occasional controlled exposure (<i>PROC2</i>) 3 Use in closed batch process (synthesis or formulation) (<i>PROC3</i>) 4 Use in batch and other process (synthesis) where opportunity for exposure arises (<i>PROC4</i>) 5 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) (<i>PROC5</i>) 6 Calendering operations (<i>PROC6</i>) 7 Industrial spraying (<i>PROC7</i>) 8 Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (<i>PROC8a</i>) 9 Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (<i>PROC8b</i>) 10 Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (<i>PROC9</i>) 11 Roller application and brushing (<i>PROC10</i>) 12 Treatment of articles by dipping and pouring (<i>PROC13</i>) 13 Production of preparations or articles by tableting, compression, extrusion, pelettisation. (<i>PROC14</i>) 14 Using material as fuel sources, limited exposure to unburned to be expected (<i>PROC16</i>) 15 Low energy manipulation of substances bound in materials and/or articles (<i>PROC21</i>) 16 Potentially closed processing with minerals/metals at elevated temperature (<i>PROC22</i>) Industrial setting 17 Open processing and transfer with minerals/ metals at elevated temperature (<i>PROC23</i>) 18 High (mechanical) energy work- up of substances bound in materials and/or articles (<i>PROC24</i>) 19 Other hot work operations with metals (<i>PROC25</i>)

2. Contributing scenario controlling environmental exposure

Formulation of mixture (ERC2); Formulation in materials (ERC3); Industrial use resulting in inclusion into or onto a matrix (ERC5); Industrial use of process regulators for polymerization processes in production of resins,

rubbers, polymers (ERC6d)
An environmental assessment has not been performed as the product does not meet the criteria for being classified.

2.1 Contributing scenario (1) controlling worker exposure	
Use descriptors covered	SU3: Industrial uses PROC1: Use in closed process, no likelihood of exposure. PROC2: Use in closed, continuous process with occasional controlled exposure.
Operational conditions	
Concentration of the substance	formaldehyde Content: $\geq 0\%$ - $\leq 1.5\%$
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	14 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Exposure estimate and reference to its source	
PROC1, PROC2	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - systemic
Exposure estimate	< 0.1 mg/kg bw/day
Risk Characterization Ratio (RCR)	< 0.01
PROC1	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	< 0.001 mg/m ³
Risk Characterization Ratio (RCR)	< 0.01
PROC1	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, short-term - systemic
Exposure estimate	< 0.01 mg/m ³
Risk Characterization Ratio (RCR)	< 0.01
PROC2	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.188 mg/m ³
Risk Characterization Ratio (RCR)	0.38
	The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.
PROC1, PROC2	
Assessment method	Qualitative assessment

	Worker - dermal
	The use is assessed to be safe.
PROC1, PROC2	
Assessment method	Qualitative assessment
	Worker - contact with eyes
	The use is assessed to be safe.
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

2.2 Contributing scenario (2) controlling worker exposure	
Use descriptors covered	SU3: Industrial uses PROC2: Use in closed, continuous process with occasional controlled exposure. (closed systems)
Operational conditions	
Concentration of the substance	formaldehyde Content: $\geq 0\%$ - $\leq 100\%$
Physical state	Liquid, high fugacity
Vapour pressure of the substance during use	1000 hPa
Process temperature	150 °C
Duration and Frequency of activity	360 min 5 days per week
Indoor/Outdoor	Indoor
Room size	300 m ³
	Operation is carried out at elevated temperature ($> 20^{\circ}\text{C}$ above ambient temperature).
Risk Management Measures	
Provide a good standard of general ventilation (not less than 3 - 5 air changes per hour)	
Use suitable eye protection.	
Personal measures have to be applied in case of potential exposure only.	
Handle substance within closed system.	Effectiveness: 99 %
Wear chemically resistant gloves in combination with intensive management supervision control.	Effectiveness: 98 %
Personal measures have to be applied in case of potential exposure only.	
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - systemic
Exposure estimate	$< 0.1\text{ mg/kg bw/day}$
Risk Characterization Ratio (RCR)	< 0.01
Assessment method	Advanced REACH Tool v1.0
	Worker - inhalative, long-term - systemic
Exposure estimate	0.253 mg/m^3
Risk Characterization Ratio (RCR)	0.51
	The exposure estimate represents the 75th percentile of the exposure distribution. The short-term exposure value corresponds to the long-

	term value multiplied by a factor of 2.
Assessment method	Qualitative assessment
	Worker - dermal
	The use is assessed to be safe.
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	
For scaling see: http://www.advancedreachtool.com	

2.3 Contributing scenario (3) controlling worker exposure	
Use descriptors covered	SU3: Industrial uses PROC2: Use in closed, continuous process with occasional controlled exposure. Transfer of liquid products - falling liquids Submerged loading Dedicated facility (open systems)
Operational conditions	
Concentration of the substance	formaldehyde Content: >= 0 % - <= 60 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	15.2 hPa
Process temperature	150 °C
Duration and Frequency of activity	120 min 5 days per week
Indoor/Outdoor	Indoor
Room size	300 m ³
	Operation is carried out at elevated temperature (> 20°C above ambient temperature).
Amounts used	Amount per use 1,000 l
Risk Management Measures	
Provide a good standard of general ventilation (not less than 3 - 5 air changes per hour)	
Use suitable eye protection.	
Personal measures have to be applied in case of potential exposure only.	
Handle substance within closed system.	Effectiveness: 99 %
Wear chemically resistant gloves in combination with intensive management supervision control.	Effectiveness: 98 %
Vapour recovery system	Effectiveness: 80 %
Wear suitable respiratory protection.	Effectiveness: 90 %
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - systemic
Exposure estimate	< 0.1 mg/kg bw/day
Risk Characterization Ratio (RCR)	< 0.01
Assessment method	Advanced REACH Tool v1.0
	Worker - inhalative, long-term - systemic
Exposure estimate	0.253 mg/m ³
Risk Characterization Ratio (RCR)	0.51

	The short-term exposure value corresponds to the long-term value multiplied by a factor of 2., The exposure estimate represents the 75th percentile of the exposure distribution.
Assessment method	Qualitative assessment
	Worker - dermal
	The use is assessed to be safe.
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	
For scaling see: http://www.advancedreachtool.com	

2.4 Contributing scenario (4) controlling worker exposure	
Use descriptors covered	SU3: Industrial uses PROC3: Use in closed batch process (synthesis or formulation). PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises.
Operational conditions	
Concentration of the substance	formaldehyde Content: $\geq 0\%$ - $\leq 1.5\%$
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	14 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Exposure estimate and reference to its source	
PROC3, PROC4	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - systemic
Exposure estimate	< 0.1 mg/kg bw/day
Risk Characterization Ratio (RCR)	< 0.01
PROC3	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.469 mg/m ³
Risk Characterization Ratio (RCR)	0.94
	The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.
PROC4	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.375 mg/m ³
Risk Characterization Ratio (RCR)	0.75
	The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.

PROC3, PROC4	
Assessment method	Qualitative assessment
	Worker - dermal
	The use is assessed to be safe.
PROC3, PROC4	
Assessment method	Qualitative assessment
	Worker - contact with eyes
	The use is assessed to be safe.
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

2.5 Contributing scenario (5) controlling worker exposure	
Use descriptors covered	SU3: Industrial uses 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
Operational conditions	
Concentration of the substance	formaldehyde Content: $\geq 0\%$ - $\leq 1.5\%$
Physical state	Liquid, high fugacity
Vapour pressure of the substance during use	14 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 90 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach., ECETOC TRA modified version: Use of gloves has been considered additionally., ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates.
	Worker - dermal, long-term - systemic
Exposure estimate	< 0.1 mg/kg bw/day
Risk Characterization Ratio (RCR)	< 0.01
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.094 mg/m ³
Risk Characterization Ratio (RCR)	0.19
	The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.
Assessment method	Qualitative assessment
	Worker - dermal
	The use is assessed to be safe.
Assessment method	Qualitative assessment
	Worker - contact with eyes

	The use is assessed to be safe.
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

