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# **SAFETY DATA SHEET**

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

# □ <u>V5</u> – amendments in this revision □

1.1 Product identifier			
Trade name	Formalin		
Synonyms	Formalin /37% solution of for	ormaldehyde/	
1.2 Relevant identified uses of the substa	nce or mixture and uses adv	ised against	
Relevant identified uses:	- monomer		
	- intermediate		
	Note: see section 16 for the annex	complete list of uses	covered by ES in provided
Uses advised against:	Not known		
	It is recommended that uses	be limited to those li	sted in section 16.
1.3 Details of the supplier of the safety da	ta sheet		
Manufacturer: Address: Tel.;fax: URL website: Email: Company e-mail for SDS  1.4 Emergency telephone number	NEOCHIM PLC East Industrial Zone, Himko 6403 Dimitrovgrad, Bulgaria +359 391 65 205; +359 391 http://www.neochim.bg neochim@neochim.bg pto@neochim.bg	a	
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
NEOCHIM PLC ( the information is available in Bulgarian, English and Turkish )	+359 2 809 20 30	24/24 h	7/7 d
SECTION 2: HAZARDS IDENTIFICA	ATION		
Physical and chemical hazards	Highly volatile liquid. Easily explosion and fire when mix v/v and upper explosion limit	k with air and has lo	



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Potential effects on health Toxic product. The risk depends on the level and on the duration of exposure.

Danger of absorption through the skin. Can cause irreversible damage. Skin contact:

Possible skin sensitivity.

Eye contact: The vapour causes redness, pain and blurred vision. Splashes may cause

irreversible eye damage (blindness).

Inflammation of the mucous membranes of the mouth, throat, oesophagus Ingestion:

and gastrointestinal tract. Possible irreversible damage. Risk of perforation of the oesophagus and stomach.

Inhalation: Possible irreversible damage. Inhalation can cause pulmonary oedema.

#### 2.1 Classification of the substance or mixture

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

Acute toxicity (oral), hazard category 3 (Acute Tox 3), H301

Acute toxicity (dermal), hazard category 3 (Acute Tox 3), H311

Acute toxicity (Inhalation - vapour), hazard category 3 (Acute Tox 3), H331

Skin corrosion/irritation, hazard category 1B, H314

Skin sensitizer, hazard category 1, H317

Carcinogenicity, hazard category 2, H351

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

T; R:23/24/25

C; R:34

R:43

Carcinogenicity, hazard category 3, R:40

## 2.1.3 Additional information

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

#### 2.2 Label elements

Hazard pictogram(s):

Labelling according to Regulation 1272/2008 (CLP)

Signal word		Danger
Hazard statement(s):	H301 H311 H314 H317 H331 H351	Toxic if swallowed. Toxic in contact with skin. Causes severe skin burns and eye damage. May cause an allergic skin reaction. Toxic if inhaled. Suspected of causing cancer if inhaled.



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December	D000	
Precautionary	P202	Do not handle until all safety precautions have been read and understood.
statement(s):	P280	Wear impervious chemical resistant protective gloves, protective clothing,
		protective goggles and gas filter.
	P301+P330+	IF SWALLOWED: rinse mouth. Do NOT induce vomiting. Immediately call
	P331	a POISON CENTER or doctor/physician.
	P303 + P361 +	IF ON SKIN (or hair): Remove/Take off immediately all contaminated
	P353	clothing. Rinse skin with water/shower.
	P308 + P313	IF exposed or concerned: Get medical advice/attention.
	P363	Wash contaminated clothing before reuse.
	P305 + P351 +	IF IN EYES: Rinse cautiously with water for several minutes. Remove
	P338	
		contact lenses, if present and easy to do. Continue rinsing.
	P304 + P340	IF INHALED: Remove to fresh air and keep at rest in a position
		comfortable for breathing.
	P405	Store locked up.
	P271	Use only outdoors or in a well-ventilated area.
	P410+403	
		Protect from sunlight. Store in a well-ventilated place.
	P411	Store at temperatures to 30°C up 50°C.
	P501	Dispose of contents/container in accordance with national and
		international regulations.
		international rogalizations.

# **SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS**

## 3.1 Substances

# 3.2 Mixtures - aqueous solution of formaldehyde

CAS №	EC №	Index №	RECH registration №	Content, % (w/w)	Name	Classification according to 67/548//EEC	Classifica tion accordin g to Regulatio n (EC) No 1272/200 8 (CLP)
50-00-0	200-001-8	605-001-00-5	01-2119488953-20-0017	37±0.5	formaldehyde	T; R23/24/25 C; R34 R43 Carc. Cat.3; R40	Acute tox. 3;H301 Acute tox. 3;H311 Acute tox. 3;H331 Sкіп corr. 1B; H314 Skіn. Sens. 1; H317 Carc. 2; H351





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	Specific Conc.	Specific
	Limits:	Conc.
	≥25 % <i>T</i> ;	Limits:
	R23/24/25	≥25 % Sĸii
	C; R34	corr. 1B
	≥5-<25.0	≥5-<25.0
	Xn; R20/21/22	Skin Irrit. 2
	Xi; R 36/37/38	
	≥0.2 R34	Eye Irrit. 2
		≥5.0 STO
		Single Exp
		3A
		≥0.2 Ski
		Sens.1

#### SECTION 4: FIRST- AID MEASURES

4.1 Description of first aid measure	scription of first aid measur	res
--------------------------------------	-------------------------------	-----

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:	Immediately remove contaminated clothing and wash affected skin area thoroughly with plenty of water for at least 15 minutes. Get medical advice/attention.
Ingestion:	Do NOT induce vomiting. If the person is conscious, dilute or deactivate ingested formaldehyde by giving water, activated charcoal or antidote. Keep warm and at rest. Obtain immediately medical attention.
Inhalation:	Remove the victim to the fresh air. If not breathing, give artificial respiration (Warning: may be dangerous to first responders, because inhaled material is toxic, infectious and corrosive). If breathing is difficult, give oxygen. Get medical attention.

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

	-
Acute effects	Pulmonary oedema
Delayed effects	Pulmonary oedema can appear later
= <b>y</b>	том от тементине о

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

Note to physician: Wash stomach with water and charcoal, antidotes, ammonium carbonate 2%, urea 20 g - orally twice at an interval of 30 minutes.

## **SECTION 5: FIRE - FIGHTING MEASURES**

## 5.1 Extinguishing media

Suitable:	Water spray, chemical foam, mechanical foam.
Not suitable:	not known
Tiot suitable.	not known

## 5.2 Special hazards arising from the substance or mixture

Flash point: 85° C. Highly volatile liquid easily released gas phase.

Evacuate personnel not engaged in fire fighting. Stop the leak if safely to do so then extinguish by type of materials that burn. Move containers filled with formalin from area. Keep containers cooled by spraying with large amounts of water from a safe distance.

# **Explosion:**



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Mixtures of formaldehyde and air in concentration limits of 7 - 73 % (v/v) are explosive. Containers may explode if involved in fire.

Hazardous combustion products: carbon dioxide, carbon oxide and formaldehyde.

Warning: may burn with an invisible flame (methyl alcohol).

## 5.3 Advice for firefighters

In the event of fire, wear a 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. Eliminate all possible sources of the fire and provide adequate ventilation. Isolate source of leak as quickly and safe to do so. Extension of announcement depends on released amount.

# ■ <u>V5</u> 6.1.1 For non-emergency personnel

Wear impervious chemical resistant protective gloves, protective clothing, protective goggles and gas filter.

## ■ V5 6.1.2 For emergency responders

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

■

#### 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 - collect the liquid in an appropriate container or absorb with inert material (eg dry sand, earth) and place in a chemical waste container. Collect large spills by pumping. Do not use combustible materials such as sawdust. Do not discharge into drains. Use water to disperse vapors, if expired or spilled material has not ignited.

#### 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 stores and work areas. Handle in accordance with good industrial hygiene and safety practice.

Protection against fire and explosion:

Take precautionary measures against static discharges. Vapours may form explosive mixture with air. Keep away from sources of ignition - No smoking.

## 7.2 Conditions for safe storage, including any incompatibilities

Store in a tightly closed container at temperatures from 30°C to 50°C. Protect from physical damage. Store in a cool, dry, well ventilated place away from an area where there is danger of fire. Preferred self-storage warehouse or separated by a wall. Separate from incompatible materials. Containers must be connected and grounded to remove the static electricity and prevent sparks.

In case of forming sludge of paraformaldehyde heat it up to 65°C without using open fire.

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.

■ <u>V5</u> Storage class: 6.1 A ■

## 7.2 Specific end use(s)

See exposure scenario(s) in the attachment to this safety data sheet.



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#### **SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION**

## 8.1 Control parameters

Regulated occupational exposure limit Workplace expos values: 8 hours - 2.5 mg

Workplace exposure limits according to EH40/2005 8 hours - 2.5 mg/m<sup>3</sup>

15 minutes - 2.5 mg/m<sup>3</sup>

Recommended occupational and consumer exposure limit values (following from the performed CSA)

# ■ V5 DNEL – Derived No Effect Level ■

	DN(M)ELs for workers		DN(M)ELs for consumers			rs		
Route of exposure	Acute effects local	Acute effects systemic	Chronic effects local	Chronic effects systemic	Acute effects local	Acute effects systemic	Chronic effects local	Chronic effects systemic
Oral		Not re	equired		No- threshold effect	No- threshold effect	No- threshold effect	4.1 mg/kg bw/d
Inhalation	1 mg/m <sup>3</sup> , 0.8 ppm	No- threshold effect	0.5 mg/m <sup>3</sup>	9 mg/m <sup>3</sup>	No- threshold effect	No- threshold effect	0.1 mg/m³	3.2 mg/m³
Dermal	No- threshold effect	No- threshold effect	0.037 mg/cm <sup>2</sup>	240 mg/kg bw/d	No- threshold effect	No- threshold effect	0.012 mg/cm <sup>2</sup>	102 mg/kg bw/d

## **PNEC - Predicted No Effect Concentration**

Components	PNEC
freshwater	0.47 mg/l
marine water	0.47 mg/l
intermittent releases	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

## 8.2 Exposure controls

# 8.2.1 Appropriate engineering controls

General or local exhaust ventilation to control exposure.

	·
Environmental exposure controls:	Dispose of rinse water in accordance with local and national regulations.
8.2.2 Personal protective equipment	······································
8.2.2.1 Eye and face protection	Tightly fitting safety goggles (splash goggles) (e.g. EN 166)
8.2.2.2 Skin protection	
Hand protection	Chemical resistant protective gloves (EN 374) Suitable materials also with prolonged, direct contact (Recommended: Protective index 6, corresponding > 480 minutes of permeation time





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	according to EN 374): butyl rubber (butyl) - 0.7 mm coating thickness nitrile rubber (NBR) - 0.4 mm coating thickness
Other skin protection	Chemical protective suit (e.g. according to EN 14605)
8.2.2.3 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.
8.2.2.4 Thermal hazards	■ <u>V5</u> Use appropriate thermal resistant clothing, if necessary ■

## 8.2.3 Environmental exposure control

See annex of this safety data sheet (exposure scenarios)

## **SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES**

## 9.1 Information on basic physical and chemical properties

Appearance:	Clear, colourless liquid
Odour:	Pungent odour
Melting/Freezing temperature:	-16 °C at 1013hPa (25% aqueous solution)
Boiling temperature:	98.9 - 99.4 °C at 1013.25 hPa (aqueous solution)
Flash-point:	79.4 °C ( 50% aqueous solution of formaldehyde, methanol 1%)
	85 °C (37% aqueous solution of formaldehyde, methanol 1%)
Flammability:	Highly flammable gas and not flammable aqueous solution when the formaldehyde content <45%.
Explosive properties:	No explosive properties
Oxidizing properties:	No oxidising properties
Vapour pressure:	1 hPa at 20 °C
Relative density (D4 (20)):	1.13 – 1.15 g/cm <sup>3</sup> at 18 °C (aqueous solution)
Solubility in water:	550 g/l at 20 °C
Partition coefficient n-octanol/water:	0.35 at 25 °C
Viscosity:	2.1 – 2.8 mPa at 20 °C
Auto ignition temperature:	430 °C at 1013 hPa
Surface tension:	Based on chemical structure, surface activity is not expected.

## 9.2 Other information

Not available

## **SECTION 10: STABILITY AND REACTIVITY**

## 10.1 Reactivity

Aqueous solutions of formaldehyde are corrosive to carbon steel, while vapours of formaldehyde are not.

## 10.2 Chemical stability

Stable under recommended storage and handling conditions (see section 7, handling and storage). Peroxides: The product does not incline for the formation of peroxide.

## 10.3 Possibility of hazardous reactions





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Reaction with peroxide, nitrogen dioxide and formic acid can cause an explosion (formaldehyde gas).

## 10.4 Conditions to avoid

Heat, flame, ignition sources and incompatible substances.

## 10.5 Incompatible materials

Incompatible with oxidizing agents and alkalis. Formaldehyde reacts explosively with nitrogen oxide in about 180 °C and it reacts violently with perchloric acid, mixtures of perchloric acid, aniline and nitromethane.

## 10.6 Hazardous decomposition product

Carbon dioxide, carbon monoxide and formaldehyde.

## **SECTION 11: TOXICOLOGICAL INFORMATION**

# 11.1 Information on toxicological effects

ACUTE TOXICITY	Toxic by inhalation, in contact with skin and if swallowed. The product has not been tested. The statement has been derived from the properties of the individual components.
Acute oral toxicity:	LD <sub>50</sub> : 460-830 mg/kg bw ;(rat)
Acute dermal toxicity:	LD50: 270 mg/kg (rabbit)
Acute inhalation toxicity:	LC <sub>50</sub> (4 h) rat = 588 mg/m³ = 490 ppm
	$LC_{50}$ (30 min) rat = 1000 mg/m <sup>3</sup> = 830 ppm
LOCAL EFFECTS	Depending 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

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 <sub>50</sub> : 41 mg/l (Brachydanio rerio)	96h LC <sub>50</sub> : 41 mg/l	achydanio rerio)
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Aquatic invertebrates:	24h EC <sub>50</sub> : 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 <sub>ow</sub> ):	Because of the n-octanol/water distribution coefficient (log Pow) accumulation in organisms is not to be expected.
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.

## Additional information:

Adsorbable organically-bound halogen (AOX):

This product contains no organically-bound halogen.

## Other ecotoxicological advice:

The inhibition of the degradation activity of activated sludge is not anticipated when introduced to biological treatment plants in appropriate low concentrations.

#### **SECTION 13: DISPOSAL CONSIDERATIONS**

Contents/container to be transferred to the licensed disposal companies

# **SECTION 14: TRANSPORT INFORMATION**





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**Land transport** 

ADR

Hazard class: 8
Packing group: III

ID number: UN 2209

Hazard label: 8

Proper shipping name: FORMALDEHYDE SOLUTION

RID

Hazard class: 8
Packing group: III

ID number: UN 2209

Hazard label: 8

Proper shipping name: FORMALDEHYDE SOLUTION

**Inland waterway transport** 

**ADN** 

Hazard class: 8 Packing group: III

ID number: UN 2209

Hazard label: 8

Proper shipping name: FORMALDEHYDE SOLUTION

Sea transport

**IMDG** 

Hazard class: 8
Packing group: III
ID number: UN 2209
Hazard label: 8

Marine pollutant: NO

Proper shipping name: FORMALDEHYDE SOLUTION

Air transport

IATA/ICAO

Hazard class: 8
Packing group: III
ID number: UN 2209

Hazard label:

Proper shipping name: FORMALDEHYDE SOLUTION

**SECTION 15: REGULATORY INFORMATION** 

15.1 Safety, health and environmental	Regulation EC 1907/2006 (REACH), Directive 67/548/EEC and
regulation/legislation specific for the substance or mixture:	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 this product.

**16. OTHER INFORMATION** 



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# Full texts of all R-phrases and H-hazards used in Sections 2.1 and 3

## 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.

#### 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.

# According to Directive 67/548/EEC or 1999/45/EC

T- Toxic

C- Corrosive

Carc. Cat. 3 - Category 3: Substances which cause concern for man due to possible carcinogenic effects, however, since sufficient information is not available a satisfactory assessment cannot be made.

