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SIBUR-KHIMPROM JSC

SAFETY DATA SHEET

According to Regulations (EC) 1907/2006 (REACH), (EC) 1272/2008 (CLP) & (EU) 2015/830

ISO-BUTANOL

Version: 3.0

Date created: 03/04/2018

SECTION 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND COMPANY/UNDERTAKING

1.1. Product identifier

Product form: Substance

Substance name: 2-methyl-propan-1-ol Chemical name: 2-methyl-propan-1-ol

EC index No.: 603-108-00-1 EC No.: 201-148-0 CAS-No.: 78-83-1

REACH registration No: 01-2119484609-23-0003

Formula: $C_4H_{10}O$

Synonyms: Isobutyl alcohol, isobutanol, IBA, 2-methyl-1-propanol,

Isopropylcarbinol

Trade names: Iso-butanol

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

1.2.1. Relevant identified uses

Use of the Distribution of substances

substance/mixture: Distribution of substances (professional)

Formulation & (re)packing of substances and mixtures

Manufacture of substances

Metal working fluids / rolling oils

Metal working fluids / rolling oils (professional)

Production of iso-butanol Use as consumer care product

Use as intermediate
Use in cleaning agents

Use in cleaning agents (consumer)
Use in cleaning agents (professional)

Use in Coatings (paint, ink, toners, adhesives)

Use in Coatings (paints, ink, toners, adhesives), consumer Use in Coatings (paints, ink, toners, adhesives), professional

Use in Laboratories Use in lubricants

Use in Lubricants (consumer)
Use in Lubricants (professional)

For the detailed identified uses of the product see Annex.

1.2.2. Uses advised against

Restrictions on use: Uses other than those given in section 1.2.1 are not recommended unless

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an assessment is completed, prior to commencement of that use, which demonstrates that the use will be controlled

1.3. Details of the supplier of the safety data sheet

Only representative

Company name: Gazprom Marketing and Trading France

Address: 68 avenue des Champs-Elysées, 75008, Paris, France

Contact Telephone: +33 1 42 99 73 50 Fax: +33 1 42 99 73 99

Email Address: didier.lebout@gazprom-mt.com

Manufacturer

Company name: Sibur-Khimprom JSC

Address: 98, Promishlennaya str., Perm, Perm region,

614055, Russian Federation

Contact phone: +7 3422 90-89-01 (Chief Engineer, Moscow time, 7.00 to 15.00)

Fax: +7 3422 90-86-60 Email Address: mail-shp@sibur.ru

Emergency Telephone: +7 3422 90-87-05 (round the clock)

Importer: List of importers is available with the Only Representative

1.4. Emergency telephone number

Emergency phone in 112 (Please note that emergency numbers may vary depending upon the country of delivery though 112 remains valid as universal number

SECTION 2. HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

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

H226 Flam. Liquid 3 H315 Skin Irrit. 2 H318 Eye Dam. 1

H335 STOT Single Exp. 3 H336 STOT Single Exp. 3

Full text of hazard classes and H-statements: see section 16

2.2. Label elements

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

Hazard pictograms

(CLP):





GHS02

GHS05

GHS07

Signal word (CLP): Danger

Hazard statements H226: Flammable liquid and vapour.

(CLP): H315: Causes skin irritation.

H318: Causes serious eye damage. H335: May cause respiratory irritation. Affected organs: respiratory tract.

H336: May cause drowsiness or dizziness. *Affected organs: central nervous system.*

Precautionary statements P210: Keep away from heat, hot surfaces, sparks, open flames and other

(CLP): ignition sources. No smoking.

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P233: Keep container tightly closed.

P240: Ground and bond container and receiving equipment.

P241: Use explosion-proof electrical/ventilating/lighting equipment.

P242: Use non-sparking tools.

P243: Take precautionary measures against static discharge.

P280: Wear protective gloves/protective clothing/eye protection/face

protection.

P303+P361+P353: IF ON SKIN (or hair): Remove/Take off

immediately all contaminated clothing. Rinse skin with water/shower. P370+P378: In case of fire: Use water spray, dry extinguishing media,

alcohol-resistant foam, carbon dioxide for extinction. P403+P235: Store in a well-ventilated place. Keep cool. P501: Dispose of contents/container in accordance with local/regional/national /international regulations.

EUH-statements: Not applicable.

Other hazards not

contributing to the

Other hazards

classification:

2.3.

Assessment PBT / vPvB: According to Annex XIII of Regulation (EC) No.1907/2006 (REACH):

- not fulfilling PBT (persistent/bioaccumulative/toxic) criteria;

- not fulfilling vPvB (very persistent/very bioaccummulative) criteria.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Not available.

Substances 3.1.

Name	Product identifier	%	Classification [CLP]
2-methyl-propan-1-ol	(CAS-No.) 78-83-1	98.5-	H226, H315, H318, H335,
	(EC No.) 201-148-0	99.8	H336
	(EC index No.) 603-108-00-1		
	(REACH-no) 01-		
	2119484609-23-0003		
Butan-1-ol	(CAS-No.) 71-36-3	< 0.1	H226, H302, H315, H318,
	(EC No.) 200-751-6		H335, H336
	(EC index No.) 603-004-00-6		
Dibutyl ether	(CAS-No.) 142-96-1	< 0.22	H226,H315,H319, H335, H412
	(EC No.) 205-575-3		
	(EC index No.) 603-054-00-9		

The product does not contain impurities or additives that could affect product's labelling and classification according to Regulation (EC) No 67/548/EEC and Regulation (EC) No 1272/2008 (CLP).