2.6 Contributing scenario (6) controlling worker exposure	
Use descriptors covered	SU3: Industrial uses PROC7: Industrial spraying Aerosol formation is not covered within the CES
Operational conditions	
Concentration of the substance	formaldehyde Content: $\geq 0\%$ - $\leq 1.5\%$
Physical state	Liquid, high fugacity
Vapour pressure of the substance during use	14 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 95 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally., ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates.
	Worker - dermal, long-term - systemic
Exposure estimate	< 0.1 mg/kg bw/day
Risk Characterization Ratio (RCR)	< 0.01
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.230 mg/m ³
Risk Characterization Ratio (RCR)	0.47
	The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.
Assessment method	Qualitative assessment
	Worker - dermal
	The use is assessed to be safe.
Assessment method	Qualitative assessment
	Worker - contact with eyes
	The use is assessed to be safe.
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

2.7 Contributing scenario (7) controlling worker exposure	
Use descriptors covered	SU3: Industrial uses PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities Submerged loading PROC8b: Transfer of substance or preparation

	(charging/discharging) from/to vessels/large containers at dedicated facilities
Operational conditions	
Concentration of the substance	formaldehyde Content: $\geq 1\%$ - $\leq 5\%$
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	14 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Outdoor
Risk Management Measures	
Vapour recovery system	Effectiveness: 80 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Exposure estimate and reference to its source	
Assessment method	Qualitative assessment
	Worker - all relevant routes
	The use is assessed to be safe., In case the identified operational conditions and risk management measures are applied:
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

2.8 Contributing scenario (8) controlling worker exposure	
Use descriptors covered	SU3: Industrial uses PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Operational conditions	
Concentration of the substance	formaldehyde Content: $\geq 0\%$ - $\leq 1.5\%$
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	14 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 97 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach., ECETOC TRA modified version: Use of gloves has been considered additionally., ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates.
	Worker - dermal, long-term - systemic
Exposure estimate	< 0.1 mg/kg bw/day
Risk Characterization Ratio (RCR)	< 0.01
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified

	version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.028 mg/m ³
Risk Characterization Ratio (RCR)	0.06
	The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.
Assessment method	Qualitative assessment
	Worker - dermal
	The use is assessed to be safe.
Assessment method	Qualitative assessment
	Worker - contact with eyes
	The use is assessed to be safe.
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

2.9 Contributing scenario (9) controlling worker exposure	
Use descriptors covered	SU3: Industrial uses 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 tableting, compression, extrusion, pelettisation.
Operational conditions	
Concentration of the substance	formaldehyde Content: >= 0 % - <= 1.5 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	14 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 90 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally., ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates.
	Worker - dermal, long-term - systemic
Exposure estimate	< 0.1 mg/kg bw/day
Risk Characterization Ratio (RCR)	< 0.01
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.094 mg/m ³
Risk Characterization Ratio (RCR)	0.19
	The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.

Assessment method	Qualitative assessment
	Worker - dermal
	The use is assessed to be safe.
Assessment method	Qualitative assessment
	Worker - contact with eyes
	The use is assessed to be safe.
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

2.10 Contributing scenario (10) controlling worker exposure	
Use descriptors covered	SU3: Industrial uses PROC16: Using material as fuel sources, limited exposure to unburned product to be expected.
Operational conditions	
Concentration of the substance	formaldehyde Content: $\geq 0\%$ - $\leq 1.5\%$
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	14 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Perform task in a fume cupboard.	
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - systemic
Exposure estimate	< 0.1 mg/kg bw/day
Risk Characterization Ratio (RCR)	< 0.01
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.094 mg/m ³
Risk Characterization Ratio (RCR)	0.19
	The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.
Assessment method	Qualitative assessment
	Worker - dermal
	The use is assessed to be safe.
Assessment method	Qualitative assessment
	Worker - contact with eyes
	The use is assessed to be safe.
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

2.11 Contributing scenario (11) controlling worker exposure	
Use descriptors covered	SU3: Industrial uses PROC21: Low energy manipulation of substances bound in materials and/or articles PROC22: Potentially closed processing operations (with

	minerals) at elevated temperature PROC23: Open processing and transfer operations (with minerals) at elevated temperature PROC24: High (mechanical) energy work-up of substances bound in materials and/or articles PROC25: Other hot work operations with metals
Operational conditions	
Concentration of the substance	formaldehyde Content: $\geq 0\%$ - $\leq 1.5\%$
Physical state	Solid
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
	Operation is carried out at ambient or elevated temperatures
Risk Management Measures	
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Exposure estimate and reference to its source	
PROC21, PROC22, PROC23, PROC24, PROC25	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - systemic
Exposure estimate	< 0.1 mg/kg bw/day
Risk Characterization Ratio (RCR)	< 0.01
PROC21, PROC22, PROC23, PROC24	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.15 mg/m ³
Risk Characterization Ratio (RCR)	0.3
	The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.
PROC21, PROC22, PROC23, PROC24, PROC25	
Assessment method	Qualitative assessment
	Worker - dermal
	The use is assessed to be safe.
PROC21, PROC22, PROC23, PROC24, PROC25	
Assessment method	Qualitative assessment
	Worker - contact with eyes
	The use is assessed to be safe.
PROC25	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.075 mg/m ³
Risk Characterization Ratio (RCR)	0.15
	The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

2. Short title of exposure scenario (ES 2) - Industrial use of products containing formaldehyde up to 1%: production of wood based materials (panels, bricks, etc), impregnated paper, paper, use in textile finishing, production of bonded fibers or fiber mats

Use descriptors related to the life cycle stage	Sector of end use SU3, SU5, SU6a, SU66, SU10, SU11, SU12, SU13, SU18, SU19 Process category: PROC1/2/3/4/5/6/7/8a/8b/9/10/13/14/16/21/22/23/24/25 Environmental release category: ERC/2/3/5/6d
Name of contributing environmental scenario (1) and corresponding ERC	<ol style="list-style-type: none"> 1 Formulation of mixture (ERC2) 2 Formulation in materials (ERC3) 3 Industrial use resulting in inclusion into or onto a matrix (ERC5) 4 Industrial use of process regulators for polymerization processes in production of resins, rubbers, polymers (ERC6d)
List of names of contributing worker scenarios (2) and corresponding PROC	<ol style="list-style-type: none"> 1 Use in closed process, no likelihood of exposure (<i>PROC1</i>) 2 Use in closed, continuous process with occasional controlled exposure (<i>PROC2</i>) 3 Use in closed batch process (synthesis or formulation) (<i>PROC3</i>) 4 Use in batch and other process (synthesis) where opportunity for exposure arises (<i>PROC4</i>) 5 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) (<i>PROC5</i>) 6 Calendering operations (<i>PROC6</i>) 7 Industrial spraying (<i>PROC7</i>) 8 Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (<i>PROC8a</i>) 9 Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (<i>PROC8b</i>) 10 Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (<i>PROC9</i>) 11 Roller application and brushing (<i>PROC10</i>) 12 Treatment of articles by dipping and pouring (<i>PROC13</i>) 13 Production of preparations or articles by tableting, compression, extrusion, pelettisation. (<i>PROC14</i>) 14 Using material as fuel sources, limited exposure to unburned to be expected (<i>PROC16</i>) 15 Low energy manipulation of substances bound in materials and/or articles (<i>PROC21</i>) 16 Potentially closed processing with minerals/metals at elevated temperature (<i>PROC22</i>) Industrial setting 17 Open processing and transfer with minerals/ metals at elevated temperature (<i>PROC23</i>) 18 High (mechanical) energy work- up of substances bound in materials and/or articles (<i>PROC24</i>) 19 Other hot work operations with metals (<i>PROC25</i>)
2. Contributing scenario controlling environmental exposure	

Formulation of mixture (ERC2); Formulation in materials (ERC3); Industrial use resulting in inclusion into or onto a matrix (ERC5); Industrial use of process regulators for polymerization processes in production of resins, rubbers, polymers (ERC6d)
An environmental assessment has not been performed as the product does not meet the criteria for being classified.