# **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<sub>X</sub> - lethal concentration

EC<sub>X</sub> - effective concentration

LD<sub>x</sub> - lethal dose

## List of attached exposure scenarios

ES1: Manufacturing of formaldehyde and an aqueous solution of formaldehyde. Use as an intermediate product, including as a monomer

ES2: Use in/as formulation

ES 3-1: Production of fertilizers



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- ES 3-2: Industrial use of formaldehyde based products: production of foams, use in adhesives, production of bonded particulates (casting, molding), use in coatings, rubber production and processing, production of firelighters, use in leather tanning, finishing, impregnation
- ES 3-3: Industrial use of formaldehyde based products: production of wood based materials (panels, bricks, etc), production of impregnated paper, production of paper, use in textile finishing, production of bonded fibers or fiber mats
- ES 3-4: 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 3-5: 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 4-1: Professional use of products containing formaldehyde up to 1.5%: adhesives, foams, coatings, firelighters and cleaning agents
- ES 4-2: 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

The information above is on the basis of our knowledge about the product and represents the data currently available to us t 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.

## **Annex: Exposure Scenarios**

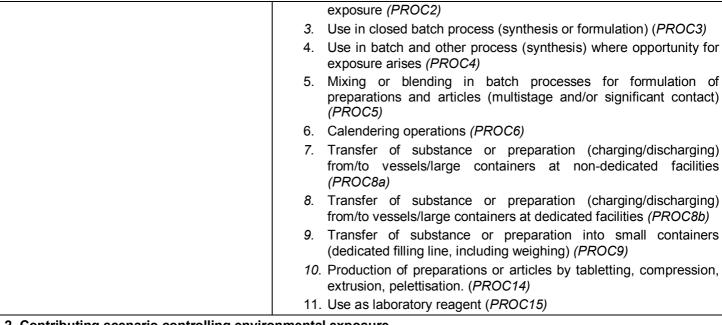
1. Short title of exposure scenario (ES1) - Manufacturing of formaldehyde and an aqueous solution of formaldehyde. Use as an intermediate product, including as a monomer

Use descriptors related to the life cycle stage	Sector of end use: SU3; SU8, SU9, SU10, SU12 Process category: PROC1/2/3/4/5/6/8a/8b/9/14/15 Environmental release category: ERC1/23/4/6a/6b/6c/6d/7
Name of contributing environmental scenario (1) and corresponding ERC	<ol> <li>Manufacture of substances (ERC1)</li> <li>Formulation of mixture (ERC2)</li> <li>Formulation in materials (ERC3)</li> <li>Industrial use of processing aids in processes and products, not becoming part of articles (ERC4)</li> <li>Industrial use resulting in manufacture of another substance (use of intermediates) (ERC6a)</li> <li>Industrial use of reactive processing aids (ERC6b)</li> <li>Industrial use of monomers for manufacture of thermoplastics (ERC6c)</li> <li>Industrial use of process regulators for polymerization processes in production of resins, rubbers, polymers (ERC6d)</li> <li>Industrial use of substances in closed systems (ERC 7)</li> </ol>
List of names of contributing worker scenarios (2) and corresponding PROC	Use in closed process, no likelihood of exposure (PROC1)     Use in closed, continuous process with occasional controlled





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#### 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 (ERC 7) 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	, , , , , , , , , , , , , , , , , , ,
	formaldehyde
Concentration of the substance	Content: >= 0 % - <= 100 %
Physical state	Liquid, high fugacity
Vapour pressure of the substance during	1000 hPa
use	
Process temperature	150 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Room size	300 m3
	Operation is carried out at elevated temperature (> 20°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	Effectiveness: 98 %
combination with intensive management	



For scaling see: http://www.advancedreachtool.com

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supervision control.	
Personal measures have to be applied in	
case of potential exposure only.	
Exposure estimate and reference to its so	urce
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified
Assessment method	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/m³
	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 Ple	ease note that a modified version has been used (see exposure estimates)

2.2 Contributing scenario (2) controlling w	•
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). (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 m3
	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 so	
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





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Assessment method	Advanced REACH Tool v1.0	
	Worker - inhalative, long-term - systemic	
Exposure estimate	0.253 mg/m³	
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		
SU3: Industrial uses		
	PROC2: Use in closed, continuous process with occasional controlled	
Use descriptors covered	exposure. PROC3: Use in closed batch process (synthesis or	
•	formulation). Transfer of liquid products - falling liquids Submerged	
	loading Dedicated facility (open systems)	
Operational conditions	J	
Concentration of the substance	formaldehyde	
Concentration of the substance	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 m3	
	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	Effectiveness: 98 %	
supervision control.		
Vapour recovery system	Effectiveness: 80 %	
Wear suitable respiratory protection.	Effectiveness: 90 %	
Exposure estimate and reference to its so		
	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified	
Assessment method	version: The concentration of the substance has been considered using a	
Assessment method	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/m³	
Risk Characterization Ratio (RCR)	0.51	



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	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		
	SU3: Industrial uses	
	PROC4: Use in batch and other process (synthesis) where opportunity for	
Use descriptors covered	exposure arises. PROC5: Mixing or blending in batch processes for	
	formulation of preparations and articles (multistage and/or significant	
	contact). (closed systems)	
Operational conditions	contact). (closed systems)	
	formaldehyde	
Concentration of the substance	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 m3	
	Operation is carried out at elevated temperature (> 20°C above ambient temperature).	
Risk Management Measures	10p = . 4 4/.	
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	Effectiveness: 98 %	
supervision control.		
Personal measures have to be applied in		
case of potential exposure only.		
Exposure estimate and reference to its so	urce	
PROC4	FOFTO TDA 00 M/ 1	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified	
	version: Use of gloves has been considered additionally.	
Function at the state	Worker - dermal, long-term - systemic	
Exposure estimate	< 0.1 mg/kg bw/day	
Risk Characterization Ratio (RCR)	< 0.01	
PROC4, PROC5	Advanced DEACH Tool v4.0	
Assessment method	Advanced REACH Tool v1.0	
Evacura estimata	Worker - inhalative, long-term - systemic	
Exposure estimate	0.293 mg/m³	
Risk Characterization Ratio (RCR)	The short term expecting value corresponds to the long term value	
	The short-term exposure value corresponds to the long-term value	
	multiplied by a factor of 2. The exposure estimate represents the 75th	
PROC5	percentile of the exposure distribution.	
	ECETOC TDA v2.0 Workers modified version ECETOC TDA	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified	



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	version: Use of gloves has been considered additionally.	
	Worker - dermal, long-term - systemic	
Exposure estimate	0.2 mg/kg bw/day	
Risk Characterization Ratio (RCR)	< 0.01	
PROC4, PROC5		
Assessment method	Qualitative assessment	
	Worker - dermal	
	The use is assessed to be safe.	
Additional good practice advice		
Avoid skin contact. Avoid contact with eyes. Wash off any skin contamination immediately.		
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		

2.5 Contributing scenario (5) 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). 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, high fugacity
Vapour pressure of the substance during use	15.2 hPa
Process temperature	150 °C
Duration and Frequency of activity	60 min 5 days per week
Indoor/Outdoor	Indoor
Room size	300 m3
	Operation is carried out at elevated temperature (> 20°C above ambient temperature).
Amounts used	Amount per use 1,000 I
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	



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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
PROC4, PROC5	
Assessment method	Advanced REACH Tool v1.0
	Worker - inhalative, long-term - systemic
Exposure estimate	0.293 mg/m³
Risk Characterization Ratio (RCR)	0.59
	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.
PROC5	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Use of gloves has been considered additionally ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - dermal, long-term - systemic
Exposure estimate	0.2 mg/kg bw/day
Risk Characterization Ratio (RCR)	< 0.01
PROC4, PROC5	·
Assessment method	Qualitative assessment
	Worker - dermal
	The use is assessed to be safe.
Additional good practice advice	·
Avoid skin contact. Avoid contact with ey	es. Wash off any skin contamination immediately.
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	a Please note that a modified version has been used (see exposure estimates)
For scaling see: http://www.advancedrea	chtool.com

2.6 Contributing scenario (6) 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). (open systems) Activities with open liquid surfaces or open reservoirs - activity with agitated surfaces
Operational conditions	
Concentration of the substance	formaldehyde





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	Occidents
Dhysical state	Content: >= 0 % - <= 60 %
Physical state	Liquid, high fugacity
Vapour pressure of the substance during	15.2 hPa
use	450.00
Process temperature	150 °C
Duration and Frequency of activity	60 min 5 days per week
Indoor/Outdoor	Indoor
Room size	300 m3
	Operation is carried out at elevated temperature (> 20°C above ambient
	temperature).
Open surface	0.1 m <sup>2</sup>
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.	
Provide extract ventilation to points where	
emissions occur (LEV).	Effectiveness: 90 %
Wear chemically resistant gloves in	
combination with intensive management	Effectiveness: 98 %
supervision control.	
Wear suitable respiratory protection.	Effectiveness: 95 %
Exposure estimate and reference to its so	
PROC4	
	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified
	version: The concentration of the substance has been considered using a
According to the sale	linear approach, ECETOC TRA modified version: Use of gloves has been
Assessment method	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, PROC5	
Assessment method	Advanced REACH Tool v1.0
	Worker - inhalative, long-term - systemic
Exposure estimate	0.293 mg/m³
Risk Characterization Ratio (RCR)	0.59
\ - /	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.
PROC5	
	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified
	version: Use of gloves has been considered additionally ECETOC TRA
Accomment mother d	modified version: The concentration of the substance has been
Assessment method	considered using a linear approach, 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	0.2 mg/kg bw/day
Risk Characterization Ratio (RCR)	< 0.01
PROC4, PROC5	
Assessment method	Qualitative assessment
	Worker - dermal
	The use is assessed to be safe.
Additional good practice advice	
9 ,	



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Avoid skin contact. Avoid contact with eyes. Wash off any skin contamination immediately. **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 worke	
Use descriptors covered	SU3: Industrial uses PROC6: Calendering operations
Operational conditions	
Concentration of the substance	formaldehyde Content: >= 0 % - <= 60 %
Physical state	Liquid, high fugacity
Vapour pressure of the substance during use	15.2 hPa
Duration and Frequency of activity	240 min 5 days per week
Indoor/Outdoor	Indoor
	Operation is carried out at elevated temperature (> 20°C above ambien temperature).
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 90 %
Wear chemically resistant gloves in combination with intensive management supervision control.	Effectiveness: 98 %
Use suitable eye protection.	
Personal measures have to be applied in	
case of potential exposure only.	
Wear suitable respiratory protection.	Effectiveness: 90 %
Exposure estimate and reference to its so	
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	0.3 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.02
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	0.233 mg/m³
Risk Characterization Ratio (RCR)	0.47
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/m³
Risk Characterization Ratio (RCR)	0.78
A account weatherd	The use is assessed to be safe.
Assessment method	Qualitative assessment
	Worker - contact with eyes
Ovidence to Desumetra and Heave	The use is assessed to be safe.
Guidance to Downstream Users	ease note that a modified version has been used (see exposure estimates)

## 2.8 Contributing scenario (8) controlling worker exposure





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	SU3: Industrial uses
Use descriptors covered	PROC8a: Transfer of substance or preparation (charging/discharging)
Ose descriptors covered	from/to vessels/large containers at non-dedicated facilities
	Aerosol formation is not covered within the CES
Operational conditions	
Concentration of the substance	formaldehyde
	Content: >= 0 % - <= 60 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during	15.2 hPa
use	
Process temperature	150 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Room size	300 m3
	Operation is carried out at elevated temperature (> 20°C above ambient
	temperature).
Amounts used	Amount per use 1,000 I
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	Effectiveness: 98 %
supervision control.	
Wear suitable respiratory protection.	Effectiveness: 90 %
Exposure estimate and reference to its so	urce
•	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified
A	version: The concentration of the substance has been considered using a
Assessment method	linear approach, ECETOC TRA modified version: Use of gloves has been
	considered additionally.
	Worker - dermal, long-term - systemic
Exposure estimate	0.2 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.01
Assessment method	Advanced REACH Tool v1.0
	Worker - inhalative, long-term - systemic
Exposure estimate	0.350 mg/m³
Risk Characterization Ratio (RCR)	0.7
( )	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	
	ease note that a modified version has been used (see exposure estimates)
For scaling see: http://www.advancedreachto	
i or obaling occ. http://www.advanocdicachto	0.0011

2.9 Contributing scenario (9) 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
Operational conditions	
Concentration of the substance	formaldehyde



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	Content: >= 0 % - <= 5 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during	15.2 hPa
use	
Process temperature	25 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Room size	300 m3
	Assumes use at not more than 20°C above ambient temperature.
Amounts used	Amount per use 1,000 I
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	<b></b>
combination with intensive management	Effectiveness: 95 %
supervision control.	
Exposure estimate and reference to its source	
	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using a
Assessment method	
/ 1000000IIIOIIL IIIOUIIOU	linear approach ECETOC TRA modified version: Use of gloves has been
7.00000 HIGHIOU	linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally
7.00000IIIOIII IIIOIIIOU	considered additionally.
	considered additionally.  Worker - dermal, long-term - systemic
Exposure estimate	considered additionally.
	considered additionally.  Worker - dermal, long-term - systemic  0.2 mg/kg bw/day  < 0.01
Exposure estimate Risk Characterization Ratio (RCR)	considered additionally.  Worker - dermal, long-term - systemic  0.2 mg/kg bw/day  < 0.01  Advanced REACH Tool v1.0
Exposure estimate Risk Characterization Ratio (RCR) Assessment method	considered additionally.  Worker - dermal, long-term - systemic  0.2 mg/kg bw/day  < 0.01
Exposure estimate Risk Characterization Ratio (RCR) Assessment method  Exposure estimate	considered additionally.  Worker - dermal, long-term - systemic  0.2 mg/kg bw/day  < 0.01  Advanced REACH Tool v1.0  Worker - inhalative, long-term - systemic
Exposure estimate Risk Characterization Ratio (RCR) Assessment method	considered additionally.  Worker - dermal, long-term - systemic  0.2 mg/kg bw/day  < 0.01  Advanced REACH Tool v1.0  Worker - inhalative, long-term - systemic  0.26 mg/m³
Exposure estimate Risk Characterization Ratio (RCR) Assessment method  Exposure estimate	considered additionally.  Worker - dermal, long-term - systemic  0.2 mg/kg bw/day  < 0.01  Advanced REACH Tool v1.0  Worker - inhalative, long-term - systemic  0.26 mg/m³  0.52
Exposure estimate Risk Characterization Ratio (RCR) Assessment method  Exposure estimate Risk Characterization Ratio (RCR)	considered additionally.  Worker - dermal, long-term - systemic  0.2 mg/kg bw/day  < 0.01  Advanced REACH Tool v1.0  Worker - inhalative, long-term - systemic  0.26 mg/m³  0.52  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.
Exposure estimate Risk Characterization Ratio (RCR) Assessment method  Exposure estimate	considered additionally.  Worker - dermal, long-term - systemic  0.2 mg/kg bw/day  < 0.01  Advanced REACH Tool v1.0  Worker - inhalative, long-term - systemic  0.26 mg/m³  0.52  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.  Qualitative assessment
Exposure estimate Risk Characterization Ratio (RCR) Assessment method  Exposure estimate Risk Characterization Ratio (RCR)	considered additionally.  Worker - dermal, long-term - systemic  0.2 mg/kg bw/day  < 0.01  Advanced REACH Tool v1.0  Worker - inhalative, long-term - systemic  0.26 mg/m³  0.52  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.  Qualitative assessment  Worker - dermal
Exposure estimate Risk Characterization Ratio (RCR) Assessment method  Exposure estimate Risk Characterization Ratio (RCR)  Assessment method	considered additionally.  Worker - dermal, long-term - systemic  0.2 mg/kg bw/day  < 0.01  Advanced REACH Tool v1.0  Worker - inhalative, long-term - systemic  0.26 mg/m³  0.52  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.  Qualitative assessment
Exposure estimate Risk Characterization Ratio (RCR) Assessment method  Exposure estimate Risk Characterization Ratio (RCR)  Assessment method  Guidance to Downstream Users	considered additionally.  Worker - dermal, long-term - systemic  0.2 mg/kg bw/day  < 0.01  Advanced REACH Tool v1.0  Worker - inhalative, long-term - systemic  0.26 mg/m³  0.52  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.  Qualitative assessment  Worker - dermal  The use is assessed to be safe.
Exposure estimate Risk Characterization Ratio (RCR) Assessment method  Exposure estimate Risk Characterization Ratio (RCR)  Assessment method  Guidance to Downstream Users	considered additionally.  Worker - dermal, long-term - systemic  0.2 mg/kg bw/day  < 0.01  Advanced REACH Tool v1.0  Worker - inhalative, long-term - systemic  0.26 mg/m³  0.52  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.  Qualitative assessment  Worker - dermal  The use is assessed to be safe.