2.1 Contributing scenario (1) controlling worker exposure	
Use descriptors covered	SU3: Industrial uses PROC1: Use in closed process, no likelihood of exposure.
Operational conditions	
Concentration of the substance	formaldehyde Content: $\geq 0\%$ - $\leq 100\%$
Physical state	Liquid, high fugacity
Vapour pressure of the substance during use	1000 hPa
Process temperature	150 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Room size	300 m ³
	Operation is carried out at elevated temperature ($> 20^{\circ}\text{C}$ above ambient temperature).
Risk Management Measures	
Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m).	
Provide a good standard of general ventilation (not less than 3 - 5 air changes per hour)	
Use suitable eye protection.	
Personal measures have to be applied in case of potential exposure only.	
Handle substance within closed system.	Effectiveness: 90 %
Wear chemically resistant gloves in combination with intensive management supervision control.	Effectiveness: 98 %
Personal measures have to be applied in case of potential exposure only.	
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - systemic
Exposure estimate	< 0.1 mg/kg bw/day
Risk Characterization Ratio (RCR)	< 0.01
Assessment method	Advanced REACH Tool v1.0
	Worker - inhalative, long-term - systemic
Exposure estimate	0.025 mg/m ³
	The exposure estimate represents the 75th percentile of the exposure distribution. The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.
Assessment method	Qualitative assessment

	Worker - dermal
	The use is assessed to be safe.
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates) For scaling see: http://www.advancedreachtool.com	

2.2 Contributing scenario (2) controlling worker exposure	
Use descriptors covered	SU3: Industrial uses PROC1: Use in closed process, no likelihood of exposure.
Operational conditions	
Concentration of the substance	formaldehyde Content: >= 0 % - <= 5 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	14 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - systemic
Exposure estimate	< 0.1 mg/kg bw/day
Risk Characterization Ratio (RCR)	< 0.01
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	< 0.001 mg/m ³
Risk Characterization Ratio (RCR)	< 0.01
	The use is assessed to be safe.
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, short-term - systemic
Exposure estimate	< 0.01 mg/m ³
Risk Characterization Ratio (RCR)	< 0.01
Assessment method	Qualitative assessment
	Worker - dermal
	The use is assessed to be safe.
Assessment method	Qualitative assessment
	Worker - contact with eyes
	The use is assessed to be safe.
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

2.3 Contributing scenario (3) controlling worker exposure	
Use descriptors covered	SU3: Industrial uses PROC1: Use in closed process, no likelihood of exposure. PROC2: Use

	in closed, continuous process with occasional controlled exposure.
Operational conditions	
Concentration of the substance	formaldehyde Content: $\geq 0\%$ - $\leq 2.5\%$
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	14 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Exposure estimate and reference to its source	
PROC1, PROC2	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - systemic
Exposure estimate	< 0.1 mg/kg bw/day
Risk Characterization Ratio (RCR)	< 0.01
PROC1	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	< 0.001 mg/m ³
Risk Characterization Ratio (RCR)	< 0.01
PROC1	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, short-term - systemic
Exposure estimate	< 0.01 mg/m ³
Risk Characterization Ratio (RCR)	< 0.01
PROC2	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.313 mg/m ³
Risk Characterization Ratio (RCR)	0.63
	The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.
PROC1, PROC2	
Assessment method	Qualitative assessment
	Worker - dermal
	The use is assessed to be safe.
PROC1, PROC2	
Assessment method	Qualitative assessment
	Worker - contact with eyes
	The use is assessed to be safe.
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure	

estimates)	
2.4 Contributing scenario (4) controlling worker exposure	
Use descriptors covered	SU3: Industrial uses PROC1: Use in closed process, no likelihood of exposure. PROC2: Use in closed, continuous process with occasional controlled exposure.
Operational conditions	
Concentration of the substance	formaldehyde Content: $\geq 0\%$ - $\leq 1.5\%$
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	14 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Exposure estimate and reference to its source	
PROC1, PROC2	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - systemic
Exposure estimate	< 0.1 mg/kg bw/day
Risk Characterization Ratio (RCR)	< 0.01
PROC1	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	< 0.001 mg/m ³
Risk Characterization Ratio (RCR)	< 0.01
PROC1	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, short-term - systemic
Exposure estimate	< 0.01 mg/m ³
Risk Characterization Ratio (RCR)	< 0.01
PROC2	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.188 mg/m ³
Risk Characterization Ratio (RCR)	0.38
	The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.
PROC1, PROC2	
Assessment method	Qualitative assessment
	Worker - dermal
	The use is assessed to be safe.
PROC1, PROC2	

Assessment method	Qualitative assessment
	Worker - contact with eyes
	The use is assessed to be safe.
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

2.5 Contributing scenario (5) controlling worker exposure	
Use descriptors covered	SU3: Industrial uses PROC1: Use in closed process, no likelihood of exposure. PROC2: Use in closed, continuous process with occasional controlled exposure.
Operational conditions	
Concentration of the substance	formaldehyde Content: $\geq 0\%$ - $\leq 1\%$
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	14 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Exposure estimate and reference to its source	
PROC1, PROC2	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - systemic
Exposure estimate	< 0.1 mg/kg bw/day
Risk Characterization Ratio (RCR)	< 0.01
PROC1	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	< 0.001 mg/m ³
Risk Characterization Ratio (RCR)	< 0.01
PROC1	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, short-term - systemic
Exposure estimate	< 0.01 mg/m ³
Risk Characterization Ratio (RCR)	< 0.01
PROC2	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.125 mg/m ³
Risk Characterization Ratio (RCR)	0.25
	The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.

PROC1, PROC2	
Assessment method	Qualitative assessment
	Worker - dermal
	The use is assessed to be safe.
PROC1, PROC2	
Assessment method	Qualitative assessment
	Worker - contact with eyes
	The use is assessed to be safe.
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

2.6 Contributing scenario (6) controlling worker exposure	
Use descriptors covered	SU3: Industrial uses PROC2: Use in closed, continuous process with occasional controlled exposure. (closed systems)
Operational conditions	
Concentration of the substance	formaldehyde Content: >= 0 % - <= 100 %
Physical state	Liquid, high fugacity
Vapour pressure of the substance during use	1000 hPa
Process temperature	150 °C
Duration and Frequency of activity	360 min 5 days per week
Indoor/Outdoor	Indoor
Room size	300 m ³
	Operation is carried out at elevated temperature (> 20°C above ambient temperature).
Risk Management Measures	
Provide a good standard of general ventilation (not less than 3 - 5 air changes per hour)	
Use suitable eye protection.	
Personal measures have to be applied in case of potential exposure only.	
Handle substance within closed system.	Effectiveness: 99 %
Wear chemically resistant gloves in combination with intensive management supervision control.	Effectiveness: 98 %
Personal measures have to be applied in case of potential exposure only.	
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - systemic
Exposure estimate	< 0.1 mg/kg bw/day
Risk Characterization Ratio (RCR)	< 0.01
Assessment method	Advanced REACH Tool v1.0
	Worker - inhalative, long-term - systemic
Exposure estimate	0.253 mg/m ³
Risk Characterization Ratio (RCR)	0.51

	The exposure estimate represents the 75th percentile of the exposure distribution. The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.
Assessment method	Qualitative assessment
	Worker - dermal
	The use is assessed to be safe.
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	
For scaling see: http://www.advancedreachtool.com	

2.7 Contributing scenario (7) controlling worker exposure	
Use descriptors covered	SU3: Industrial uses PROC2: Use in closed, continuous process with occasional controlled exposure. Transfer of liquid products - falling liquids Submerged loading Dedicated facility (open systems)
Operational conditions	
Concentration of the substance	formaldehyde Content: $\geq 0\%$ - $\leq 60\%$
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	15.2 hPa
Process temperature	150 °C
Duration and Frequency of activity	120 min 5 days per week
Indoor/Outdoor	Indoor
Room size	300 m ³
	Operation is carried out at elevated temperature ($> 20^{\circ}\text{C}$ above ambient temperature).
Amounts used	Amount per use 1,000 l
Risk Management Measures	
Provide a good standard of general ventilation (not less than 3 - 5 air changes per hour)	
Use suitable eye protection.	
Personal measures have to be applied in case of potential exposure only.	
Handle substance within closed system.	Effectiveness: 99 %
Wear chemically resistant gloves in combination with intensive management supervision control.	Effectiveness: 98 %
Vapour recovery system	Effectiveness: 80 %
Wear suitable respiratory protection.	Effectiveness: 90 %
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - systemic
Exposure estimate	$< 0.1\text{ mg/kg bw/day}$
Risk Characterization Ratio (RCR)	< 0.01
Assessment method	Advanced REACH Tool v1.0
	Worker - inhalative, long-term - systemic

Exposure estimate	0.253 mg/m ³
Risk Characterization Ratio (RCR)	0.51
	The short-term exposure value corresponds to the long-term value multiplied by a factor of 2. The exposure estimate represents the 75th percentile of the exposure distribution.
Assessment method	Qualitative assessment
	Worker - dermal
	The use is assessed to be safe.
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	
For scaling see: http://www.advancedreachtool.com	

2.8 Contributing scenario (8) controlling worker exposure	
Use descriptors covered	SU3: Industrial uses PROC2: Use in closed, continuous process with occasional controlled exposure. PROC3: Use in closed batch process (synthesis or formulation).
Operational conditions	
Concentration of the substance	formaldehyde Content: >= 0 % - <= 5 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	14 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 90 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Exposure estimate and reference to its source	
PROC2, PROC3	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally., ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates.
	Worker - dermal, long-term - systemic
Exposure estimate	< 0.1 mg/kg bw/day
Risk Characterization Ratio (RCR)	< 0.01
PROC2	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.06 mg/m ³
Risk Characterization Ratio (RCR)	< 0.13
	The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.
PROC3	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.

	Worker - inhalative, long-term - systemic
Exposure estimate	0.156 mg/m ³
Risk Characterization Ratio (RCR)	0.31
	The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.
PROC2, PROC3	
Assessment method	Qualitative assessment
	Worker - dermal
	The use is assessed to be safe.
PROC2, PROC3	
Assessment method	Qualitative assessment
	Worker - contact with eyes
	The use is assessed to be safe.
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

2.9 Contributing scenario (9) controlling worker exposure	
Use descriptors covered	SU3: Industrial uses PROC3: Use in closed batch process (synthesis or formulation). PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises.
Operational conditions	
Concentration of the substance	formaldehyde Content: >= 0 % - <= 2.5 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	14 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 90 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Exposure estimate and reference to its source	
PROC3, PROC4	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally., ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates.
	Worker - dermal, long-term - systemic
Exposure estimate	< 0.1 mg/kg bw/day
Risk Characterization Ratio (RCR)	< 0.01
PROC3	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.078 mg/m ³
Risk Characterization Ratio (RCR)	< 0.16
	The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.

PROC4	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.063 mg/m ³
Risk Characterization Ratio (RCR)	0.13
	The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.
PROC3, PROC4	
Assessment method	Qualitative assessment
	Worker - dermal
	The use is assessed to be safe.
PROC3, PROC4	
Assessment method	Qualitative assessment
	Worker - contact with eyes
	The use is assessed to be safe.
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

2.10 Contributing scenario (10) controlling worker exposure	
Use descriptors covered	SU3: Industrial uses PROC3: Use in closed batch process (synthesis or formulation). PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises.
Operational conditions	
Concentration of the substance	formaldehyde Content: >= 0 % - <= 1.5 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	14 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Exposure estimate and reference to its source	
PROC3, PROC4	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - systemic
Exposure estimate	< 0.1 mg/kg bw/day
Risk Characterization Ratio (RCR)	< 0.01
PROC3	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.469 mg/m ³
Risk Characterization Ratio (RCR)	0.94
	The short-term exposure value corresponds to the long-term value

	multiplied by a factor of 2.
PROC4	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.375 mg/m ³
Risk Characterization Ratio (RCR)	0.75
	The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.
PROC3, PROC4	
Assessment method	Qualitative assessment
	Worker - dermal
	The use is assessed to be safe.
PROC3, PROC4	
Assessment method	Qualitative assessment
	Worker - contact with eyes
	The use is assessed to be safe.
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

2.11 Contributing scenario (11) controlling worker exposure	
Use descriptors covered	SU3: Industrial uses 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).
Operational conditions	
Concentration of the substance	formaldehyde Content: >= 0 % - <= 5 %
Physical state	Liquid, high fugacity
Vapour pressure of the substance during use	14 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 90 %
Use suitable eye protection.	Effectiveness: 90 %
Exposure estimate and reference to its source	
PROC4, PROC5	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally., ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates.
	Worker - dermal, long-term - systemic
Exposure estimate	< 0.1 mg/kg bw/day
Risk Characterization Ratio (RCR)	< 0.01
PROC4	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic

Exposure estimate	0.125 mg/m ³
Risk Characterization Ratio (RCR)	0.25
	The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.
PROC5	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.313 mg/m ³
Risk Characterization Ratio (RCR)	0.63
	The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.
PROC4, PROC5	
Assessment method	Qualitative assessment
	Worker - dermal
	The use is assessed to be safe.
PROC4, PROC5	
Assessment method	Qualitative assessment
	Worker - contact with eyes
	The use is assessed to be safe.
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

2.12 Contributing scenario (12) controlling worker exposure	
Use descriptors covered	SU3: Industrial uses 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
Operational conditions	
Concentration of the substance	formaldehyde Content: >= 0 % - <= 2.5 %
Physical state	Liquid, high fugacity
Vapour pressure of the substance during use	14 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 90 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally., ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates.
	Worker - dermal, long-term - systemic
Exposure estimate	< 0.1 mg/kg bw/day
Risk Characterization Ratio (RCR)	< 0.01

Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
Exposure estimate	Worker - inhalative, long-term - systemic 0.156 mg/m ³
Risk Characterization Ratio (RCR)	0.31
	The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.
Assessment method	Qualitative assessment
	Worker - dermal
	The use is assessed to be safe.
Assessment method	Qualitative assessment
	Worker - contact with eyes
	The use is assessed to be safe.
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

2.13 Contributing scenario (13) controlling worker exposure	
Use descriptors covered	SU3: Industrial uses 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
Operational conditions	
Concentration of the substance	formaldehyde Content: >= 0 % - <= 1.5 %
Physical state	Liquid, high fugacity
Vapour pressure of the substance during use	14 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 90 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally., ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates.
	Worker - dermal, long-term - systemic
Exposure estimate	< 0.1 mg/kg bw/day
Risk Characterization Ratio (RCR)	< 0.01
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.094 mg/m ³
Risk Characterization Ratio (RCR)	0.19
	The short-term exposure value corresponds to the long-term value

	multiplied by a factor of 2.
Assessment method	Qualitative assessment
	Worker - dermal
	The use is assessed to be safe.
Assessment method	Qualitative assessment
	Worker - contact with eyes
	The use is assessed to be safe.
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

2.14 Contributing scenario (14) controlling worker exposure	
Use descriptors covered	SU3: Industrial uses PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). PROC6: Calendring operations PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
Operational conditions	
Concentration of the substance	formaldehyde Content: $\geq 0\%$ - $\leq 1\%$
Physical state	Liquid, high fugacity
Vapour pressure of the substance during use	14 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 90 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates.
	Worker - dermal, long-term - systemic
Exposure estimate	< 0.1 mg/kg bw/day
Risk Characterization Ratio (RCR)	< 0.01
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.063 mg/m ³
Risk Characterization Ratio (RCR)	0.13
	The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.
Assessment method	Qualitative assessment
	Worker - dermal
	The use is assessed to be safe.
Assessment method	Qualitative assessment
	Worker - contact with eyes
	The use is assessed to be safe.

Guidance to Downstream Users
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)

2.15 Contributing scenario (15) controlling worker exposure

Use descriptors covered	SU3: Industrial uses PROC6: Calendering operations 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 tableting, compression, extrusion, pelettisation. PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
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Operational conditions

Concentration of the substance	formaldehyde Content: $\geq 0\%$ - $\leq 5\%$
Physical state	Liquid, high fugacity
Vapour pressure of the substance during use	14 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor

Risk Management Measures

Local exhaust ventilation	Effectiveness: 90 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %

Exposure estimate and reference to its source

Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates.
	Worker - dermal, long-term - systemic
Exposure estimate	< 0.1 mg/kg bw/day
Risk Characterization Ratio (RCR)	< 0.01
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.313 mg/m ³
Risk Characterization Ratio (RCR)	0.63
	The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.
Assessment method	Qualitative assessment
	Worker - dermal
	The use is assessed to be safe.
Assessment method	Qualitative assessment
	Worker - contact with eyes
	The use is assessed to be safe.