2.10 Contributing scenario (10) 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	
Operational conditions		
Concentration of the substance	formaldehyde Content: >= 0 % - <= 1.5 %	
Physical state	Liquid, moderate fugacity	
Vapour pressure of the substance during use	15.2 hPa	
Process temperature	25 °C	
Duration and Frequency of activity	480 min 5 days per week	
Indoor/Outdoor	Indoor	
Room size	300 m <sup>3</sup>	





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	Assumes use at not more than 20°C above ambient temperature.
Amounts used	Amount per use 1,000 I
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	Effectiveness: 95 %
supervision control.	
Exposure estimate and reference to its source	
	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified
Assessment method	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	0.076 mg/m³
Risk Characterization Ratio (RCR)	0.15
	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	

2.11 Contributing scenario (11) 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
Operational conditions	
Concentration of the substance	formaldehyde Content: >= 0 % - <= 60 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during	15.2 hPa
use	
Process temperature	150 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Room size	300 m3
	Assumes use at not more than 20°C above ambient temperature.
Amounts used	Amount per use 1,000 l
Risk Management Measures	
Vapour recovery system	
Use suitable eye protection.	
Personal measures have to be applied in	
case of potential exposure only.	
Handle substance within closed system.	Effectiveness: 99 %



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Wear chemically resistant gloves in combination with intensive management supervision control.	Effectiveness: 98 %	
Exposure estimate and reference to its so	urce	
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)		
For scaling see: http://www.advancedreachtool.com		

Use descriptors covered    SU3: Industrial uses   PROC8b: Transfer of substance or preparation (charging/discharging/from/to vessels/large containers at dedicated facilities Submerged loading from/to vessels/large containers at dedicated facilities Submerged loading form/to vessels/large containers at dedicated facilities Submerged loading from/to vessels/large containers at dedicated facilities Submerged loading form/to vessels/large containers at dedicated facilities Submerged loading form.	2.12 Contributing scenario (12) controlling	worker exposure
from/to vessels/large containers at dedicated facilities Submerged loading   Operational conditions		SU3: Industrial uses
Operational conditions  Concentration of the substance	Use descriptors covered	
Concentration of the substance   formaldehyde   Content: >= 0 % - <= 60 %	0 " 1 ""	from/to vessels/large containers at dedicated facilities Submerged loading
Content: >= 0 % - <= 60 %  Physical state  Cipulation of the substance during use  Process temperature  Duration and Frequency of activity  Indoor/Outdoor  Room size  Amounts used  Amounts used  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.  Wear chemically resistant gloves in combination with intensive management supervision control.  Vapour recovery system  Wear suitable respiratory protection.  Effectiveness: 90 %  Effectiveness: 90 %  Effectiveness: 90 %  Exposure estimate and reference to its source  ECETOC TRA v2.0 Worker, modified version. Use of gloves has bee considered additionally.  Worker - dermal, long-term - systemic  Exposure estimate  Vapour estimate  Vapour ecovery system  ECETOC TRA modified version: Use of gloves has bee considered additionally.  Worker - dermal, long-term - systemic  Exposure estimate  Vapour estimate  Vapour ecovery system  ECETOC TRA modified version: Use of gloves has bee considered additionally.  Worker - dermal, long-term - systemic	Operational conditions	forms aldala side
Physical state Vapour pressure of the substance during use Process temperature Process	Concentration of the substance	
Vapour pressure of the substance during use  Process temperature  Duration and Frequency of activity  Indoor/Outdoor  Room size  300 m3  Operation is carried out at elevated temperature (> 20°C above ambient temperature).  Amounts used  Amount per use 1,000 I  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.  Wear chemically resistant gloves in combination with intensive management supervision control.  Vapour recovery system  Effectiveness: 99 %  Wear suitable respiratory protection.  Exposure estimate and reference to its source  ECETOC TRA v2.0 Worker; modified version; Use of gloves has bee considered additionally.  Worker - dermal, long-term - systemic  Exposure estimate  Engagement Measures  150 °C  480 min 5 days per week Indoor  1800 min 5 days per week Indoor  20° C above ambient temperature (> 20° C above ambient temperature)  1800 min 5 days per week  1800 min 5 days per week  1800 min 5 days per week  1800 min 6 mi	Dhysical state	
Process temperature 150 °C  Duration and Frequency of activity 480 min 5 days per week Indoor/Outdoor Indoor  Room size 300 m3  Operation is carried out at elevated temperature (> 20°C above ambient temperature).  Amounts used Amount per use 1,000 I  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.  Wear chemically resistant gloves in combination with intensive management supervision control.  Vapour recovery system Effectiveness: 99 %  Wear suitable respiratory protection.  Exposure estimate and reference to its source  ECETOC TRA v2.0 Worker; modified version: Use of gloves has bee considered additionally.  Worker - dermal, long-term - systemic  Exposure estimate  ECETOC TRA modified version: Use of gloves has bee considered additionally.  Worker - dermal, long-term - systemic		
Process temperature Duration and Frequency of activity A80 min 5 days per week Indoor/Outdoor Room size 300 m3 Operation is carried out at elevated temperature (> 20°C above ambient temperature). Amounts used Amount per use 1,000 I  Amount per use 1,000 I  Amount 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. Wear chemically resistant gloves in combination with intensive management supervision control. Vapour recovery system Wear suitable respiratory protection. Effectiveness: 90 % Exposure estimate and reference to its source  ECETOC TRA v2.0 Worker; modified version: Use of gloves has beer considered additionally. Worker - dermal, long-term - systemic Exposure estimate  = CETOC TRA modified version: Use of gloves has beer considered additionally. Worker - dermal, long-term - systemic  = CETOC TRA publication of the substance has been considered using linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally.  Worker - dermal, long-term - systemic  = CETOC TRA publication of the substance has been considered using linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally.  Worker - dermal, long-term - systemic		15.2 1178
Duration and Frequency of activity Indoor/Outdoor Room size 300 m3 Operation is carried out at elevated temperature (> 20°C above ambient temperature).  Amounts used Amount per use 1,000 I  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. Wear chemically resistant gloves in combination with intensive management supervision control. Vapour recovery system Wear suitable respiratory protection. Exposure estimate and reference to its source  ECETOC TRA v2.0 Worker; modified version: Use of gloves has beer considered additionally. Worker - dermal, long-term - systemic  Exposure estimate  480 min 5 days per week Indoor		
Indoor/Outdoor Room size  300 m3 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. Wear chemically resistant gloves in combination with intensive management supervision control. Vapour recovery system Wear suitable respiratory protection.  Exposure estimate and reference to its source  ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally.  Exposure estimate  Exposure estimate  Value  ECETOC TRA woloffed version, ECETOC TRA modified version: Use of gloves has been considered additionally.  Worker - dermal, long-term - systemic  Vol. 1 mg/kg bw/day		
Room size  300 m3 Operation is carried out at elevated temperature (> 20°C above ambient temperature).  Amounts used Amount per use 1,000 I  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. Wear chemically resistant gloves in combination with intensive management supervision control. Vapour recovery system Wear suitable respiratory protection.  Exposure estimate and reference to its source  ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally.  Worker - dermal, long-term - systemic  Exposure estimate  Vanout recovery system ECETOC TRA wodified version: Use of gloves has been considered additionally. Worker - dermal, long-term - systemic  Exposure estimate < 0.1 mg/kg bw/day		
Amounts used Amount per use 1,000 I  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. Wear chemically resistant gloves in combination with intensive management supervision control.  Vapour recovery system Wear suitable respiratory protection.  Exposure estimate and reference to its source  ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally.  Worker - dermal, long-term - systemic  Exposure estimate  Vapour estimate  Vorker - dermal, long-term - systemic  Vorker - dermal, long-term - systemic		
temperature).  Amounts used  Amount per use 1,000 I  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.  Wear chemically resistant gloves in combination with intensive management supervision control.  Vapour recovery system  Wear suitable respiratory protection.  Effectiveness: 90 %  Wear suitable respiratory protection.  Effectiveness: 90 %  Exposure estimate and reference to its source  ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally.  Worker - dermal, long-term - systemic  Exposure estimate  Vorker - dermal, long-term - systemic	NOOTH SIZE	
Amount per use 1,000 I  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.  Wear chemically resistant gloves in combination with intensive management supervision control.  Vapour recovery system  Wear suitable respiratory protection.  Exposure estimate and reference to its source  ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally.  Worker - dermal, long-term - systemic  Exposure estimate  Amount per use 1,000 I  Risk Management Measures  Provide a good standard of general ventilation (not less than 3 - 5 air changes per hour)  Beffectiveness: 99 %  Effectiveness: 98 %  Effectiveness: 98 %  Effectiveness: 90 %  Exposure estimate and reference to its source  ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Use of gloves has been considered additionally.  Worker - dermal, long-term - systemic		
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.  Wear chemically resistant gloves in combination with intensive management supervision control.  Vapour recovery system  Wear suitable respiratory protection.  Effectiveness: 99 %  Effectiveness: 98 %  Wear suitable respiratory protection.  Exposure estimate and reference to its source  Assessment method  Assessment method  Worker - dermal, long-term - systemic  Exposure estimate  EVENTOR TRA wolding version: Use of gloves has been considered additionally.  Worker - dermal, long-term - systemic	Amounts used	
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.  Wear chemically resistant gloves in combination with intensive management supervision control.  Vapour recovery system  Wear suitable respiratory protection.  Exposure estimate and reference to its source  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  Exposure estimate  Vapour recovery system  Effectiveness: 99 %  ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Use of gloves has been considered additionally.  Worker - dermal, long-term - systemic		
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.  Wear chemically resistant gloves in combination with intensive management supervision control.  Vapour recovery system  Wear suitable respiratory protection.  Exposure estimate and reference to its source  ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally.  Worker - dermal, long-term - systemic  Exposure estimate <ul> <li>Vanish (All Control of the substance has been considered using linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally.</li> <li>Worker - dermal, long-term - systemic</li> </ul>		
Der hour)  Use suitable eye protection.  Personal measures have to be applied in case of potential exposure only.  Handle substance within closed system.  Wear chemically resistant gloves in combination with intensive management supervision control.  Vapour recovery system  Wear suitable respiratory protection.  Exposure estimate and reference to its source  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  Exposure estimate  Vapour recovery system  Effectiveness: 98 %  Effectiveness: 90 %  ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Use of gloves has been considered dadditionally.  Worker - dermal, long-term - systemic		
Personal measures have to be applied in case of potential exposure only.  Handle substance within closed system.  Wear chemically resistant gloves in combination with intensive management supervision control.  Vapour recovery system  Wear suitable respiratory protection.  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 linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally.  Worker - dermal, long-term - systemic  Exposure estimate		
Personal measures have to be applied in case of potential exposure only.  Handle substance within closed system.  Wear chemically resistant gloves in combination with intensive management supervision control.  Vapour recovery system  Wear suitable respiratory protection.  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 linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally.  Worker - dermal, long-term - systemic  Exposure estimate	Use suitable eye protection.	
Handle substance within closed system.  Wear chemically resistant gloves in combination with intensive management supervision control.  Vapour recovery system  Wear suitable respiratory protection.  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 linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally.  Worker - dermal, long-term - systemic  Exposure estimate  Version: The concentration of the substance has been considered using linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally.  Worker - dermal, long-term - systemic	Personal measures have to be applied in	
Wear chemically resistant gloves in combination with intensive management supervision control.  Vapour recovery system  Wear suitable respiratory protection.  Exposure estimate and reference to its source  ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally.  Worker - dermal, long-term - systemic  Exposure estimate  Vapour recovery system  Effectiveness: 98 %  Effectiveness: 90 %  ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Use of gloves has been considered additionally.  Worker - dermal, long-term - systemic  < 0.1 mg/kg bw/day	case of potential exposure only.	
combination with intensive management supervision control.  Vapour recovery system  Wear suitable respiratory protection.  Exposure estimate and reference to its source  ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally.  Worker - dermal, long-term - systemic  Exposure estimate	Handle substance within closed system.	Effectiveness: 99 %
supervision control.  Vapour recovery system  Wear suitable respiratory protection.  Effectiveness: 90 %  Exposure estimate and reference to its source  ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally.  Worker - dermal, long-term - systemic  Exposure estimate <ul> <li>Vapour recovery system</li> <li>Effectiveness: 80 %</li> </ul> Exposure estimate and reference to its source  ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Use of gloves has been considered additionally.  Worker - dermal, long-term - systemic <li>Systemic</li> <li>Systemic</li> <li>Systemic</li>	Wear chemically resistant gloves in	
Vapour recovery system  Wear suitable respiratory protection.  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 linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally.  Worker - dermal, long-term - systemic  Exposure estimate		Effectiveness: 98 %
Wear suitable respiratory protection.  Exposure estimate and reference to its source  ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally.  Worker - dermal, long-term - systemic  Exposure estimate <ul> <li>4 0.1 mg/kg bw/day</li> </ul>		
Assessment method    CETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally.    Worker - dermal, long-term - systemic   Volume   Vo		
Assessment method  ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: The concentration of the substance has been considered using linear approach, ECETOC TRA modified version: Use of gloves has been considered additionally.  Worker - dermal, long-term - systemic  Exposure estimate    CETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Use of gloves has been considered additionally.    Worker - dermal, long-term - systemic   < 0.1 mg/kg bw/day		
Assessment method  version: The concentration of the substance has been considered using 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	Exposure estimate and reference to its so	
linear approach, ECETOC TRA modified version: Use of gloves has bee considered additionally.  Worker - dermal, long-term - systemic  Exposure estimate  < 0.1 mg/kg bw/day		
considered additionally.  Worker - dermal, long-term - systemic  Exposure estimate < 0.1 mg/kg bw/day	Assessment method	
Worker - dermal, long-term - systemic  Exposure estimate < 0.1 mg/kg bw/day		
Exposure estimate < 0.1 mg/kg bw/day		
	Evaceuro cotimeto	
		< 0.01
Risk Characterization Ratio (RCR) < 0.01 Assessment method Advanced REACH Tool v1.0		
Worker - inhalative, long-term - systemic	ASSESSITETIL THE LITTUU	
Exposure estimate 0.230 mg/m³	Exposure estimate	
Risk Characterization Ratio (RCR) 0.46		· ·
	Mak Characterization Natio (NON)	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	Assessment method	





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	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	

	SU3: Industrial uses
Use descriptors covered	PROC8b: Transfer of substance or preparation (charging/discharging from/to vessels/large containers at dedicated facilities Submerged loading
Operational conditions	
Concentration of the substance	formaldehyde
	Content: >= 0 % - <= 5 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	15.2 hPa
Process temperature	150 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Room size	300 m3
	Operation is carried out at elevated temperature (> 20°C above ambient temperature).
Amounts used	Amount per use 1,000 I
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	Effectiveness: 95 %
combination with specific activity training	
Vapour recovery system	Effectiveness: 80 %
Exposure estimate and reference to its sou	
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	0.170 mg/m³
Risk Characterization Ratio (RCR)	0.34
	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	
Fara and Barray Later the constant and the Dis	ase 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



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	PROC8b: Transfer of substance or preparation (charging/discharging)	
	from/to vessels/large containers at dedicated facilities Submerged loading	
Operational conditions		
Concentration of the substance	formaldehyde	
	Content: >= 0 % - <= 1.5 %	
Physical state	Liquid, moderate fugacity	
Vapour pressure of the substance during	15.2 hPa	
use		
Process temperature	150 °C	
Duration and Frequency of activity	480 min 5 days per week	
Indoor/Outdoor	Indoor	
Room size	300 m3	
	Operation is carried out at elevated temperature (> 20°C above ambient temperature).	
Amounts used	Amount per use 1,000 I	
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 specific activity training	Effectiveness: 95 %	
Exposure estimate and reference to its so	UITCO	
Exposure estimate and reference to its so	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified	
	version: The concentration of the substance has been considered using a	
Assessment method	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	
7 toocsoment method	Worker - inhalative, long-term - systemic	
Exposure estimate	0.25 mg/m³	
Risk Characterization Ratio (RCR)	0.5	
Nisk Characterization Natio (NON)	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	
7.00003HIGHE HIGHIOU	Worker - dermal	
	The use is assessed to be safe.	
Guidance to Downstream Users	THE 430 13 43363364 to be 3416.	
	ease note that a modified version has been used (see exposure estimates)	
For scaling see: http://www.advancedreachtool.com		

2.15 Contributing scenario (15) controlling worker exposure	
	SU3: Industrial uses
Use descriptors covered	PROC8b: Transfer of substance or preparation (charging/discharging)
	from/to vessels/large containers at dedicated facilities Submerged loading
Operational conditions	
Concentration of the substance	formaldehyde
Concentration of the substance	Content: >= 0 % - <= 60 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during	15.2 hPa
use	
Process temperature	150 °C



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Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Outdoor
	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	Effectiveness: 80 %
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	Effectiveness: 98 %
supervision control.	
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)	
For scaling see: http://www.advancedreachtool.com	

2.16 Contributing scenario (16) controlling worker exposure	
	SU3: Industrial uses
Use descriptors covered	PROC9: Transfer of substance or preparation into small containers
	(dedicated filling line, including weighing). Submerged loading
Operational conditions	
Concentration of the substance	formaldehyde
Concentration of the substance	Content: >= 0 % - <= 60 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during	15.2 hPa
use	
Process temperature	150 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Room size	300 m3
	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: 90 %
Wear chemically resistant gloves in	
combination with intensive management	Effectiveness: 98 %
supervision control.	
Provide extract ventilation to points where	Effectiveness: 90 %
emissions occur (LEV).	
Wear suitable respiratory protection.	Effectiveness: 90 %
Exposure estimate and reference to its so	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified



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	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	0.120 mg/m³
Risk Characterization Ratio (RCR)	0.24
	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	

2.17 Contributing scenario (17) controlling worker exposure	
Use descriptors covered	SU3: Industrial uses PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing). Submerged loading
Operational conditions	
Concentration of the substance	formaldehyde Content: >= 0 % - <= 5 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	15.2 hPa
Process temperature	150 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Room size	300 m3
	Operation is carried out at elevated temperature (> 20°C above ambient temperature).
Amounts used	Amount per use 1,000 I
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: 90 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Provide extract ventilation to points where emissions occur (LEV).	Effectiveness: 90 %



For scaling see: http://www.advancedreachtool.com

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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	Advanced REACH Tool v1.0
	Worker - inhalative, long-term - systemic
Exposure estimate	0.085 mg/m³
Risk Characterization Ratio (RCR)	0.17
	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)	

2.18 Contributing scenario (18) controlling worker exposure	
	SU3: Industrial uses
Use descriptors covered	PROC9: Transfer of substance or preparation into small containers
·	(dedicated filling line, including weighing). Submerged loading
Operational conditions	
Concentration of the substance	formaldehyde
Concentration of the substance	Content: >= 0 % - <= 1.5 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during	15.2 hPa
use	
Process temperature	150 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Room size	300 m3
	Operation is carried out at elevated temperature (> 20°C above ambient
	temperature).
Amounts used	Amount per use 1,000 I
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: 90 %
Wear chemically resistant gloves in	Effectiveness: 95 %
combination with specific activity training	
Exposure estimate and reference to its source	



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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, 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	0.25 mg/m³
Risk Characterization Ratio (RCR)	0.5
	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.advancedread	htool.com

2.19 Contributing scenario (19) controlling worker exposure		
Use descriptors covered	SU3: Industrial uses PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelettisation.	
Operational conditions		
Concentration of the substance	formaldehyde Content: >= 0 % - <= 60 %	
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 %	
Use suitable eye protection.		
Personal measures have to be applied in case of potential exposure only.		
Wear chemically resistant gloves in combination with intensive management supervision control.	Effectiveness: 98 %	
Wear suitable respiratory protection.	Effectiveness: 90 %	
Exposure estimate and reference to its so	urce	
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	0.04 mg/kg bw/day	
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.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.233 mg/m³
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/m³
Risk Characterization Ratio (RCR)	0.78
Guidance to Downstream Users	•
For scaling see: http://www.ecetoc.org/tr	ra Please note that a modified version has been used (see exposure estimates)

2.20 Contributing scenario (20) controlling	2.20 Contributing scenario (20) controlling worker exposure	
Use descriptors covered	SU3: Industrial uses, SU22: Professional uses	
	PROC15: Use a laboratory reagent.	
Operational conditions		
Concentration of the substance	formaldehyde	
Concentration of the substance	Content: >= 0 % - <= 60 %	
Physical state	Liquid, moderate fugacity	
Vapour pressure of the substance during	14 hPa	
use		
Duration and Frequency of activity	480 min 5 days per week	
Indoor/Outdoor	Indoor	
Room size	100 m3	
Amounts used	Amount per use 0.1 l	
Risk Management Measures		
Provide a good standard of controlled		
ventilation (10 to 15 air changes per hour)		
Use suitable eye protection.		
Personal measures have to be applied in		
case of potential exposure only.		
Wear chemically resistant gloves in		
combination with intensive management	Effectiveness: 98 %	
supervision control.		
Perform task in a fume cupboard.		
Exposure estimate and reference to its source		
	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified	
	version: The concentration of the substance has been considered using a	
Assessment method	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.	
	· ·	
Exposure estimate	Worker - dermal, long-term - systemic < 0.1 mg/kg bw/day	
Risk Characterization Ratio (RCR)	< 0.01	
Assessment method	Advanced REACH Tool v1.0	
ASSESSMENT METHOD	Worker - inhalative, long-term - systemic	
Exposure estimate	0.3 mg/m <sup>3</sup>	
Exposure commute	0.0 mg/m	



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Risk Characterization Ratio (RCR)	0.6
	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. Short title of exposure scenario (ES 2) - Use in/as Formulation

Use descriptors related to the life cycle stag	Sector of end use: SU3, SU10
	Process category: PROC1/2/3/4/5/6/8a/8b/9/14/15
	Environmental release category: ERC/2/3
Name of contributing environmental	1 Formulation of mixture (ERC2)
scenario (1) and corresponding ERC	2 Formulation in materials (ERC3)
List of names of contributing worker	1 Use in closed process, no likelihood of exposure (PROC1)
scenarios (2) and corresponding PROC	<ol> <li>Use in closed, continuous process with occasional controlled exposure (PROC2)</li> </ol>
	3 Use in closed batch process (synthesis or formulation) (PROC3)
	4 Use in batch and other process (synthesis) where opportunity for exposure arises (PROC4)
	5 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) (PROC5)
	6 Calendering operations (PROC6)
	7 Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (PROC8a)
	8 Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC8b)
	9 Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (PROC9)
	10 Production of preparations or articles by tabletting, compression, extrusion, pelettisation ( <i>PROC14</i> )
	11 Use as laboratory reagent (PROC15)
2. Contributing scenario controlling enviro	•
Formulation of mixture (ERC2); Formulation in	n materials (ERC3)

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: >= 0 % - <= 100 %
Physical state	Liquid, high fugacity
Vapour pressure of the substance during	1000 hPa
use	
Process temperature	150 °C

An environmental assessment has not been performed as the product does not meet the criteria for being classified



For scaling see: http://www.advancedreachtool.com

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Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Room size	300 m3
	Operation is carried out at elevated temperature (> 20°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	Effectiveness: 98 %
supervision control.	
Personal measures have to be applied in	
case of potential exposure only.	
Exposure estimate and reference to its so	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified
7 to cooment method	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
Assessment method  Exposure estimate	Worker - inhalative, long-term - systemic 0.025 mg/m³
	Worker - inhalative, long-term - systemic 0.025 mg/m³ The exposure estimate represents the 75th percentile of the exposure
	Worker - inhalative, long-term - systemic 0.025 mg/m³ The exposure estimate represents the 75th percentile of the exposure distribution. The short-term exposure value corresponds to the long-term
Exposure estimate	Worker - inhalative, long-term - systemic  0.025 mg/m³  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.
	Worker - inhalative, long-term - systemic  0.025 mg/m³  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.  Qualitative assessment
Exposure estimate	Worker - inhalative, long-term - systemic  0.025 mg/m³  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.  Qualitative assessment  Worker - dermal
Exposure estimate  Assessment method	Worker - inhalative, long-term - systemic  0.025 mg/m³  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.  Qualitative assessment
Exposure estimate  Assessment method  Guidance to Downstream Users	Worker - inhalative, long-term - systemic  0.025 mg/m³  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.  Qualitative assessment  Worker - dermal

2.2 Contributing scenario (2) 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). (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 m3
	Operation is carried out at elevated temperature (> 20°C above ambient temperature).
Risk Management Measures	



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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	Effectiveness: 98 %	
supervision control.		
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	
Assessment method	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/m³	
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.advancedreachto	pol.com	

2.3 Contributing scenario (3) controlling w	2.3 Contributing scenario (3) controlling worker exposure	
, ,	SU3: Industrial uses	
	PROC2: Use in closed, continuous process with occasional controlled	
Use descriptors covered	exposure. PROC3: Use in closed batch process (synthesis or	
	formulation). Transfer of liquid products - falling liquids Submerged	
	loading Dedicated facility (open systems)	
Operational conditions		
Concentration of the substance	formaldehyde	
Concentration of the substance	Content: >= 0 % - <= 60 %	
Physical state	Liquid, moderate fugacity	
Vapour pressure of the substance during	15.2 hPa	
use		
Process temperature	150 °C	
Duration and Frequency of activity	120 min 5 days per week	
Indoor/Outdoor	Indoor	
Room size	300 m3	
	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.		





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Handle substance within closed system.	Effectiveness: 99 %		
Wear chemically resistant gloves in			
combination with intensive management	Effectiveness: 98 %		
supervision control.			
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/m³		
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.advancedreachto	For scaling see: http://www.advancedreachtool.com		

2.4 Contributing scenario (4) controlling w	orker exposure
. , ,	SU3: Industrial uses
	PROC4: Use in batch and other process (synthesis) where opportunity for
Use descriptors covered	exposure arises. PROC5: Mixing or blending in batch processes for
•	formulation of preparations and articles (multistage and/or significant
	contact). (closed systems)
Operational conditions	
Concentration of the substance	formaldehyde
Concentration of the substance	Content: >= 0 % - <= 100 %
Physical state	Liquid, high fugacity
Vapour pressure of the substance during	1000 hPa
use	
Process temperature	150 °C
Duration and Frequency of activity	360 min 5 days per week
Indoor/Outdoor	Indoor
Room size	300 m3
	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	Effectiveness: 98 %
supervision control.	
Personal measures have to be applied in	



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case of potential exposure only.	
Exposure estimate and reference to its	source
PROC4	
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
PROC4, PROC5	
Assessment method	Advanced REACH Tool v1.0
	Worker - inhalative, long-term - systemic
Exposure estimate	0.293 mg/m³
Risk Characterization Ratio (RCR)	0.59
	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.
PROC5	· · · · · · · · · · · · · · · · · · ·
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	0.2 mg/kg bw/day
Risk Characterization Ratio (RCR)	< 0.01
PROC4, PROC5	
Assessment method	Qualitative assessment
	Worker - dermal
	The use is assessed to be safe.
Additional good practice advice	
Avoid skin contact. Avoid contact with eye	es. Wash off any skin contamination immediately.
Guidance to Downstream Users	•
For scaling see: http://www.ecetoc.org/tra	a Please note that a modified version has been used (see exposure estimates)
For scaling see: http://www.advancedread	chtool.com

2.5 Contributing scenario (5) 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). Transfer of liquid products - falling liquids Submerged loading
Operational conditions	Dedicated facility (open systems)
Concentration of the substance	formaldehyde Content: >= 0 % - <= 60 %
Physical state	Liquid, high fugacity
Vapour pressure of the substance during use	15.2 hPa
Process temperature	150 °C
Duration and Frequency of activity	60 min 5 days per week
Indoor/Outdoor	Indoor
Room size	300 m3
	Operation is carried out at elevated temperature (> 20°C above ambient temperature).
Amounts used	Amount per use 1,000 I
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	





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case of potential exposure only.	
Handle substance within closed system.	Effectiveness: 99 %
Wear chemically resistant gloves in	
combination with intensive management	Effectiveness: 98 %
supervision control.	
Vapour recovery system	Effectiveness: 80 %
Wear suitable respiratory protection.	Effectiveness: 90 %
Exposure estimate and reference to its so	urce
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
PROC4, PROC5	
Assessment method	Advanced REACH Tool v1.0
	Worker - inhalative, long-term - systemic
Exposure estimate	0.293 mg/m³
Risk Characterization Ratio (RCR)	0.59
	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.
PROC5	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Use of gloves has been considered additionally, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach.
	Worker - dermal, long-term - systemic
Exposure estimate	0.2 mg/kg bw/day
Risk Characterization Ratio (RCR)	< 0.01
PROC4, PROC5	
Assessment method	Qualitative assessment
	Worker - dermal
Additional mandanessis	The use is assessed to be safe.
Additional good practice advice	
Avoid skin contact. Avoid contact with eyes. Wash off any skin contamination immediately.	
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	

2.6 Contributing scenario (6) 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). (open systems) Activities with open liquid surfaces or open reservoirs - activity with agitated surfaces	
Operational conditions		
Concentration of the substance	formaldehyde Content: >= 0 % - <= 60 %	
Physical state	Liquid, high fugacity	
Vapour pressure of the substance during use	15.2 hPa	
Process temperature	150 °C	





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Duration and Frequency of activity	60 min 5 days per week
Indoor/Outdoor	Indoor
Room size	300 m3
1.00.11.01.20	Operation is carried out at elevated temperature (> 20°C above ambient
	temperature).
Open surface	0.1 m <sup>2</sup>
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.	
Provide extract ventilation to points where emissions occur (LEV).	Effectiveness: 90 %
Wear chemically resistant gloves in combination with intensive management supervision control.	Effectiveness: 98 %
Wear suitable respiratory protection.	Effectiveness: 95 %
Exposure estimate and reference to its so	urce
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
PROC4, PROC5	
Assessment method	Advanced REACH Tool v1.0
	Worker - inhalative, long-term - systemic
Exposure estimate	0.293 mg/m³
Risk Characterization Ratio (RCR)	0.59
Their Grid action Land (1971)	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.
PROC5	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Use of gloves has been considered additionally, ECETOC TRA modified version: The concentration of the substance has been considered using a linear approach., 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	0.2 mg/kg bw/day
Risk Characterization Ratio (RCR)	< 0.01
PROC4, PROC5	



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Assessment method	Qualitative assessment
	Worker - dermal
	The use is assessed to be safe.
Additional good practice advice	
Avoid skin contact. Avoid contact with eyes. Wash off any skin contamination immediately.	
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	

Han decodotes consess	SU3: Industrial uses
Use descriptors covered	PROC6: Calendering operations
Operational conditions	<b>3</b> · F · · · · · · <b>3</b> · F · · · · · ·
Concentration of the authorope	formaldehyde
Concentration of the substance	Content: >= 0 % - <= 60 %
Physical state	Liquid, high fugacity
Vapour pressure of the substance during	15.2 hPa
use	
Duration and Frequency of activity	240 min 5 days per week
Indoor/Outdoor	Indoor
	Operation is carried out at elevated temperature (> 20°C above ambient
	temperature).
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 90 %
Wear chemically resistant gloves in	
combination with intensive management	Effectiveness: 98 %
supervision control.	
Use suitable eye protection.	
Personal measures have to be applied in	
case of potential exposure only.	
Wear suitable respiratory protection.	Effectiveness: 90 %
Exposure estimate and reference to its so	
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	0.3 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.02
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	0.233 mg/m³
Risk Characterization Ratio (RCR)	0.47
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, short-term - systemic
Exposure estimate  Pick Characterization Ratio (PCR)	0.78 mg/m³
Risk Characterization Ratio (RCR)	0.78
A a a a a m a nt m a th a d	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)	