Guidance to Downstream Users

For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)

2.16 Contributing scenario (16) controlling worker exposure

Use descriptors covered	SU3: Industrial uses PROC7: Industrial spraying Aerosol formation is not covered within the CES
Operational conditions	
Concentration of the substance	formaldehyde Content: $\geq 0\%$ - $\leq 5\%$
Physical state	Liquid, high fugacity
Vapour pressure of the substance during use	14 hPa
Duration and Frequency of activity	60 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 95 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally., ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates.
	Worker - dermal, long-term - systemic
Exposure estimate	0.1 mg/kg bw/day
Risk Characterization Ratio (RCR)	< 0.01
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.156 mg/m ³
Risk Characterization Ratio (RCR)	0.31
Assessment method	Qualitative assessment
	Worker - dermal
	The use is assessed to be safe.
Assessment method	Qualitative assessment
	Worker - contact with eyes
	The use is assessed to be safe.
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, short-term - systemic
Exposure estimate	0.78 mg/m ³
Risk Characterization Ratio (RCR)	0.78
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

2.17 Contributing scenario (17) controlling worker exposure	
Use descriptors covered	SU3: Industrial uses PROC7: Industrial spraying Aerosol formation is not covered within the CES
Operational conditions	
Concentration of the substance	formaldehyde

	Content: $\geq 0\%$ - $\leq 2.5\%$
Physical state	Liquid, high fugacity
Vapour pressure of the substance during use	14 hPa
Duration and Frequency of activity	240 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 95 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally., ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates.
	Worker - dermal, long-term - systemic
Exposure estimate	< 0.1 mg/kg bw/day
Risk Characterization Ratio (RCR)	< 0.01
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.235 mg/m ³
Risk Characterization Ratio (RCR)	0.47
Assessment method	Qualitative assessment
	Worker - dermal
	The use is assessed to be safe.
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, short-term - systemic
Exposure estimate	0.78 mg/m ³
Risk Characterization Ratio (RCR)	0.78
Assessment method	Qualitative assessment
	Worker - contact with eyes
	The use is assessed to be safe.
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

2.18 Contributing scenario (18) controlling worker exposure	
Use descriptors covered	SU3: Industrial uses PROC7: Industrial spraying Aerosol formation is not covered within the CES
Operational conditions	
Concentration of the substance	formaldehyde Content: $\geq 0\%$ - $\leq 1.5\%$
Physical state	Liquid, high fugacity
Vapour pressure of the substance during use	14 hPa
Duration and Frequency of activity	480 min 5 days per week

Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 95 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates.
	Worker - dermal, long-term - systemic
Exposure estimate	< 0.1 mg/kg bw/day
Risk Characterization Ratio (RCR)	< 0.01
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.230 mg/m ³
Risk Characterization Ratio (RCR)	0.47
	The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.
Assessment method	Qualitative assessment
	Worker - dermal
	The use is assessed to be safe.
Assessment method	Qualitative assessment
	Worker - contact with eyes
	The use is assessed to be safe.
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

2.19 Contributing scenario (19) controlling worker exposure	
Use descriptors covered	SU3: Industrial uses PROC7: Industrial spraying Aerosol formation is not covered within the CES
Operational conditions	
Concentration of the substance	formaldehyde Content: >= 0 % - <= 1 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	14 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 95 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach, ECETOC TRA modified version: Use of gloves has

	been considered additionally, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates.
	Worker - dermal, long-term - systemic
Exposure estimate	< 0.1 mg/kg bw/day
Risk Characterization Ratio (RCR)	< 0.01
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.156 mg/m ³
Risk Characterization Ratio (RCR)	0.31
	The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.
Assessment method	Qualitative assessment
	Worker - dermal
	The use is assessed to be safe.
Assessment method	Qualitative assessment
	Worker - contact with eyes
	The use is assessed to be safe.
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

2.20 Contributing scenario (20) controlling worker exposure	
Use descriptors covered	SU3: Industrial uses PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities Submerged loading PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Operational conditions	
Concentration of the substance	formaldehyde Content: >= 1 % - <= 5 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	14 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Outdoor
Risk Management Measures	
Vapour recovery system	Effectiveness: 80 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Exposure estimate and reference to its source	
Assessment method	Qualitative assessment
	Worker - all relevant routes
	The use is assessed to be safe., In case the identified operational conditions and risk management measures are applied:
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

2.21 Contributing scenario (21) controlling worker exposure	
Use descriptors covered	SU3: Industrial uses

	PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Operational conditions	
Concentration of the substance	formaldehyde Content: $\geq 0\%$ - $\leq 5\%$
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	14 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 97 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally., ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates.
	Worker - dermal, long-term - systemic
Exposure estimate	< 0.1 mg/kg bw/day
Risk Characterization Ratio (RCR)	< 0.01
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.094 mg/m ³
Risk Characterization Ratio (RCR)	0.19
	The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.
Assessment method	Qualitative assessment
	Worker - dermal
	The use is assessed to be safe.
Assessment method	Qualitative assessment
	Worker - contact with eyes
	The use is assessed to be safe.
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

2.22 Contributing scenario (22) controlling worker exposure	
Use descriptors covered	SU3: Industrial uses PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Operational conditions	
Concentration of the substance	formaldehyde Content: $\geq 0\%$ - $\leq 2.5\%$
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	14 hPa

Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 97 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates.
	Worker - dermal, long-term - systemic
Exposure estimate	< 0.1 mg/kg bw/day
Risk Characterization Ratio (RCR)	< 0.01
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.047 mg/m ³
Risk Characterization Ratio (RCR)	0.09
	The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.
Assessment method	Qualitative assessment
	Worker - dermal
	The use is assessed to be safe.
Assessment method	Qualitative assessment
	Worker - contact with eyes
	The use is assessed to be safe.
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

2.23 Contributing scenario (23) controlling worker exposure	
Use descriptors covered	SU3: Industrial uses PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Operational conditions	
Concentration of the substance	formaldehyde Content: >= 0 % - <= 1.5 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	14 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 97 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified

	version: The concentration of the substance has been considered using a linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates.
	Worker - dermal, long-term - systemic
Exposure estimate	< 0.1 mg/kg bw/day
Risk Characterization Ratio (RCR)	< 0.01
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.028 mg/m ³
Risk Characterization Ratio (RCR)	0.06
	The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.
Assessment method	Qualitative assessment
	Worker - dermal
	The use is assessed to be safe.
Assessment method	Qualitative assessment
	Worker - contact with eyes
	The use is assessed to be safe.
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

2.24 Contributing scenario (24) controlling worker exposure	
Use descriptors covered	SU3: Industrial uses PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Operational conditions	
Concentration of the substance	formaldehyde Content: >= 0 % - <= 1 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	14 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 97 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates.
	Worker - dermal, long-term - systemic
Exposure estimate	< 0.1 mg/kg bw/day
Risk Characterization Ratio (RCR)	< 0.01
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using

	a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.019 mg/m ³
Risk Characterization Ratio (RCR)	0.04
	The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.
Assessment method	Qualitative assessment
	Worker - dermal
	The use is assessed to be safe.
Assessment method	Qualitative assessment
	Worker - contact with eyes
	The use is assessed to be safe.
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

2.25 Contributing scenario (25) controlling worker exposure	
Use descriptors covered	SU3: Industrial uses 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 tableting, compression, extrusion, pelettisation.
Operational conditions	
Concentration of the substance	formaldehyde Content: >= 0 % - <= 2.5 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	14 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 90 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally., ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates.
	Worker - dermal, long-term - systemic
Exposure estimate	< 0.1 mg/kg bw/day
Risk Characterization Ratio (RCR)	< 0.01
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.156 mg/m ³
Risk Characterization Ratio (RCR)	0.31
	The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.
Assessment method	Qualitative assessment

	Worker - dermal
	The use is assessed to be safe.
Assessment method	Qualitative assessment
	Worker - contact with eyes
	The use is assessed to be safe.
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

2.26 Contributing scenario (26) controlling worker exposure	
Use descriptors covered	SU3: Industrial uses 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 tableting, compression, extrusion, pelettisation.
Operational conditions	
Concentration of the substance	formaldehyde Content: $\geq 0\%$ - $\leq 1.5\%$
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	14 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 90 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates.
	Worker - dermal, long-term - systemic
Exposure estimate	< 0.1 mg/kg bw/day
Risk Characterization Ratio (RCR)	< 0.01
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.094 mg/m ³
Risk Characterization Ratio (RCR)	0.19
	The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.
Assessment method	Qualitative assessment
	Worker - dermal
	The use is assessed to be safe.
Assessment method	Qualitative assessment
	Worker - contact with eyes
	The use is assessed to be safe.
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

estimates)

2.27 Contributing scenario (27) controlling worker exposure

Use descriptors covered	SU3: Industrial uses 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 tableting, compression, extrusion, pelettisation.
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Operational conditions

Concentration of the substance	formaldehyde Content: >= 0 % - <= 1 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	14 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor

Risk Management Measures

Local exhaust ventilation	Effectiveness: 90 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %

Exposure estimate and reference to its source

Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates.
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Worker - dermal, long-term - systemic

Exposure estimate	< 0.1 mg/kg bw/day
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Risk Characterization Ratio (RCR)	< 0.01
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Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
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Worker - inhalative, long-term - systemic

Exposure estimate	0.063 mg/m ³
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Risk Characterization Ratio (RCR)	0.13
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The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.