2.8 Contributing scenario (8) controlling w	
Use descriptors covered	SU3: Industrial uses PROC8a: Transfer of substance or preparation (charging/discharging from/to vessels/large containers at non-dedicated facilities Aerosol formation is not covered within the CES.
Operational conditions	
Concentration of the substance	formaldehyde
Physical state	Content: >= 0 % - <= 60 %  Liquid, moderate fugacity
Vapour pressure of the substance during use	15.2 hPa
Process temperature	150 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Room size	300 m3
	Operation is carried out at elevated temperature (> 20°C above ambient temperature).
Amounts used	Amount per use 1,000 I
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 %
Wear suitable respiratory protection.	Effectiveness: 90 %
Exposure estimate and reference to its so	urce
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.
Fun course action at a	Worker - dermal, long-term - systemic
Exposure estimate  Pick Characterization Patio (PCP)	0.2 mg/kg bw/day
Risk Characterization Ratio (RCR) Assessment method	0.01 Advanced REACH Tool v1.0
ASSESSITIETI THERITOU	
Exposure estimate	Worker - inhalative, long-term - systemic
Exposure estimate Risk Characterization Ratio (RCR)	0.350 mg/m³ 0.7
	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	
	ease note that a modified version has been used (see exposure estimates)
For scaling see: http://www.advancedreachto	ol.com

# 2.9 Contributing scenario (9) controlling worker exposure





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	SU3: Industrial uses
Use descriptors covered	PROC8a: Transfer of substance or preparation (charging/discharging)
	from/to vessels/large containers at non-dedicated facilities Submerged
	loading
Operational conditions	[a]
Concentration of the substance	formaldehyde
	Content: >= 0 % - <= 5 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during	15.2 hPa
use	05.00
Process temperature	25 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Room size	300 m3
Amagumta was d	Assumes use at not more than 20°C above ambient temperature.
Amounts used	Amount per use 1,000 I
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	LifeCtiveriess. 99 70
combination with intensive management	Effectiveness: 95 %
supervision control.	LifeCtiveriess. 90 70
Exposure estimate and reference to its so	UICO
Exposure estimate and reference to its so	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified
	version: The concentration of the substance has been considered using a
Assessment method	linear approach, ECETOC TRA modified version: Use of gloves has been
	considered additionally.
	Worker - dermal, long-term - systemic
Exposure estimate	0.2 mg/kg bw/day
Risk Characterization Ratio (RCR)	< 0.01
Assessment method	Advanced REACH Tool v1.0
7.00000monemound	Worker - inhalative, long-term - systemic
Exposure estimate	0.26 mg/m³
Risk Characterization Ratio (RCR)	0.52
radio (Norty	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
. ioooonii iioonii a	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	
1 of Scaling Sec. http://www.auvanceureachtool.com	

2.10 Contributing scenario (10) 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.
Operational conditions	
Concentration of the substance	formaldehyde Content: >= 0 % - <= 1.5 %
Physical state	Liquid, moderate fugacity



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Vapour pressure of the substance during	15.2 hPa
use	
Process temperature	25 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Room size	300 m <sup>3</sup>
	Assumes use at not more than 20°C above ambient temperature.
Amounts used	Amount per use 1,000 I
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	Effectiveness: 95 %
supervision control.	
Exposure estimate and reference to its so	
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	0.076 mg/m <sup>3</sup>
Risk Characterization Ratio (RCR)	0.15
	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	
Guidalice to Dowlisticalli Oscis	
	ease 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 PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities Submerged loading	
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	480 min 5 days per week	
Indoor/Outdoor	Indoor	
Room size	300 m3	
	Assumes use at not more than 20°C above ambient temperature.	
Amounts used	Amount per use 1,000 I	



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Risk Management Measures	
Vapour recovery system	
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	Effectiveness: 98 %
supervision control.	
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)	
For scaling see: http://www.advancedreachtool.com	

2.12 Contributing scenario (12) controlling	ı worker exposure
	SU3: Industrial uses
Use descriptors covered	PROC8b: Transfer of substance or preparation (charging/discharging)
	from/to vessels/large containers at dedicated facilities Submerged loading
Operational conditions	Transitio vecesional gerealitatione at additional racinities easimologica reading
•	formaldehyde
Concentration of the substance	Content: >= 0 % - <= 60 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during	15.2 hPa
use	10.2 111 0
Process temperature	150 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Room size	300 m3
	Operation is carried out at elevated temperature (> 20°C above ambient
	temperature).
Amounts used	Amount per use 1,000 I
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	Effectiveness: 98 %
supervision control.	
Vapour recovery system	Effectiveness: 80 %
Wear suitable respiratory protection.	Effectiveness: 90 %
Exposure estimate and reference to its so	
	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified
Assessment method	version: The concentration of the substance has been considered using a
7.00000ment method	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



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Exposure estimate	0.230 mg/m³
Risk Characterization Ratio (RCR)	0.46
	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	

2.13 Contributing scenario (13) controlling worker exposure	
	SU3: Industrial uses
Use descriptors covered	PROC8b: Transfer of substance or preparation (charging/discharging)
	from/to vessels/large containers at dedicated facilities Submerged loading
Operational conditions	
Concentration of the substance	formaldehyde
	Content: >= 0 % - <= 5 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during	15.2 hPa
use	
Process temperature	150 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Room size	300 m3
	Operation is carried out at elevated temperature (> 20°C above ambient
Amountoused	temperature).
Amounts used	Amount per use 1,000 I
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 specific activity training	Effectiveness: 95 %
Vapour recovery system	Effectiveness: 80 %
Exposure estimate and reference to its so	
	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified
Assessment method	version: The concentration of the substance has been considered using a
	linear approach, ECETOC TRA modified version: Use of gloves has been
	considered additionally.
Even a current a cation a ta	Worker - dermal, long-term - systemic
Exposure estimate Risk Characterization Ratio (RCR)	< 0.1 mg/kg bw/day
Assessment method	Advanced REACH Tool v1.0
Assessment method	
Exposure estimate	Worker - inhalative, long-term - systemic 0.170 mg/m³
Risk Characterization Ratio (RCR)	0.34
MISK CHALACICHZALION RALIO (RCR)	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
7.00000monemound	Worker - dermal
	The use is assessed to be safe.
	1110 000 10 0000000 10 00 0010.





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### 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

	SU3: Industrial uses
Use descriptors covered	PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities Submerged loading
Operational conditions	
Concentration of the substance	formaldehyde
	Content: >= 0 % - <= 1.5 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	15.2 hPa
Process temperature	150 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Room size	300 m3
	Operation is carried out at elevated temperature (> 20°C above ambient temperature).
Amounts used	Amount per use 1,000 I
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 specific activity training	Effectiveness: 95 %
Exposure estimate and reference to its so	
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	0.25 mg/m³
Risk Characterization Ratio (RCR)	0.5
·	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	
Г	ase 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 PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities Submerged loading
Operational conditions	



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Concentration of the substance	formaldehyde	
Concentration of the substance	Content: >= 0 % - <= 60 %	
Physical state	Liquid, moderate fugacity	
Vapour pressure of the substance during	15.2 hPa	
use		
Process temperature	150 °C	
Duration and Frequency of activity	480 min 5 days per week	
Indoor/Outdoor	Outdoor	
	Operation is carried out at elevated temperature (> 20°C above ambient temperature).	
Amounts used	Amount per use 1,000 I	
Risk Management Measures	, , , , , , , , , , , , , , , , , , ,	
Provide a good standard of general		
ventilation (not less than 3 - 5 air changes	Effectiveness: 80 %	
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	Effectiveness: 98 %	
supervision control.		
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)		
For scaling see: http://www.advancedreachtool.com		

2.16 Contributing scenario (16) controlling worker exposure	
	SU3: Industrial uses
Use descriptors covered	PROC9: Transfer of substance or preparation into small containers
	(dedicated filling line, including weighing). Submerged loading
Operational conditions	
Concentration of the substance	formaldehyde
Concentration of the substance	Content: >= 0 % - <= 60 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during	15.2 hPa
use	
Process temperature	150 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Room size	300 m3
	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: 90 %
Wear chemically resistant gloves in	Effectiveness: 98 %
combination with intensive management	



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supervision control.	
Provide extract ventilation to points where emissions occur (LEV).	Effectiveness: 90 %
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, 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	0.120 mg/m³
Risk Characterization Ratio (RCR)	0.24
	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	

2.17 Contributing scenario (17) controlling worker exposure	
Use descriptors covered	SU3: Industrial uses PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing). Submerged loading
Operational conditions	
Concentration of the substance	formaldehyde Content: >= 0 % - <= 5 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	15.2 hPa
Process temperature	150 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Room size	300 m3
	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: 90 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Provide extract ventilation to points where	Effectiveness: 90 %



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emissions occur (LEV).	
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	Advanced REACH Tool v1.0
	Worker - inhalative, long-term - systemic
Exposure estimate	0.085 mg/m³
Risk Characterization Ratio (RCR)	0.17
	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	

2.18 Contributing scenario (18) controlling	2.18 Contributing scenario (18) controlling worker exposure	
Use descriptors covered	SU3: Industrial uses PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing). Submerged loading	
Operational conditions	, <u> </u>	
Concentration of the substance	formaldehyde Content: >= 0 % - <= 1.5 %	
Physical state	Liquid, moderate fugacity	
Vapour pressure of the substance during use	15.2 hPa	
Process temperature	150 °C	
Duration and Frequency of activity	480 min 5 days per week	
Indoor/Outdoor	Indoor	
Room size	300 m3	
	Operation is carried out at elevated temperature (> 20°C above ambient temperature).	
Amounts used	Amount per use 1,000 I	
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: 90 %	
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %	
Exposure estimate and reference to its so	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	





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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	0.25 mg/m³
Risk Characterization Ratio (RCR)	0.5
	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	

2.19 Contributing scenario (19) controlling	worker exposure
	SU3: Industrial uses
Use descriptors covered	PROC14: Production of preparations or articles by tabletting,
•	compression, extrusion, pelettisation.
Operational conditions	•
Concentration of the substance	formaldehyde
Concentration of the substance	Content: >= 0 % - <= 60 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during	14 hPa
use	
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.	
Personal measures have to be applied in	
case of potential exposure only.	
Wear chemically resistant gloves in	
combination with intensive management	Effectiveness: 98 %
supervision control.	
Wear suitable respiratory protection.	Effectiveness: 90 %
Exposure estimate and reference to its so	
	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified
	version: The concentration of the substance has been considered using a
Assessment method	linear approach, ECETOC TRA modified version: Use of gloves has been
Assessment method	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	0.04 mg/kg bw/day
Risk Characterization Ratio (RCR)	< 0.01
	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified
Assessment method	version: The concentration of the substance has been considered using a
	linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.233 mg/m³
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
Assessificial inclined	version: The concentration of the substance has been considered using a



### **Formalin**

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	linear approach.
	Worker - inhalative, short-term - systemic
Exposure estimate	0.78 mg/m³
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)	

2.20 Contributing scenario (20) controlling	
Use descriptors covered	SU3: Industrial uses, SU22: Professional uses
ose descriptors covered	PROC15: Use a laboratory reagent.
Operational conditions	
Concentration of the substance	formaldehyde
Concentration of the substance	Content: >= 0 % - <= 60 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during	14 hPa
use	
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Room size	100 m3
Amounts used	Amount per use 0.1 l
Risk Management Measures	
Provide a good standard of controlled	
ventilation (10 to 15 air changes per hour)	
Use suitable eye protection.	
Personal measures have to be applied in	
case of potential exposure only.	
Wear chemically resistant gloves in	
combination with intensive management	Effectiveness: 98 %
supervision control.	
Perform task in a fume cupboard.	
Exposure estimate and reference to its so	
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	Advanced REACH Tool v1.0
	Worker - inhalative, long-term - systemic
Exposure estimate	0.3 mg/m³
Risk Characterization Ratio (RCR)	0.6
	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 Ple	ease note that a modified version has been used (see exposure estimates)
For scaling see: http://www.advancedreachto	ol.com



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# 3. Short title of exposure scenario (ES 3-1) - Production of Fertilizers

Use descriptors related to the life cycle stage	Sector of end use: SU3; SU8 Process category: PROC1/2 Environmental release category: ERC 5
Name of analytical and analysis and a	Industrial use resulting in inclusion into or onto a matrix (ERC5)
Name of contributing environmental scenario (1) and corresponding ERC	industrial use resulting in inclusion into or onto a matrix (ERCS)
List of names of contributing worker scenarios (2) and corresponding PROC	Use in closed process, no likelihood of exposure (PROC1)     Use in closed, continuous process with occasional controlled exposure (PROC2)
2. Contributing scenario controlling enviro	onmental exposure

Industrial use resulting in inclusion into or onto a matrix (ERC5)

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

2.1 Contributing scenario (1) controlling w	
	SU3: Industrial uses
Use descriptors covered	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: >= 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 so	urce
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/m³
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/m³
Risk Characterization Ratio (RCR)	< 0.01
PROC2	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified



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	version: The concentration of the substance has been considered using a
	linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.188 mg/m³
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/tr	a Please note that a modified version has been used (see exposure estimates)

2.2 Contributing scenario (2) controlling w	vorker exposure
, , , , , , ,	SU3: Industrial uses
Use descriptors covered	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
Concentration of the substance	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 %
Exposure estimate and reference to its so	urce
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/m³
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 <sup>3</sup>
Risk Characterization Ratio (RCR)	< 0.01
PROC2	- 0.01
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified
	1





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	version: The concentration of the substance has been considered using a
	linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.125 mg/m <sup>3</sup>
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/tr	ra Please note that a modified version has been used (see exposure estimates)

2.3 Contributing scenario (3) controlling w	orker exposure
<u> </u>	SU3: Industrial uses
Use descriptors covered	PROC2: Use in closed, continuous process with occasional controlled
•	exposure. (closed systems)
Operational conditions	, , ,
Concentration of the substance	formaldehyde
Concentration of the substance	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 m3
	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	Effectiveness: 98 %
supervision control.	
Personal measures have to be applied in	
case of potential exposure only.	
Exposure estimate and reference to its soil	
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/m³
Risk Characterization Ratio (RCR)	0.51
, ,	The exposure estimate represents the 75th percentile of the exposure





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	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	

2.4 Contributing scenario (4) controlling w	orker 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 m3
	Operation is carried out at elevated temperature (> 20°C above ambient temperature).
Amounts used	Amount per use 1,000 I
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 so	urce
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.
Exposure estimate	Worker - dermal, long-term - systemic
Exposure estimate Risk Characterization Ratio (RCR)	< 0.1 mg/kg bw/day < 0.01
Assessment method	Advanced REACH Tool v1.0
Assessificiti ilictituu	Worker - inhalative, long-term - systemic
Exposure estimate	0.253 mg/m³
Risk Characterization Ratio (RCR)	0.51
Trior Gharacenzation France (FGFV)	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



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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	

**4. Short title of exposure scenario (ES 3-2)** - Industrial use of formaldehyde based products: production of foams, use in adhesives, production of 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	1 Formulation of mixture (ERC2)
scenario (1) and corresponding ERC	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	Use in closed process, no likelihood of exposure (PROC1)
scenarios (2) and corresponding PROC	2 Use in closed, continuous process with occasional controlled exposure (PROC2)
	3 Use in closed batch process (synthesis or formulation) (PROC3)
	4 Use in batch and other process (synthesis) where opportunity for exposure arises (PROC4)
	5 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) (PROC5)
	6 Calendering operations (PROC6)
	7 Industrial spraying (PROC7)
	8 Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (PROC8a)
	9 Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC8b)
	10 Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (PROC9)
	11 Roller application and brushing (PROC10)
	12 Treatment of articles by dipping and pouring (PROC13)
	13 Production of preparations or articles by tabletting, compression, extrusion, pelettisation. ( <i>PROC14</i> )
	14 Using material as fuel sources, limited exposure to unburned to be expected (PROC16)
	15 Low energy manipulation of substances bound in materials and/or articles (PROC21)
	16 Potentially closed processing with minerals/metals at elevated temperature (PROC22) Industrial setting
	17 Open processing and transfer with minerals/ metals at elevated

temperature (PROC23)