Assessment method	Qualitative assessment
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Worker - dermal

The use is assessed to be safe.

Assessment method	Qualitative assessment
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Worker - contact with eyes

The use is assessed to be safe.

Guidance to Downstream Users

For scaling see: <http://www.ecetoc.org/tra> Please note that a modified version has been used (see exposure estimates)

2.28 Contributing scenario (28) controlling worker exposure

Use descriptors covered	SU3: Industrial uses PROC16: Using material as fuel sources, limited exposure to unburned product to be expected.
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Operational conditions	
Concentration of the substance	formaldehyde Content: $\geq 0\%$ - $\leq 5\%$
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	14 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Perform task in a fume cupboard.	
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - systemic
Exposure estimate	< 0.1 mg/kg bw/day
Risk Characterization Ratio (RCR)	< 0.01
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.313 mg/m ³
Risk Characterization Ratio (RCR)	0.63
	The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.
Assessment method	Qualitative assessment
	Worker - dermal
	The use is assessed to be safe.
Assessment method	Qualitative assessment
	Worker - contact with eyes
	The use is assessed to be safe.
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

2.29 Contributing scenario (29) controlling worker exposure	
Use descriptors covered	SU3: Industrial uses PROC16: Using material as fuel sources, limited exposure to unburned product to be expected.
Operational conditions	
Concentration of the substance	formaldehyde Content: $\geq 0\%$ - $\leq 2.5\%$
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	14 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Wear chemically resistant gloves in	Effectiveness: 95 %

combination with specific activity training	
Perform task in a fume cupboard.	
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - systemic
Exposure estimate	< 0.1 mg/kg bw/day
Risk Characterization Ratio (RCR)	< 0.01
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.156 mg/m ³
Risk Characterization Ratio (RCR)	0.31
	The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.
Assessment method	Qualitative assessment
	Worker - dermal
	The use is assessed to be safe.
Assessment method	Qualitative assessment
	Worker - contact with eyes
	The use is assessed to be safe.
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

2.30 Contributing scenario (30) controlling worker exposure	
Use descriptors covered	SU3: Industrial uses PROC16: Using material as fuel sources, limited exposure to unburned product to be expected.
Operational conditions	
Concentration of the substance	formaldehyde Content: >= 0 % - <= 1.5 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	14 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Perform task in a fume cupboard.	
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - systemic
Exposure estimate	< 0.1 mg/kg bw/day
Risk Characterization Ratio (RCR)	< 0.01
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified

	version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.094 mg/m ³
Risk Characterization Ratio (RCR)	0.19
	The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.
Assessment method	Qualitative assessment
	Worker - dermal
	The use is assessed to be safe.
Assessment method	Qualitative assessment
	Worker - contact with eyes
	The use is assessed to be safe.
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

2.31 Contributing scenario (31) controlling worker exposure	
Use descriptors covered	SU3: Industrial uses PROC21: Low energy manipulation of substances bound in materials and/or articles PROC22: Potentially closed processing operations (with minerals) at elevated temperature PROC23: Open processing and transfer operations (with minerals) at elevated temperature
Operational conditions	
Concentration of the substance	formaldehyde Content: >= 0 % - <= 5 %
Physical state	Solid
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
	Operation is carried out at ambient or elevated temperatures
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 90 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally., ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates.
	Worker - dermal, long-term - systemic
Exposure estimate	< 0.1 mg/kg bw/day
Risk Characterization Ratio (RCR)	< 0.01
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.05 mg/m ³
Risk Characterization Ratio (RCR)	0.1
	The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.
Assessment method	Qualitative assessment
	Worker - dermal

	The use is assessed to be safe.
Assessment method	Qualitative assessment
	Worker - contact with eyes
	The use is assessed to be safe.
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

2.32 Contributing scenario (32) controlling worker exposure	
Use descriptors covered	SU3: Industrial uses PROC21: Low energy manipulation of substances bound in materials and/or articles PROC22: Potentially closed processing operations (with minerals) at elevated temperature PROC23: Open processing and transfer operations (with minerals) at elevated temperature PROC24: High (mechanical) energy work-up of substances bound in materials and/or articles PROC25: Other hot work operations with metals
Operational conditions	
Concentration of the substance	formaldehyde Content: $\geq 0\%$ - $\leq 2.5\%$
Physical state	Solid
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
	Operation is carried out at ambient or elevated temperatures
Risk Management Measures	
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Exposure estimate and reference to its source	
PROC21, PROC22, PROC23, PROC24, PROC25	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - systemic
Exposure estimate	$< 0.1 \text{ mg/kg bw/day}$
Risk Characterization Ratio (RCR)	< 0.01
PROC21, PROC22, PROC23, PROC24	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.25 mg/m^3
Risk Characterization Ratio (RCR)	0.5
	The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.
PROC21, PROC22, PROC23, PROC24, PROC25	
Assessment method	Qualitative assessment
	Worker - dermal
	The use is assessed to be safe.
PROC21, PROC22, PROC23, PROC24, PROC25	
Assessment method	Qualitative assessment
	Worker - contact with eyes
	The use is assessed to be safe.
PROC25	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified

	version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.125 mg/m ³
Risk Characterization Ratio (RCR)	0.25
	The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

2.33 Contributing scenario (33) controlling worker exposure	
Use descriptors covered	SU3: Industrial uses PROC21: Low energy manipulation of substances bound in materials and/or articles PROC22: Potentially closed processing operations (with minerals) at elevated temperature PROC23: Open processing and transfer operations (with minerals) at elevated temperature PROC24: High (mechanical) energy work-up of substances bound in materials and/or articles PROC25: Other hot work operations with metals
Operational conditions	
Concentration of the substance	formaldehyde Content: >= 0 % - <= 1.5 %
Physical state	Solid
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
	Operation is carried out at ambient or elevated temperatures
Risk Management Measures	
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Exposure estimate and reference to its source	
PROC21, PROC22, PROC23, PROC24, PROC25	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - systemic
Exposure estimate	< 0.1 mg/kg bw/day
Risk Characterization Ratio (RCR)	< 0.01
PROC21, PROC22, PROC23, PROC24	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.15 mg/m ³
Risk Characterization Ratio (RCR)	0.3
	The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.
PROC21, PROC22, PROC23, PROC24, PROC25	
Assessment method	Qualitative assessment
	Worker - dermal
	The use is assessed to be safe.
PROC21, PROC22, PROC23, PROC24, PROC25	
Assessment method	Qualitative assessment
	Worker - contact with eyes
	The use is assessed to be safe.

PROC25	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.075 mg/m ³
Risk Characterization Ratio (RCR)	0.15
	The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

2.34 Contributing scenario (34) controlling worker exposure	
Use descriptors covered	SU3: Industrial uses PROC24: High (mechanical) energy work-up of substances bound in materials and/or articles
Operational conditions	
Concentration of the substance	formaldehyde Content: >= 0 % - <= 5 %
Physical state	Solid
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
	Operation is carried out at ambient or elevated temperatures
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 90 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally., ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates.
	Worker - dermal, long-term - systemic
Exposure estimate	< 0.1 mg/kg bw/day
Risk Characterization Ratio (RCR)	< 0.01
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.10 mg/m ³
Risk Characterization Ratio (RCR)	0.2
	The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.
Assessment method	Qualitative assessment
	Worker - dermal
	The use is assessed to be safe.
Assessment method	Qualitative assessment
	Worker - contact with eyes
	The use is assessed to be safe.
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

estimates)

2.35 Contributing scenario (35) controlling worker exposure	
Use descriptors covered	SU3: Industrial uses PROC24: High (mechanical) energy work-up of substances bound in materials and/or articles
Operational conditions	
Concentration of the substance	formaldehyde Content: $\geq 0\%$ - $\leq 1\%$
Physical state	Solid
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
	Operation is carried out at ambient or elevated temperatures
Risk Management Measures	
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - systemic
Exposure estimate	< 0.1 mg/kg bw/day
Risk Characterization Ratio (RCR)	< 0.01
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.10 mg/m ³
Risk Characterization Ratio (RCR)	0.2
	The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.
Assessment method	Qualitative assessment
	Worker - dermal
	The use is assessed to be safe.
Assessment method	Qualitative assessment
	Worker - contact with eyes
	The use is assessed to be safe.
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