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18 High (mechanical) energy work- up of substances bound in
materials and/or articles (PROC24)
19 Other hot work operations with metals (PROC25)

# 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	
Concentration of the substance	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 so		
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/m³	
Risk Characterization Ratio (RCR)	< 0.01	
Assessment method	The use is assessed to be safe.  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/m³	
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		
	ease note that a modified version has been used (see exposure estimates)	
	and the same and t	

2.2 Contributing scenario (2) controlling worker exposure	
	SU3: Industrial uses
Use descriptors covered	PROC2: Use in closed, continuous process with occasional controlled
	exposure. Transfer of liquid products - falling liquids Submerged loading





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	Dedicated facility (open systems)
Operational conditions	
•	formaldehyde
Concentration of the substance	Content: >= 0 % - <= 60 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during	15.2 hPa
use	
Process temperature	150 °C
Duration and Frequency of activity	120 min 5 days per week
Indoor/Outdoor	Indoor
Room size	300 m3
	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	Effectiveness: 98 %
supervision control.	
Vapour recovery system	Effectiveness: 80 %
Wear suitable respiratory protection.	Effectiveness: 90 %
Exposure estimate and reference to its so	
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/m³
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.advancedreachto	ol.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. PROC3: Use in closed batch process (synthesis or formulation).
Operational conditions	
Concentration of the substance	formaldehyde Content: >= 0 % - <= 5 %
Physical state	Liquid, moderate fugacity



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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 so	urce
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/m³
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/m³
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
7.00000ment method	Worker - contact with eyes
	The use is assessed to be safe.
Guidance to Downstream Users	וווב עטב וט מסטבסטבע נט שב סמוב.
For scaling see: http://www.ecetoc.org/tra Ple	ease 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 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	





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Vapour pressure of the substance during	14 hPa
use	
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 so	urce
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.
Francisco estimate	Worker - inhalative, long-term - systemic
Exposure estimate	0.125 mg/m³
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/m³
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	
	ease note that a modified version has been used (see exposure estimates)
1 or obdining occ. http://www.coctoo.org/trailie	saco noto that a modifica voloton had been abea (see exposure estimates)

2.5 Contributing scenario (5) 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 tabletting, compression, extrusion, pelettisation. PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
Operational conditions	
Concentration of the substance	formaldehyde



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	Content: >= 0 % - <= 5 %
Physical state	Liquid, high fugacity
Vapour pressure of the substance during	14 hPa
use	
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	Effectiveness: 95 %
combination with specific activity training	
Exposure estimate and reference to its so	
	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified
	version: The concentration of the substance has been considered using a
Assessment method	linear approach, ECETOC TRA modified version: Use of gloves has been
Assessment method	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
	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified
Assessment method	version: The concentration of the substance has been considered using a
	linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.313 mg/m³
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)	

2.6 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: >= 0 % - <= 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	



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	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/m³
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/m³
Risk Characterization Ratio (RCR)	0.78
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Ple	ease 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: >= 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 P	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



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	PROC8b: Transfer of substance or preparation (charging/discharging)
Operational conditions	from/to vessels/large containers at dedicated facilities
Operational conditions	formaldehyde
Concentration of the substance	Content: >= 0 % - <= 5 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during	14 hPa
use	17 III <b>u</b>
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 so	urce
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.
Eveneum estimate	Worker - inhalative, long-term - systemic
Exposure estimate Risk Characterization Ratio (RCR)	0.094 mg/m³ 0.19
RISK CHARACIERIZALION RALIO (RCR)	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 Ple	ease note that a modified version has been used (see exposure estimates)

2.8 Contributing scenario (8) controlling worker exposure		
	SU3: Industrial uses	
Use descriptors covered	PROC8b: Transfer of substance or preparation (charging/discharging)	
	from/to vessels/large containers at dedicated facilities	
Operational conditions		
Concentration of the substance	formaldehyde	
Concentration of the substance	Content: >= 0 % - <= 2.5 %	
Physical state	Liquid, moderate fugacity	
Vapour pressure of the substance during	14 hPa	
use		
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	Effectiveness: 95 %	
combination with specific activity training	Eliculveliess. 30 /0	
Exposure estimate and reference to its source		



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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, 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/m³
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)

2.9 Contributing scenario (9) controlling w	orker 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 % - <= 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 so	urce
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/m³
Risk Characterization Ratio (RCR)	0.63
	The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.





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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 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 so	urce
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/m³
Risk Characterization Ratio (RCR)	O.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)	

2.11 Contributing scenario (11) 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	





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Concentration of the substance formaldehyde		
Concentration of the substance	Content: >= 0 % - <= 5 %	
Physical state	Solid	
•	480 min 5 days per week	
Duration and Frequency of activity	400 min 3 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	Eff. 1: 05.0/	
combination with specific activity training	Effectiveness: 95 %	
Exposure estimate and reference to its so	urce	
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/m³	
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 Ple	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 PROC25: Other hot work operations with metals	
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		
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	



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Risk Characterization Ratio (RCR)	< 0.01
	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified
Assessment method	version: The concentration of the substance has been considered using a
	linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.25 mg/m³
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 F	Please note that a modified version has been used (see exposure estimates)

**5. Short title of exposure scenario (ES 3-3) -** Industrial use of formaldehyde based products: production of wood based materials (panels, bricks, etc), production of impregnated paper, production of paper and 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: ERC2/3/5/6d
Name of contributing environmental	Formulation of mixture (ERC2)
scenario (1) and corresponding ERC	<ol> <li>Formulation in materials (ERC3)</li> <li>Industrial use resulting in inclusion into or onto a matrix (ERC5)</li> <li>Industrial use of process regulators for polymerization processes in production of resins, rubbers, polymers (ERC6d)</li> </ol>
List of names of contributing worker	Use in closed process, no likelihood of exposure (PROC1)
scenarios (2) and corresponding PROC	<ol><li>Use in closed, continuous process with occasional controlled exposure (PROC2)</li></ol>
	3. Use in closed batch process (synthesis or formulation) (PROC3)
	<ol> <li>Use in batch and other process (synthesis) where opportunity for exposure arises (PROC4)</li> </ol>
	<ol> <li>Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) (PROC5)</li> </ol>
	6. Calendering operations (PROC6)
	7. Industrial spraying (PROC7)
	8. Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (PROC8a)
	9. Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC8b)
	10. Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (PROC9)
	11. Roller application and brushing (PROC10)
	12. Treatment of articles by dipping and pouring (PROC13)
	13. Production of preparations or articles by tabletting, compression,



### **Formalin**

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	extrusion, pelettisation. (PROC14)
	14. Using material as fuel sources, limited exposure to unburned to be expected (PROC16)
	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 (PROC24)
	19. Other hot work operations with metals (PROC25)
O Cantulation according according the continuous	antal arma arma

### 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 w	SU3: Industrial uses
Hee descriptors sovered	
Use descriptors covered	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: >= 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	•
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Exposure estimate and reference to its so	urce
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/m³
Risk Characterization Ratio (RCR)	< 0.01
PROC1	1 0.01
11001	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified
Assessment method	version: The concentration of the substance has been considered using a
	linear approach.
	Worker - inhalative, short-term - systemic
Exposure estimate	< 0.01 mg/m³
Risk Characterization Ratio (RCR)	< 0.01
NISK CHALACIETIZALIUTI RALIU (RCR)	~ 0.01



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PROC2	
	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified
Assessment method	version: The concentration of the substance has been considered using a
	linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.313 mg/m³
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)	

2.2 Contributing scenario (2) controlling w	orker exposure
<u> </u>	SU3: Industrial uses
Use descriptors covered	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 m3
	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	Effectiveness: 98 %
supervision control.	
Vapour recovery system	Effectiveness: 80 %
Wear suitable respiratory protection.	Effectiveness: 90 %
Exposure estimate and reference to its so	
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





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Risk Characterization Ratio (RCR)	< 0.01
Assessment method	Advanced REACH Tool v1.0
	Worker - inhalative, long-term - systemic
Exposure estimate	0.253 mg/m³
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.advancedreacht	ool.com

2.3 Contributing scenario (3) 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 so	urce
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/m³
Risk Characterization Ratio (RCR)	< 0.16
	The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.



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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/m³	
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/tr	a Please note that a modified version has been used (see exposure estimates)	

2.4 Contributing scenario (4) controlling worker exposure	
	SU3: Industrial uses PROC5: Mixing or blending in batch processes for formulation of
Use descriptors covered	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 sol	urce
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/m³



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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)

2.5 Contributing scenario (5) controlling w	
Han dan suintana anyonad	SU3: Industrial uses
Use descriptors covered	PROC7: Industrial spraying Aerosol formation is not covered within the CES
Operational conditions	Aerosor formation is not covered within the CES
Operational conditions	formaldehyde
Concentration of the substance	Content: >= 0 % - <= 2.5 %
Physical state	Liquid, high fugacity
Vapour pressure of the substance during	14 hPa
use	17 III <b>u</b>
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 so	urce
	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified
	version: The concentration of the substance has been considered using a
A accomment method	linear approach, ECETOC TRA modified version: Use of gloves has been
Assessment method	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
	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified
Assessment method	version: The concentration of the substance has been considered using a
	linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.235 mg/m³
Risk Characterization Ratio (RCR)	0.47
Assessment method	Qualitative assessment
	Worker - dermal
	The use is assessed to be safe.
	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified
Assessment method	version: The concentration of the substance has been considered using a
	linear approach.
	Worker - inhalative, short-term - systemic
Exposure estimate	0.78 mg/m³
Risk Characterization Ratio (RCR)	0.78
Assessment method	Qualitative assessment
	Worker - contact with eyes
Ovidence to Desimetrican Heave	The use is assessed to be safe.
Guidance to Downstream Users	



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2.6 Contributing scenario (6) controlling worker exposure		
Use descriptors covered	SU3: Industrial uses PROC8b: Transfer of substance or preparation (charging/discharging)	
Ose descriptors covered	from/to vessels/large containers at dedicated facilities	
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: 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.	
Fun a suma a atima a ta	Worker - inhalative, long-term - systemic	
Exposure estimate	0.047 mg/m³ 0.09	
Risk Characterization Ratio (RCR)	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 Ple	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 PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing). PROC10: Roller application or brushing PROC13: Treatment of articles by dipping and pouring. PROC14: Production of preparations or articles by tabletting, compression, extrusion, 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



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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 so	urce
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/m³
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 Ple	ease note that a modified version has been used (see exposure estimates)

2.8 Contributing scenario (8) controlling worker exposure		
	SU3: Industrial uses	
Use descriptors covered	PROC16: Using material as fuel sources, limited exposure to unburned	
	product to be expected.	
Operational conditions		
Concentration of the substance	formaldehyde	
	Content: >= 0 % - <= 2.5 %	
Physical state	Liquid, moderate fugacity	
Vapour pressure of the substance during	14 hPa	
use		
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	Ellectiveness. 90 /0	
Perform task in a fume cupboard.		
Exposure estimate and reference to its source		
	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified	
Assessment method	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	



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	linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.156 mg/m³
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)	

2.9 Contributing scenario (9) 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 % - <= 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 so	
PROC21, PROC22, PROC23, PROC24, PROC24, PROC24, PROC24, PROC25, PROC26, PROC26	
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	0.25 mg/m³
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, PROC24	
Assessment method	Qualitative assessment
	Worker - dermal
	The use is assessed to be safe.
PROC21, PROC22, PROC23, PROC24, PRO	
Assessment method	Qualitative assessment Worker - contact with eyes



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	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/m³
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)	

**6. Short title of exposure scenario (ES 3-4) -** 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	Sector of end use: SU2a, SU3, SU5, SU8, SU9, SU10, SU11, SU12,
stage	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	Formulation of mixture (ERC2)
scenario (1) and corresponding ERC	2. Formulation in materials (ERC3)
	<ul><li>3. Industrial use resulting in inclusion into or onto a matrix (ERC5)</li><li>4. Industrial use of process regulators for polymerization processes</li></ul>
	in production of resins, rubbers, polymers (ERC6d)
List of names of contributing worker	Use in closed process, no likelihood of exposure (PROC1)
scenarios (2) and corresponding PROC	<ol><li>Use in closed, continuous process with occasional controlled exposure (PROC2)</li></ol>
	3. Use in closed batch process (synthesis or formulation) (PROC3)
	<ol> <li>Use in batch and other process (synthesis) where opportunity for exposure arises (PROC4)</li> </ol>
	<ol> <li>Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) (PROC5)</li> </ol>
	6. Calendering operations (PROC6)
	7. Industrial spraying (PROC7)
	<ol> <li>Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (PROC8a)</li> </ol>
	<ol> <li>Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC8b)</li> </ol>
	<ol> <li>Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (PROC9)</li> </ol>
	11. Roller application and brushing (PROC10)
	12. Treatment of articles by dipping and pouring (PROC13)
	<ol> <li>Production of preparations or articles by tabletting, compression, extrusion, pelettisation. (PROC14)</li> </ol>
	<ol> <li>Using material as fuel sources, limited exposure to unburned to be expected (PROC16)</li> </ol>
	15. Low energy manipulation of substances bound in materials





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	and/or articles (PROC21)
	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 (PROC24)
	19. Other hot work operations with metals (PROC25)
2. Contributing scenario controlling envir	onmental exposure

## ontributing 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	
SU3: Industrial uses	
PROC1: Use in closed process, no likelihood of exposure. PROC2: Use in	
closed, continuous process with occasional controlled exposure.	
formaldehyde	
Content: >= 0 % - <= 1.5 %	
Liquid, moderate fugacity	
14 hPa	
480 min 5 days per week	
Indoor	
Effectiveness: 95 %	
urce	
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	
< 0.1 mg/kg bw/day	
< 0.01	
FOFTOO TDA v.O.O. Washing readified warning FOFTOO TDA modified	
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	
< 0.001 mg/m³	
< 0.01	
( 0.01	
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	
< 0.01 mg/m³	
< 0.01 mg/m³	
< 0.01 mg/m³ < 0.01	
< 0.01	





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	Worker - inhalative, long-term - systemic
Exposure estimate	0.188 mg/m³
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	
	SU3: Industrial uses
Use descriptors covered	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	1000 hPa
use	
Process temperature	150 °C
Duration and Frequency of activity	360 min 5 days per week
Indoor/Outdoor	Indoor
Room size	300 m3
	Operation is carried out at elevated temperature (> 20°C above ambient
Distantance and M	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.	Effectiveness: 99 %
Handle substance within closed system.  Wear chemically resistant gloves in	Effectiveness. 99 %
combination with intensive management	Effectiveness: 98 %
supervision control.	Effectiveness. 90 %
Personal measures have to be applied in	
case of potential exposure only.	
Exposure estimate and reference to its so	UITCE
	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified
Assessment method	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/m³
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.



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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 w	
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 m3
	Operation is carried out at elevated temperature (> 20°C above ambient temperature).
Amounts used	Amount per use 1,000 I
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	Effectiveness: 98 %
supervision control.	
Vapour recovery system	Effectiveness: 80 %
Wear suitable respiratory protection.	Effectiveness: 90 %
Exposure estimate and reference to its so	
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/m³
Risk Characterization Ratio (RCR)	O.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	
	ase note that a modified version has been used (see exposure estimates)



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For scaling see: http://www.advancedreachtool.com

2.4 Contributing scenario (4) controlling w	orker 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 so	urce
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/m³
Risk Characterization Ratio (RCR)	0.94  The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.
PROC4	That upiled by a factor of 2.
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/m³
Risk Characterization Ratio (RCR)	0.75 The short-term exposure value corresponds to the long-term value
DDOC2 DDOC4	multiplied by a factor of 2.
PROC3, PROC4	Qualitative accomment
Assessment method	Qualitative assessment
	Worker - dermal
DDOC2 DDOC4	The use is assessed to be safe.
PROC3, PROC4	Qualitative accomment
Assessment method	Qualitative assessment
	Worker - contact with eyes
Guidanco to Downstroom Hoors	The use is assessed to be safe.
Guidance to Downstream Users	

# 2.5 Contributing scenario (5) controlling worker exposure



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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 so	urce
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/m³
Risk Characterization Ratio (RCR)	O.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 Ple	ease note that a modified version has been used (see exposure estimates)

2.6 Contributing scenario (6) controlling worker exposure		
	SU3: Industrial uses	
Use descriptors covered	PROC7: Industrial spraying	
	Aerosol formation is not covered within the CES	
Operational conditions		
Concentration of the substance	formaldehyde	
Concentration of the substance	Content: >= 0 % - <= 1.5 %	
Physical state	Liquid, high fugacity	
Vapour pressure of the substance during	14 hPa	
use		
Duration and Frequency of activity	480 min 5 days per week	
Indoor/Outdoor	Indoor	
Risk Management Measures		



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Local exhaust ventilation	Effectiveness: 95 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Exposure estimate and reference to its so	urce
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/m³
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 Ple	ase note that a modified version has been used (see exposure estimates)

2.7 Contributing scenario (7) controlling w	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: >= 1 % - <= 5 %	
Physical state	Liquid, moderate fugacity	
Vapour pressure of the substance during	14 hPa	
use		
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)		



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	SU3: Industrial uses
Use descriptors covered	PROC8b: Transfer of substance or preparation (charging/discharging)
Ose descriptors covered	from/to vessels/large containers at dedicated facilities
Operational conditions	TIONING VESSEIS/IAIGE CONTAINERS AT DEGICALED FACILITIES
	formaldehyde
Concentration of the substance	Content: >= 0 % - <= 1.5 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during	14 hPa
use	
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	Effectiveness: 95 %
combination with specific activity training	
Exposure estimate and reference to its so	
	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified
	version: The concentration of the substance has been considered using a
Assessment method	linear approach, ECETOC TRA modified version: Use of gloves has been
7 toodoomone mounou	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
	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified
Assessment method	version: The concentration of the substance has been considered using a
	linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.028 mg/m³
Risk Characterization Ratio (RCR)	0.06
	The short-term exposure value corresponds to the long-term value
A see a series and transition of	multiplied by a factor of 2.
Assessment method	Qualitative assessment
	Worker - dermal
A	The use is assessed to be safe.
Assessment method	Qualitative assessment
	Worker - contact with eyes
Cuidanas ta Daymatras en Usara	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.ecetoc.org/tra Pie	ease 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 tabletting, compression, extrusion, pelettisation.		
Operational conditions	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			





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Local exhaust ventilation	Effectiveness: 90 %
Wear chemically resistant gloves in	Effectiveness: 95 %
combination with specific activity training	
Exposure estimate and reference to its so	
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/m³
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	2.10 Contributing scenario (10) controlling worker exposure	
-	SU3: Industrial uses	
Use descriptors covered	PROC16: Using material as fuel sources, limited exposure to unburned	
	product to be expected.	
Operational conditions		
Concentration of the substance	formaldehyde	
Concentration of the substance	Content: >= 0 % - <= 1.5 %	
Physical state	Liquid, moderate fugacity	
Vapour pressure of the substance during	14 hPa	
use		
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	Lifectiveness. 30 /0	
Perform task in a fume cupboard.		
Exposure estimate and reference to its so		
	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified	
Assessment method	version: The concentration of the substance has been considered using a	
Assessment method	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	
	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified	
Assessment method	version: The concentration of the substance has been considered using a	
	linear approach.	
	Worker - inhalative, long-term - systemic	



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Exposure estimate	0.094 mg/m³
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
2.11 Contributing Sconario (11) Controlling	SU3: Industrial uses
Use descriptors covered	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 so	
PROC21, PROC22, PROC23, PROC24, PR	
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/m³
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, PR	OC25
Assessment method	Qualitative assessment
	Worker - dermal
	The use is assessed to be safe.
PROC21, PROC22, PROC23, PROC24, PR	
Assessment method	Qualitative assessment
	Worker - contact with eyes
DD0.005	The use is assessed to be safe.
PROC25	





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A	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified
Assessment method	version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.075 mg/m³
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)	

7. Short title of exposure scenario (ES 3-5) - 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	Formulation of mixture (ERC2)
scenario (1) and corresponding ERC	2. Formulation in materials (ERC3)
	<ol> <li>Industrial use resulting in inclusion into or onto a matrix (ERC5)</li> <li>Industrial use of process regulators for polymerization processes in production of resins, rubbers, polymers (ERC6d)</li> </ol>
List of names of contributing worker	Use in closed process, no likelihood of exposure (PROC1)
scenarios (2) and corresponding PROC	<ol> <li>Use in closed, continuous process with occasional controlled exposure (PROC2)</li> </ol>
	3. Use in closed batch process (synthesis or formulation) (PROC3)
	<ol> <li>Use in batch and other process (synthesis) where opportunity for exposure arises (PROC4)</li> </ol>
	<ol> <li>Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) (PROC5)</li> </ol>
	6. Calendering operations (PROC6)
	7. Industrial spraying (PROC7)
	8. Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (PROC8a)
	<ol> <li>Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC8b)</li> </ol>
	10. Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (PROC9)
	11. Roller application and brushing (PROC10)
	12. Treatment of articles by dipping and pouring (PROC13)
	<ol> <li>Production of preparations or articles by tabletting, compression, extrusion, pelettisation. (PROC14)</li> </ol>
	<ol> <li>Using material as fuel sources, limited exposure to unburned to be expected (PROC16)</li> </ol>
	15. Low energy manipulation of substances bound in materials and/or articles (PROC21)
	16. Potentially closed processing with minerals/metals at elevated





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	temperature (PROC22) 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 (PROC24)
19	. Other hot work operations with metals (PROC25)
2. Contributing cooperio controlling environmental expecure	

**Formalin** 

## 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.

Use descriptors covered	SU3: Industrial uses
	PROC1: Use in closed process, no likelihood of exposure.
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	480 min 5 days per week
Indoor/Outdoor	Indoor
Room size	300 m3
	Operation is carried out at elevated temperature (> 20°C above ambientemperature).
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 so	
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/m³
	The exposure estimate represents the 75th percentile of the exposur distribution. The short-term exposure value corresponds to the long-terr value multiplied by a factor of 2.





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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 w	orker exposure
Use descriptors covered	SU3: Industrial uses
•	PROC1: Use in closed process, no likelihood of exposure.
Operational conditions	
Concentration of the substance	formaldehyde
Concentration of the substance	Content: >= 0 % - <= 5 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during	14 hPa
use	
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 so	urce
·	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified
A concern out mosthed	version: The concentration of the substance has been considered using a
Assessment method	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
	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified
Assessment method	version: The concentration of the substance has been considered using a
	linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	< 0.001 mg/m³
Risk Characterization Ratio (RCR)	< 0.01
	The use is assessed to be safe.
	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified
Assessment method	version: The concentration of the substance has been considered using a
	linear approach.
	Worker - inhalative, short-term - systemic
Exposure estimate	< 0.01 mg/m³
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 Ple	ase 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: >= 0 % - <= 2.5 %	



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Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during	14 hPa
use	14 III a
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 so	urce
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/m³
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/m³
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/m³
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	
	SU3: Industrial uses
Use descriptors covered	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: >= 0 % - <= 1.5 %





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Vapour pressure of the substance during use  Duration and Frequency of activity	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 sou	ırce
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/m³
Risk Characterization Ratio (RCR)	< 0.01
PROC1	FOFTOO TDA OO W L FOFTOO TDA WELL
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/m³
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
	0.188 mg/m³
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 Plea	ase 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: >= 0 % - <= 1 %	



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Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during	14 hPa
use	
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 so	urce
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/m³
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/m³
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/m³
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)	
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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 %





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Physical state	Liquid, high fugacity
Vapour pressure of the substance during	1000 hPa
use	
Process temperature	150 °C
Duration and Frequency of activity	360 min 5 days per week
Indoor/Outdoor	Indoor
Room size	300 m3
	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	Effectiveness: 98 %
supervision control.	
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
7.00000ment method	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/m³
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: >= 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 m3
	Operation is carried out at elevated temperature (> 20°C above ambient



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Amounts used	temperature). Amount per use 1,000 I	
	Amount per use 1,000 i	
Risk Management Measures		
Provide a good standard of general		
ventilation (not less than 3 - 5 air changes per hour)		
1 /		
Use suitable eye protection.		
Personal measures have to be applied in		
case of potential exposure only.	F# # 00.0/	
Handle substance within closed system.	Effectiveness: 99 %	
Wear chemically resistant gloves in		
combination with intensive management	Effectiveness: 98 %	
supervision control.		
Vapour recovery system	Effectiveness: 80 %	
Wear suitable respiratory protection.	Effectiveness: 90 %	
Exposure estimate and reference to its so		
	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified	
Assessment method	version: The concentration of the substance has been considered using a	
Assessment method	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/m³	
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		
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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	



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	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 <sup>3</sup>
Risk Characterization Ratio (RCR)	< 0.13
RISK Characterization Ratio (RCR)	
	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/m³
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	355 .5 3555556
	a 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	



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	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	
	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified
Assessment method	version: The concentration of the substance has been considered using a
	linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.078 mg/m³
Risk Characterization Ratio (RCR)	< 0.16
	The short-term exposure value corresponds to the long-term value
	multiplied by a factor of 2.
PROC4	
	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified
Assessment method	version: The concentration of the substance has been considered using a
	linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.063 mg/m³
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/tr	a 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		
Operational conditions	batch and other process (synthesis) where opportunity for exposure arises.		
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	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.		





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	Worker - dermal, long-term - systemic
Exposure estimate	< 0.1 mg/kg bw/day
Risk Characterization Ratio (RCR)	< 0.01
PROC3	·
	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified
Assessment method	version: The concentration of the substance has been considered using a
	linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.469 mg/m³
Risk Characterization Ratio (RCR)	0.94
	The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.
PROC4	
	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified
Assessment method	version: The concentration of the substance has been considered using a
	linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.375 mg/m³
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	



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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/m³
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/m³
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/tr	a 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 so	urce
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





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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/m³
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/tr	a Please note that a modified version has been used (see exposure estimates)

2.13 Contributing scenario (13) controlling	
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 so	
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)  Assessment method	< 0.01 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 0.094 mg/m³
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





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	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			
	SU3: Industrial uses		
	PROC5: Mixing or blending in batch processes for formulation of		
	preparations and articles (multistage and/or significant contact). PROC6:		
Use descriptors covered	Colondaring apprehime DDOC90. Transfer of substance or preparation		
•	Calendering operations PROC8a: Transfer of substance or preparation		
	(charging/discharging) from/to vessels/large containers at non-dedicated		
Operational conditions	facilities		
Operational conditions  Concentration of the substance formaldehyde			
Concentration of the substance	Content: >= 0 % - <= 1 %		
Physical state	Liquid, high fugacity		
Vapour pressure of the substance during	14 hPa		
use	111113		
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	Effectiveness: 95 %		
combination with specific activity training			
Exposure estimate and reference to its so			
	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified		
	version: The concentration of the substance has been considered using a		
Assessment method	linear approach, ECETOC TRA modified version: Use of gloves has been		
Assessment method	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		
	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified		
Assessment method	version: The concentration of the substance has been considered using a		
	linear approach.		
	Worker - inhalative, long-term - systemic		
Exposure estimate	0.063 mg/m³		
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 Ple	ase 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



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	articles by dipping and pouring. PROC14: Production of preparations or
	articles by tabletting, compression, extrusion, pelettisation. PROC8a: Transfer of substance or preparation (charging/discharging) from/to
	vessels/large containers at non-dedicated facilities
Operational conditions	vessels/large containers at non-dedicated radiities
•	formaldehyde
Concentration of the substance	Content: >= 0 % - <= 5 %
Physical state	Liquid, high fugacity
Vapour pressure of the substance during	14 hPa
use	
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 so	urce
,	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified
Assessment method	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/m³
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 Ple	ease note that a modified version has been used (see exposure estimates)

2.16 Contributing scenario (16) controlling worker exposure	
	SU3: Industrial uses
Use descriptors covered	PROC7: Industrial spraying
	Aerosol formation is not covered within the CES
Operational conditions	
Concentration of the substance	formaldehyde
	Content: >= 0 % - <= 5 %
Physical state	Liquid, high fugacity
Vapour pressure of the substance during	14 hPa
use	
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	Effectiveness: 95 %



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combination with specific activity training	
Exposure estimate and reference to its so	ource
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/m³
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/m³
Risk Characterization Ratio (RCR)	0.78
Guidance to Downstream Users	0.70
	ages note that a modified version has been used (see expecture estimates)
For scaling see: http://www.ecetoc.org/tra Pl	ease note that a modified version has been used (see exposure estimates)

0.47.0 (47)		
2.17 Contributing scenario (17) controlling	,	
	SU3: Industrial uses	
Use descriptors covered	PROC7: Industrial spraying	
	Aerosol formation is not covered within the CES	
Operational conditions		
Concentration of the substance	formaldehyde	
Concentration of the substance	Content: >= 0 % - <= 2.5 %	
Physical state	Liquid, high fugacity	
Vapour pressure of the substance during	14 hPa	
use		
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	Effectiveness: 95 %	
combination with specific activity training	Effectiveness. 90 %	
Exposure estimate and reference to its source		
	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified	
	version: The concentration of the substance has been considered using a	
Assessment method	linear approach, ECETOC TRA modified version: Use of gloves has been	
Assessment method	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	





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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.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.235 mg/m³
Risk Characterization Ratio (RCR)	0.47
Assessment method	Qualitative assessment
	Worker - dermal
	The use is assessed to be safe.
	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified
Assessment method	version: The concentration of the substance has been considered using a
	linear approach.
	Worker - inhalative, short-term - systemic
Exposure estimate	0.78 mg/m³
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 F	Please note that a modified version has been used (see exposure estimates)

2.18 Contributing scenario (18) controlling	worker exposure
	SU3: Industrial uses
Use descriptors covered	PROC7: Industrial spraying
•	Aerosol formation is not covered within the CES
Operational conditions	
Concentration of the substance	formaldehyde
Concentration of the substance	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: 95 %
Wear chemically resistant gloves in	Effectiveness: 95 %
combination with specific activity training	Effectiveness. 95 %
Exposure estimate and reference to its sou	urce
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.
Tunasuma astimasta	Worker - inhalative, long-term - systemic
Exposure estimate	0.230 mg/m³
Risk Characterization Ratio (RCR)	O.47  The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.
Assessment method	Qualitative assessment
	Worker - dermal





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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
	SU3: Industrial uses
Use descriptors covered	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	14 hPa
use	
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	Effectiveness: 95 %
combination with specific activity training	
Exposure estimate and reference to its so	
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/m³
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 Ple	ease 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





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	<u> </u>	
	Content: >= 1 % - <= 5 %	
Physical state	Liquid, moderate fugacity	
Vapour pressure of the substance during	14 hPa	
use		
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	Effectiveness: 95 %	
combination with specific activity training	LifeCtiveriess. 90 70	
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	
<b>5</b> - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	SU3: Industrial uses
Use descriptors covered	PROC8b: Transfer of substance or preparation (charging/discharging)
•	from/to vessels/large containers at dedicated facilities
Operational conditions	•
Concentration of the substance	formaldehyde
Concentration of the substance	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: 97 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Exposure estimate and reference to its so	
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/m³
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.