2.36 Contributing scenario (36) controlling worker exposure	
Use descriptors covered	SU3: Industrial uses PROC25: Other hot work operations with metals
Operational conditions	
Concentration of the substance	formaldehyde Content: $\geq 0\%$ - $\leq 5\%$
Physical state	Solid
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
	Operation is carried out at ambient or elevated temperatures

Risk Management Measures	
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - systemic
Exposure estimate	< 0.1 mg/kg bw/day
Risk Characterization Ratio (RCR)	< 0.01
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.25 mg/m ³
Risk Characterization Ratio (RCR)	0.5
	The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.
Assessment method	Qualitative assessment
	Worker - dermal
	The use is assessed to be safe.
Assessment method	Qualitative assessment
	Worker - contact with eyes
	The use is assessed to be safe.
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

3. Short title of exposure scenario (ES 3) - Professional use of products containing formaldehyde up to 1.5%: adhesives, foams, coatings, firelighters and cleaning agents

Use descriptors related to the life cycle stage	Sector of end use: SU22; Process category: PROC 5/8a/8b/10/11/13/15/16/19/21/22/23/24/25 Chemical product category: PC8/9a/39/13/31/35 Environmental release category: ERC/2/3/5/8a/8b/8c/8d/8f
Name of contributing environmental scenario (1) and corresponding ERC	<ol style="list-style-type: none"> 1 Formulation of mixture (ERC2) 2 Formulation in materials (ERC3) 3 Industrial use resulting in inclusion into or onto a matrix (ERC5) 4 Wide dispersive indoor use of processing aids in open systems (ERC8a) 5 Wide dispersive indoor use of reactive substances in open systems (ERC8b) 6 Wide dispersive indoor use resulting in inclusion into or onto a matrix (ERC8c) 7 Wide dispersive outdoor use of processing aids in open systems (ERC8d) 8 Wide dispersive outdoor use resulting in inclusion into or onto a matrix (ERC8f)
List of names of contributing worker scenarios (2) and corresponding PROC	<ol style="list-style-type: none"> 1 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) (<i>PROC5</i>) 2 Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (<i>PROC8a</i>) 3 Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (<i>PROC8b</i>) 4 Roller application and brushing (<i>PROC10</i>) 5 Non industrial spraying (<i>PROC11</i>) 6 Treatment of articles by dipping and pouring (<i>PROC13</i>) 7 Use as laboratory reagent (<i>PROC15</i>) 8 Using material as fuel sources, limited exposure to unburned to be expected (<i>PROC16</i>) 9 Hand-mixing with intimate contact and only PPE available (<i>PROC19</i>) 10 Low energy manipulation of substances bound in materials and/or articles (<i>PROC21</i>) 11 Potentially closed processing with minerals/metals at elevated temperature (<i>PROC22</i>) Industrial setting 12 Open processing and transfer with minerals/ metals at elevated temperature (<i>PROC23</i>) 13 High (mechanical) energy work- up of substances bound in materials and/or articles (<i>PROC24</i>) 14 Other hot work operations with metals (<i>PROC25</i>)
List of names of corresponding PC	<ol style="list-style-type: none"> 1. Biocide products (PC8) 2. Coating and paints, thinners, paint removal (PC9a) 3. Fillers, putties, plasters, modelling clay (PC9b) 4. Finger paints (PC9c) 5. Fuels (PC13) 6. Polishes and wax blends (PC31) 7. Washing and cleaning products (including solvent based products) (PC35)

	8. Cosmetics, personal care products (PC39)
2. Contributing scenario controlling environmental exposure	
Formulation of mixture (ERC2); Formulation in materials (ERC3); Industrial use resulting in inclusion into or onto a matrix (ERC5); Wide dispersive indoor use of processing aids in open systems (ERC8a); Wide dispersive indoor use of reactive substances in open systems (ERC8b); Wide dispersive indoor use resulting in inclusion into or onto a matrix (ERC8c); Wide dispersive outdoor use of processing aids in open systems (ERC8d); Wide dispersive outdoor use resulting in inclusion into or onto a matrix (ERC8f)	
An environmental assessment has not been performed as the product does not meet the criteria for being classified.	

2.1 Contributing scenario (1) controlling worker exposure	
Use descriptors covered	SU22: Professional uses PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact).
Operational conditions	
Concentration of the substance	formaldehyde Content: $\geq 0\%$ - $\leq 1.5\%$
Physical state	Liquid, high fugacity
Vapour pressure of the substance during use	14 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Wear a half face respirator conforming to EN140 Type A filter or better.	Effectiveness: 90 %
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - systemic
Exposure estimate	< 0.1 mg/kg bw/day
Risk Characterization Ratio (RCR)	< 0.01
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.188 mg/m ³
Risk Characterization Ratio (RCR)	0.38
	The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.
Assessment method	Qualitative assessment
	Worker - dermal
	The use is assessed to be safe.
Assessment method	Qualitative assessment
	Worker - contact with eyes
	The use is assessed to be safe.
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

2.2 Contributing scenario (2) controlling worker exposure	
Use descriptors covered	SU3: Industrial uses PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Operational conditions	
Concentration of the substance	formaldehyde Content: $\geq 0\%$ - $\leq 1.5\%$
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	14 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 90 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally., ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates.
	Worker - dermal, long-term - systemic
Exposure estimate	< 0.1 mg/kg bw/day
Risk Characterization Ratio (RCR)	< 0.01
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.094 mg/m ³
Risk Characterization Ratio (RCR)	0.19
	The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.
Assessment method	Qualitative assessment
	Worker - dermal
	The use is assessed to be safe.
Assessment method	Qualitative assessment
	Worker - contact with eyes
	The use is assessed to be safe.
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

2.3 Contributing scenario (3) controlling worker exposure	
Use descriptors covered	SU3: Industrial uses PROC11: Non industrial spraying Aerosol formation is not covered within the CES
Operational conditions	
Concentration of the substance	formaldehyde Content: $\geq 0\%$ - $\leq 1.5\%$

Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	14 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 90 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Wear a half face respirator conforming to EN140 Type A filter or better.	Effectiveness: 90 %
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates.
	Worker - dermal, long-term - systemic
Exposure estimate	< 0.1 mg/kg bw/day
Risk Characterization Ratio (RCR)	< 0.01
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.113 mg/m ³
Risk Characterization Ratio (RCR)	0.23
Assessment method	Qualitative assessment
	Worker - dermal
	The use is assessed to be safe.
Assessment method	Qualitative assessment
	Worker - contact with eyes
	The use is assessed to be safe.
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, short-term - systemic
Exposure estimate	0.38 mg/m ³
Risk Characterization Ratio (RCR)	0.38
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

2.4 Contributing scenario (4) controlling worker exposure	
Use descriptors covered	SU22: Professional uses PROC15: Use a laboratory reagent. PROC16: Using material as fuel sources, limited exposure to unburned product to be expected.
Operational conditions	
Concentration of the substance	formaldehyde Content: >= 0 % - <= 1.5 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	14 hPa
Duration and Frequency of activity	480 min 5 days per wee

Indoor/Outdoor	Indoor
Risk Management Measures	
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Perform task in a fume cupboard.	
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - systemic
Exposure estimate	< 0.1 mg/kg bw/day
Risk Characterization Ratio (RCR)	< 0.01
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.188 mg/m ³
Risk Characterization Ratio (RCR)	0.38
	The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.
Assessment method	Qualitative assessment
	Worker - dermal
	The use is assessed to be safe.
Assessment method	Qualitative assessment
	Worker - contact with eyes
	The use is assessed to be safe.
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

2.5 Contributing scenario (5) controlling worker exposure	
Use descriptors covered	SU3: Industrial uses PROC19: Hand-mixing with intimate contact and only PPE available.
Operational conditions	
Concentration of the substance	formaldehyde Content: >= 0 % - <= 1.5 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	14 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Perform task in a fume cupboard.	
Wear a half face respirator conforming to EN140 Type A filter or better.	Effectiveness: 90 %
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally.

	Worker - dermal, long-term - systemic
Exposure estimate	< 0.1 mg/kg bw/day
Risk Characterization Ratio (RCR)	< 0.01
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.113 mg/m ³
Risk Characterization Ratio (RCR)	0.23
Assessment method	Qualitative assessment
	Worker - dermal
Assessment method	The use is assessed to be safe.
	Qualitative assessment
	Worker - contact with eyes
Assessment method	The use is assessed to be safe.
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, short-term - systemic
Exposure estimate	0.38 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.38
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

2.6 Contributing scenario (6) controlling worker exposure	
Use descriptors covered	SU22: Professional uses PROC21: Low energy manipulation of substances bound in materials and/or articles PROC23: Open processing and transfer operations (with minerals) at elevated temperature PROC24: High (mechanical) energy work-up of substances bound in materials and/or articles PROC25: Other hot work operations with metals
Operational conditions	
Concentration of the substance	formaldehyde Content: >= 0 % - <= 1.5 %
Physical state	Solid
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
	Operation is carried out at ambient or elevated temperatures
Risk Management Measures	
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Exposure estimate and reference to its source	
PROC21, PROC23, PROC24, PROC25	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - systemic
Exposure estimate	< 0.1 mg/kg bw/day
Risk Characterization Ratio (RCR)	< 0.01
PROC21, PROC23, PROC24	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using

	a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.30 mg/m ³
Risk Characterization Ratio (RCR)	0.6
	The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.
PROC21, PROC23, PROC24, PROC25	
Assessment method	Qualitative assessment
	Worker - dermal
	The use is assessed to be safe.
PROC21, PROC23, PROC24, PROC25	
Assessment method	Qualitative assessment
	Worker - contact with eyes
	The use is assessed to be safe.
PROC25	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.15 mg/m ³
Risk Characterization Ratio (RCR)	0.3
	The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

4. Short title of exposure scenario (ES 4) - Professional use of products containing formaldehyde up to 1%: resins in wood applications (eg. glues)

Use descriptors related to the life cycle stage	Sector of end use: SU22 Process category: PROC 5/8a/8b/10/15 Product category: PC1 Environmental release category: ERC1/2/3/4/6a/6b/6c/6d/7 Article category: AC11
Name of contributing environmental scenario (1) and corresponding ERC	<ol style="list-style-type: none"> 1. Manufacture of substances(ERC1) 2. Formulation of mixture (ERC2) 3. Formulation in materials(ERC3) 4. Industrial use of processing aids in processes and products, not becoming part of articles (ERC4) 5. Industrial use resulting in manufacture of another substance (use of intermediates) (ERC6a) 6. Industrial use of reactive processing aids (ERC6b) 7. Industrial use of monomers for manufacture of thermoplastics (ERC6c) 8. Industrial use of process regulators for polymerization processes in production of resins, rubbers, polymers (ERC6d) 9. Industrial use of substances in closed systems (ERC7)
List of names of contributing worker scenarios (2) and corresponding PROC	<ol style="list-style-type: none"> 1. Mixing or blending in batch processes for formulation of mixture and articles (multistage and/or significant contact) (PROC5) 2. Transfer of substance or mixture (charging/discharging) from/to vessels/large containers at non-dedicated facilities (PROC8a) 3. Transfer of substance or mixture (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC8b) 4. Roller application or brushing (PROC10) 5. Use as laboratory reagent (PROC15)
List of names of corresponding PC	Adhesives, sealants (PC1)

2. Contributing scenario controlling environmental exposure

Manufacture of substances(ERC1); Formulation of mixture (ERC2); Formulation in materials(ERC3); Industrial use of processing aids in processes and products, not becoming part of articles (ERC4); Industrial use resulting in manufacture of another substance (use of intermediates) (ERC6a); Industrial use of reactive processing aids (ERC6b); Industrial use of monomers for manufacture of thermoplastics (ERC6c); Industrial use of process regulators for polymerization processes in production of resins, rubbers, polymers (ERC6d); Industrial use of substances in closed systems (ERC7)

An environmental assessment has not been performed as the substance does not meet the criteria for being classified as dangerous for the environment.

2.1 Contributing scenario (1) controlling worker exposure for:

Use descriptors covered	SU22: Professional uses PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). PROC10: Roller application or brushing PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
Operational conditions	
Concentration of the substance	formaldehyde Content: $\geq 0\%$ - $\leq 1\%$
Physical state	Liquid, high fugacity
Vapour pressure of the substance	14 hPa

during use	
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 80 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach. ECETOC TRA modified version: Use of gloves has been considered additionally., ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates.
	Worker - dermal, long-term - systemic
Exposure estimate	< 0.1 mg/kg bw/day
Risk Characterization Ratio (RCR)	< 0.01
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.25 mg/m ³
Risk Characterization Ratio (RCR)	0.5
	The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.
Assessment method	Qualitative assessment
	Worker - dermal
	The use is assessed to be safe.
Assessment method	Qualitative assessment
	Worker - contact with eyes
	The use is assessed to be safe.
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

2.2 Contributing scenario (2) controlling worker exposure for:	
Use descriptors covered	SU3: Industrial uses PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Operational conditions	
Concentration of the substance	formaldehyde Content: >= 0 % - <= 1 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	14 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 90 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Exposure estimate and reference to its source	

Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach. ECETOC TRA modified version: Use of gloves has been considered additionally. ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates.
	Worker - dermal, long-term - systemic
Exposure estimate	< 0.1 mg/kg bw/day
Risk Characterization Ratio (RCR)	< 0.01
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.063 mg/m ³
Risk Characterization Ratio (RCR)	0.13
	The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.
Assessment method	Qualitative assessment
	Worker - dermal
	The use is assessed to be safe
Assessment method	Qualitative assessment
	Worker - contact with eyes
	The use is assessed to be safe
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

2.3 Contributing scenario (3) controlling worker exposure for:	
Use descriptors covered	SU22: Professional uses PROC15: Use a laboratory reagent.
Operational conditions	
Concentration of the substance	formaldehyde Content: >= 0 % - <= 1 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	14 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Perform task in a fume cupboard.	
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach. ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - systemic
Exposure estimate	< 0.1 mg/kg bw/day
Risk Characterization Ratio (RCR)	< 0.01
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic

Exposure estimate	0.125 mg/m ³
Risk Characterization Ratio (RCR)	0.25
	The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.
Assessment method	Qualitative assessment
	Worker - dermal
	The use is assessed to be safe
Assessment method	Qualitative assessment
	Worker - contact with eyes
	The use is assessed to be safe
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

5. Short title of exposure scenario (ES 5) - Consumer use of formaldehyde based products: adhesives, coatings, firelighters and cleaning agents

Use descriptors related to the life cycle stage	Sector of end use: SU21 Chemical product category: PC1/3/8/9a/9b/9c/13/15/18/21/23/31/32/35/37/39 Environmental release category: ERC8a/8b/8c/8d/8f/10a/11a
Name of contributing environmental scenario (1) and corresponding ERC	<ol style="list-style-type: none"> 1. Wide dispersive indoor use of processing aids in open systems (<i>ERC8a</i>) 2. Wide dispersive indoor use of reactive substances in open systems (<i>ERC8b</i>) 3. Wide dispersive indoor use resulting in inclusion into or onto a matrix (<i>ERC8c</i>) 4. Wide dispersive outdoor use of processing aids in open systems (<i>ERC8d</i>) 5. Wide dispersive outdoor use resulting in inclusion into or onto a matrix (<i>ERC8f</i>) 6. Wide dispersive outdoor use of long-life articles and materials with low release (<i>ERC10a</i>) 7. Wide dispersive indoor use of long-life articles and materials with low release (<i>ERC11a</i>)
Списък с имена на съответните Категории на химическия продукт (<i>PC</i>)	<ol style="list-style-type: none"> 1. Adhesives, sealants (<i>PC1</i>) 2. Air care products (<i>PC3</i>) 3. Biocides products (<i>PC8</i>) 4. Coatings and paints, thinners, paint removers (<i>PC9a</i>) 5. Fillers, putties, plasters, modeling clay (<i>PC9b</i>) 6. Finger paints (<i>PC9c</i>) 7. Fuels (<i>PC13</i>) 8. Non-metal-surface treatment products (<i>PC15</i>) 9. Ink and toners (<i>PC18</i>) 10. Laboratory chemicals (<i>PC21</i>) 11. Leather tanning (<i>PC23</i>) 12. Polishes and wax blends (<i>PC31</i>) 13. Polymer preparations and compounds (<i>PC32</i>) 14. Washing and cleaning products (including solvent based products) (<i>PC35</i>) 15. Water treatment chemicals (<i>PC37</i>) 16. Cosmetics, personal care products (<i>PC39</i>)
In accordance to the Article 14 (2a-f) of the REACH Regulation (EC) No 1907/2006, exposure estimation and risk characterization needs not to be performed if the substance in a preparation is less than 0.1%.	