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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	
Line depositation accorded	SU3: Industrial uses
Use descriptors covered	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 % - <= 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 so	urce
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/m³
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	
	ease note that a modified version has been used (see exposure estimates)
	and the state of t

2.23 Contributing scenario (23) controlling worker exposure	
	SU3: Industrial uses
Use descriptors covered	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	14 hPa
use	
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor



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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 so	urce	
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/m³	
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	
	SU3: Industrial uses
Use descriptors covered	PROC8b: Transfer of substance or preparation (charging/discharging)
	from/to vessels/large containers at dedicated facilities
Operational conditions	
Concentration of the substance	formaldehyde
Concentration of the substance	Content: >= 0 % - <= 1 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during	14 hPa
use	
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	Effectiveness OF 0/
combination with specific activity training	Effectiveness: 95 %
Exposure estimate and reference to its so	urce
•	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified
	version. The concentration of the substance has been considered using a
A consequent weatherd	linear approach, ECETOC TRA modified version: Use of gloves has been
Assessment method	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



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	version: The concentration of the substance has been considered using a
	linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.019 mg/m³
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	<u> </u>
For scaling see: http://www.ecetoc.org/ti	ra Please note that a modified version has been used (see exposure estimates)

2.25 Contributing scenario (25) controlling worker exposure	
	SU3: Industrial uses PROC9: Transfer of substance or preparation into small containers
Use descriptors covered	(dedicated filling line, including weighing). PROC10: Roller application or brushing PROC13: Treatment of articles by dipping and pouring. PROC14: Production of preparations or articles by tabletting,
	compression, extrusion, 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	Effectiveness: 95 %
combination with specific activity training	
Exposure estimate and reference to its so	
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/m³
Risk Characterization Ratio (RCR)	0.31
	The short-term exposure value corresponds to the long-term value
A	multiplied by a factor of 2.
Assessment method	Qualitative assessment
	Worker - dermal
A consequent weatherd	The use is assessed to be safe.
Assessment method	Qualitative assessment
	Worker - contact with eyes



## **Formalin**

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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
(,	SU3: Industrial uses
Use descriptors covered	PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing). PROC10: Roller application of brushing PROC13: Treatment of articles by dipping and pouring. PROC14 Production of preparations or articles by tabletting, compression extrusion, pelettisation.
Operational conditions	· 1
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 so	
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/m³
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 Ple	ease note that a modified version has been used (see exposure 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 tabletting, compression, extrusion, pelettisation.	
Operational conditions	71	



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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	110001
Local exhaust ventilation	Effectiveness: 90 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Exposure estimate and reference to its so	urce
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/m³
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 Ple	ease 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	
Onerational conditions	product to be expected.	
Operational conditions		
Concentration of the substance	formaldehyde	
	Content: >= 0 % - <= 5 %	
Physical state	Liquid, moderate fugacity	
Vapour pressure of the substance during	14 hPa	
use		
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	



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	considered additionally.
	Worker - dermal, long-term - systemic
Exposure estimate	< 0.1 mg/kg bw/day
Risk Characterization Ratio (RCR)	< 0.01
	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified
Assessment method	version: The concentration of the substance has been considered using a
	linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.313 mg/m³
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	
	SU3: Industrial uses
Use descriptors covered	PROC16: Using material as fuel sources, limited exposure to unburned
0 " 1 ""	product to be expected.
Operational conditions	
Concentration of the substance	formaldehyde
DI : I ( )	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	
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Perform task in a fume cupboard.	
Exposure estimate and reference to its so	urce
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/m³
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



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	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		
SU3: Industrial uses		
Use descriptors covered	PROC16: Using material as fuel sources, limited exposure to unburned	
•	product to be expected.	
Operational conditions		
Concentration of the substance	formaldehyde	
Concentration of the substance	Content: >= 0 % - <= 1.5 %	
Physical state	Liquid, moderate fugacity	
Vapour pressure of the substance during	14 hPa	
use	100 : 5 !	
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		
-	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified	
Assessment method	version: The concentration of the substance has been considered using a	
Assessment method	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	
	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified	
Assessment method	version: The concentration of the substance has been considered using a	
	linear approach.	
	Worker - inhalative, long-term - systemic	
Exposure estimate	0.094 mg/m³	
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		
	SU3: Industrial uses PROC21: Low energy manipulation of substances bound in materials	
Use descriptors covered	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	



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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 so	IIICA
Exposure estimate and reference to its so	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified
Assessment method	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/m³
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 Ple	ease note that a modified version has been used (see exposure estimates)

2.32 Contributing scenario (32) controlling worker exposure		
	SU3: Industrial uses	
	PROC21: Low energy manipulation of substances bound in materials	
	and/or articles PROC22: Potentially closed processing operations (with	
Use descriptors covered	minerals) at elevated temperature PROC23: Open processing and	
p	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	articles i 10025. Other not work operations with metals	
Operational conditions	formaldohydo	
Concentration of the substance	formaldehyde Content: >= 0 % - <= 2.5 %	
Dhysical state	Solid	
Physical state		
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	Effectiveness: 95 %	
combination with specific activity training	Effectiveness. 95 %	
Exposure estimate and reference to its so	urce	
PROC21, PROC22, PROC23, PROC24, PROC24	DC25	
	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified	
Assessment method	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	



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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/m³
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	
	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified
Assessment method	version: The concentration of the substance has been considered using a
	linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.125 mg/m³
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		
SU3: Industrial uses		
Use descriptors covered	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, PRO	DC25	
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	





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	version: The concentration of the substance has been considered using a
	linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.15 mg/m³
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, PR	OC25
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	
	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified
Assessment method	version: The concentration of the substance has been considered using a
	linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.075 mg/m³
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
Ose descriptors covered	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 so	urce
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/m³
Risk Characterization Ratio (RCR)	0.2



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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
	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.or	g/tra Please note that a modified version has been used (see exposure 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	That of the order	
Concentration of the substance	formaldehyde Content: >= 0 % - <= 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 so	urce	
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/m³	
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		

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: >= 0 % - <= 5 %	
Physical state	Solid	
Duration and Frequency of activity	480 min 5 days per week	

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



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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 so	urce
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/m³
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)	

**8. Short title of exposure scenario (ES 4-1)** - 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  • V5 Chemical product category: PC9a/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	<ul> <li>Formulation of mixture (ERC2)</li> <li>Formulation in materials (ERC3)</li> <li>Industrial use resulting in inclusion into or onto a matrix (ERC5)</li> <li>Wide dispersive indoor use of processing aids in open systems (ERC8a)</li> <li>Wide dispersive indoor use of reactive substances in open systems (ERC8b)</li> <li>Wide dispersive indoor use resulting in inclusion into or onto a matrix (ERC8c)</li> <li>Wide dispersive outdoor use of processing aids in open systems (ERC8d)</li> <li>Wide dispersive outdoor use resulting in inclusion into or onto a matrix (ERC8f)</li> </ul>
List of names of contributing worker scenarios (2) and corresponding PROC	Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) (PROC5)



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	2 Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (PROC8a)
	3 Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC8b)
	4 Roller application and brushing (PROC10)
	5 Non industrial spraying (PROC11)
	6 Treatment of articles by dipping and pouring (PROC13)
	7 Use as laboratory reagent (PROC15)
	8 Using material as fuel sources, limited exposure to unburned to be expected (PROC16)
	9 Hand-mixing with intimate contact and only PPE available (PROC19)
	10 Low energy manipulation of substances bound in materials and/or articles (PROC21)
	11 Potentially closed processing with minerals/metals at elevated temperature (PROC22) Industrial setting
	12 Open processing and transfer with minerals/ metals at elevated temperature (PROC23)
	13 High (mechanical) energy work- up of substances bound in materials and/or articles (PROC24)
	14 Other hot work operations with metals (PROC25)
List of names of corresponding PC	Coating and paints, thinners, paint removal (PC9a)
	2. Fillers, putties, plasters, modelling clay (PC9b)
	3. Finger paints (PC9c)
	4. Fuels (PC13)
	5. Polishes and wax blends (PC31)
	6. Washing and cleaning products (including solvent based products) (PC35)
	7. Cosmetics, personal care products (PC39)
2 Contributing econorio controlling onviro	anmontal expective

#### 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.

2.4. Contribution and a (4) and a library and a	
2.1 Contributing scenario (1) controlling worker exposure	
	SU22: Professional uses
Use descriptors covered	PROC5: Mixing or blending in batch processes for formulation of
	preparations and articles (multistage and/or significant contact).
Operational conditions	•
Composition of the substance	formaldehyde
Concentration of the substance	Content: >= 0 % - <= 1.5 %
Physical state	Liquid, high fugacity
Vapour pressure of the substance during	14 hPa
use	
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	Ellectiveness. 90 %
Wear a half face respirator conforming to	Effectiveness: 90 %



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EN140 Type A filter or better.	
Exposure estimate and reference to it	s 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/m³
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/tr	a Please note that a modified version has been used (see exposure estimates)

2.2 Contributing scenario (2) controlling worker exposure	
	SU3: Industrial uses
Use descriptors covered	PROC8b: Transfer of substance or preparation (charging/discharging)
	from/to vessels/large containers at dedicated facilities
Operational conditions	
Concentration of the substance	formaldehyde
Concentration of the substance	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	Effectiveness: 95 %
combination with specific activity training	Effectiveness. 90 %
Exposure estimate and reference to its so	urce
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/m³
Risk Characterization Ratio (RCR)	0.19



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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
	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 w	orker exposure
<b>5</b>	SU3: Industrial uses
Use descriptors covered	PROC11: Non industrial spraying
•	Aerosol formation is not covered within the CES
Operational conditions	
Concentration of the substance	formaldehyde
Concentration of the substance	Content: >= 0 % - <= 1.5 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during	14 hPa
use	
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	F. ( ) 00 0/
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 so	
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/m³
Risk Characterization Ratio (RCR)	0.23
Assessment method	Qualitative assessment
	Worker - dermal
A	The use is assessed to be safe.
Assessment method	Qualitative assessment
	Worker - contact with eyes
	The use is assessed to be safe.  ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified
Assessment method	version: The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, short-term - systemic
Exposure estimate	0.38 mg/m³
Risk Characterization Ratio (RCR)	0.38
Guidance to Downstream Users	



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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	
Handaradatan arang d	SU22: Professional uses
Use descriptors covered	PROC15: Use a laboratory reagent. PROC16: Using material as fuel
Operational conditions	sources, limited exposure to unburned product to be expected.
•	formaldehyde
Concentration of the substance	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 so	
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/m³
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.
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For scaling see: http://www.ecetoc.org/tra Ple	ease 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	
Concentration of the substance	Content: >= 0 % - <= 1.5 %	
Physical state	Liquid, moderate fugacity	
Vapour pressure of the substance during	14 hPa	
use		
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	LITECUIVEHESS. 30 /0	
Perform task in a fume cupboard.		



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Wear a half face respirator conforming to EN140 Type A filter or better.	Effectiveness: 90 %
Exposure estimate and reference to its so	urce
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/m³
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/kg bw/day
Risk Characterization Ratio (RCR)	0.38
Guidance to Downstream Users	0.00
	ease note that a modified version has been used (see exposure estimates)

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2.6 Contributing scenario (6) controlling w	
	SU22: Professional uses
	PROC21: Low energy manipulation of substances bound in materials
Llee descriptore severed	and/or articles PROC23: Open processing and transfer operations (with
Use descriptors covered	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
Concentration of the substance	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	Effectiveness: 95 %
combination with specific activity training	Effectiveness. 90 %
Exposure estimate and reference to its source	
PROC21, PROC23, PROC24, PROC25	
	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified
Accomment mathed	version: The concentration of the substance has been considered using a
Assessment method	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	



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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.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.30 mg/m³
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	
	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified
Assessment method	version: The concentration of the substance has been considered using a
	linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	0.15 mg/m³
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 Pl	ease note that a modified version has been used (see exposure estimates)

# **9. Short title of exposure scenario (ES 4-2) -** Professional use of products containing formaldehyde up to 1%: resins in wood applications (eg. glues)

Use descriptors related to the life cycle	Sector of end use: SU22
stage	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	Manufacture of substances(ERC1)
scenario (1) and corresponding ERC	Formulation of mixture (ERC2)
	Formulation in materials(ERC3)
	<ol> <li>Industrial use of processing aids in processes and products, not becoming part of articles (ERC4)</li> </ol>
	<ol> <li>Industrial use resulting in manufacture of another substance (use of intermediates) (ERC6a)</li> </ol>
	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)
	Industrial use of substances in closed systems (ERC7)
List of names of contributing worker scenarios (2) and corresponding PROC	Mixing or blending in batch processes for formulation of mixture and articles (multistage and/or significant contact) (PROC5)
	<ol> <li>Transfer of substance or mixture (charging/discharging) from/to vessels/large containers at non-dedicated facilities (PROC8a)</li> </ol>





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	3. Transfer of substance or mixture (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC8b)
	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:	
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	
formaldehyde Content: >= 0 % - <= 1 %	
Liquid, high fugacity	
14 hPa	
480 min 5 days per week	
Indoor	
Effectiveness: 80 %	
Effectiveness: 95 %	
urce	
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	
< 0.1 mg/kg bw/day	
< 0.01	
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	
0.25 mg/m³	
0.5	
0.5  The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.	
0.5  The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.  Qualitative assessment	
0.5 The short-term exposure value corresponds to the long-term value multiplied by a factor of 2. Qualitative assessment Worker - dermal	
0.5  The short-term exposure value corresponds to the long-term value multiplied by a factor of 2.  Qualitative assessment	





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	Worker - contact with eyes
	The use is assessed to be safe.
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2.2 Contributing scenario (2) controlling worker exposure for:	
<b>3</b>	SU3: Industrial uses
Use descriptors covered	PROC8b: Transfer of substance or preparation (charging/discharging)
	from/to vessels/large containers at dedicated facilities
Operational conditions	
Concentration of the substance	formaldehyde
Concentration of the substance	Content: >= 0 % - <= 1 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during	14 hPa
use	
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	Effectiveness: 95 %
combination with specific activity training	
Exposure estimate and reference to its so	
	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified
	version: The concentration of the substance has been considered using a
Assessment method	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
	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified
Assessment method	version: The concentration of the substance has been considered using a
	linear approach.
Function at	Worker - inhalative, long-term - systemic
Exposure estimate	0.063 mg/m³
Risk Characterization Ratio (RCR)	0.13
	The short-term exposure value corresponds to the long-term value
A see a see see the see	multiplied by a factor of 2.
Assessment method	Qualitative assessment
	Worker - dermal
A consequent weatherd	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	14 hPa



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use	
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	IIIdool
Wear chemically resistant gloves in	
combination with specific activity training	Effectiveness: 95 %
Perform task in a fume cupboard.	
Exposure estimate and reference to its so	
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/m³
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 Ple	ase note that a modified version has been used (see exposure estimates)

# **10. Short title of exposure scenario (ES5) -** 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  ■ <u>V5</u> Chemical product category: PC1/3/9a/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> <li>Wide dispersive indoor use of processing aids in open systems (ERC8a)</li> <li>Wide dispersive indoor use of reactive substances in open systems (ERC8b)</li> <li>Wide dispersive indoor use resulting in inclusion into or onto a matrix (ERC8c)</li> <li>Wide dispersive outdoor use of processing aids in open systems (ERC8d)</li> <li>Wide dispersive outdoor use resulting in inclusion into or onto a matrix (ERC8f)</li> <li>Wide dispersive outdoor use of long-life articles and materials with low release (ERC10a)</li> <li>Wide dispersive indoor use of long-life articles and materials with</li> </ol>
List of names of corresponding PC	low release (ERC11a)  1. Adhesives, sealants (PC1) 2. Air care products (PC3)



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- 3. Coatings and paints, thinners, paint removers (PC9a)
  - 4. Fillers, putties, plasters, modeling clay (PC9b)
  - 5. Finger paints (PC9c)
  - 6. Fuels (PC13)
  - 7. Non-metal-surface treatment products (PC15)
  - 8. Ink and toners (PC18)
  - 9. Laboratory chemicals (PC21)
  - 10. Leather tanning (PC23)
  - 11. Polishes and wax blends (PC31)
  - 12. Polymer preparations and compounds (PC32)
  - 13. Washing and cleaning products (including solvent based products) (PC35)
  - 14. Water treatment chemicals (PC37)
  - 15. Cosmetics, personal care products (PC39)

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%.