3.2. **Mixtures**

Not applicable.

SECTION 4. FIRST-AID MEASURES

Description of first aid measures

First-aid measures general

First aid personnel should pay attention to their own safety. If the patient is likely to become

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unconscious, place and transport in stable sideways position (recovery position). Immediately remove contaminated clothing.

First-aid measures after inhalation

Move any exposed person to fresh air at once. Keep warm and at rest. If there is respiratory distress give oxygen. If respiration stops or shows signs of failing, apply artificial respiration.

Get medical attention immediately.

First-aid measures after skin contact

Remove contaminated clothing and wash skin with plenty of running water, under a shower if affected area is large enough to warrant this. Get medical attention if irritation develops or persists.

First-aid measures after eye contact

Rinse immediately eye with plenty of low pressure water for at least 15 minutes.

Remove any contact lenses. Get medical attention immediately.

First-aid measures after ingestion

Potential for aspiration if swallowed. Get medical aid immediately. Wash out mouth with water and give plenty of water to drink, provided person is conscious. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If vomiting occurs naturally, have victim lean forward.

Most important symptoms and effects, both acute and delayed

Dyspnoea, discoordination, irritation of respiratory tract, nausea, Symptoms/effects after

inhalation: vomiting, weakness

Symptoms/effects after Dryness, redness

skin contact:

Pain, lacrimation Symptoms/effects after

eye contact:

Symptoms/effects after Dyspnoea, discoordination, irritation of respiratory tract, nausea,

ingestion: vomiting, weakness

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

Advice to physician

Treat according to symptoms (decontamination, vital functions), no known specific antidote.

SECTION 5. FIRE-FIGHTING MEASURES

5.1. **Extinguishing media**

Suitable extinguishing Water spray, dry powder, alcohol-resistant foam, carbon dioxide

media

Unsuitable extinguishing Do NOT use straight streams of water. Material is lighter than water and

media a fire may be spread by the use of water.

5.2. Special hazards arising from the substance or mixture

Flammable in the presence of a source of ignition when the temperature Fire hazard:

is above the flash point. Keep away from heat/sparks/open flame/hot

surface. No smoking.

Vapours may form explosive mixture with air. Prevent buildup of Explosion hazard:

> vapours or gases to explosive concentrations. Vapours may travel considerable distance to a source of ignition and flash back. Water may

> May evolve oxides of carbon (COx) under fire conditions. Combustion

cause splattering. Container may rupture on heating.

decomposition products

generates irritating and highly toxic fumes.

in case of fire:

Hazardous

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5.3. Advice for firefighters

Firefighting instructions: Evacuate unnecessary personnel to safe areas. Use water spray to keep

fire-exposed containers cool. Water may be ineffective in fighting the fire. Fight fire from a protected location. Move containers from fire area

if you can do so without risk.

Protection during

firefighting:

Wear self-contained breathing apparatus and chemical-protective

clothing.

Further information: Collect contaminated extinguishing water separately, do not allow to

reach sewage or effluent systems. Foam should be applied in large quantities as it is broken down to some extent by the product.

SECTION 6. ACCIDENTAL RELEASE MEASURE

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

6.1.2. For emergency responders

Emergency procedures May form explosive mixtures with air. Immediately evacuate all

personnel from danger area. Ventilate closed spaces before entering them. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Keep upwind.

Keep unauthorized personnel away.

Stop the flow of material, if this is without risk. Prevent entry into

waterways, sewer, basements or confined areas.

In the event of a spill or accidental release, notify relevant authorities in

accordance with all applicable regulations.

6.2. Environmental precautions

Do not contaminate water sources or sewer. Prevent further leakage or spillage if safe to do so.

6.3. Methods and material for containment and cleaning up

For large amounts: Pump off product. Dike far ahead of larger spill for later recovery and disposal. For residues: Pick up with suitable absorbent material (e.g. sand, sawdust, general-purpose binder, kieselguhr). Dispose of absorbed material in accordance with regulations.

6.4. Reference to other sections

SECTION 8: Exposure controls/personal protection. SECTION 13: Disposal considerations.

SECTION 7. HANDLING AND STORAGE

7.1. Precautions for safe handling

Precautions for safe

Use only in a v

handling

Use only in a well-ventilated area. Ground and bond containers when transferring material. Avoid contact with eyes, skin, and clothing. Empty containers retain product residue, (liquid and/or vapour), and can be dangerous. Keep container tightly closed. Keep away from heat, sparks and flame. Take precautionary measures against static discharges. Avoid ingestion and inhalation. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames.

Hygiene measures

Wash thoroughly after handling. Wash your hands at the end of each work shift, before and after eating, drinking, smoking or using the toilet.

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7.2. Conditions for safe storage, including any incompatibilities

Conditions for safe Keep away from heat, sparks, and flame. Keep away from sources of

storage ignition. Store in a tightly closed container. Store in a cool, dry, well-

ventilated area away from incompatible substances.

Incompatible materials Strong oxidizing agents.

Storage area Ensure thorough ventilation of stores and work areas.

7.3. Specific end use(s)

Not applicable.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

8.1.1. Occupational Exposure Limits

2-methyl-propan-1-ol (CAS 78-83-1)					
	LTEL TWA ppm	LTEL TWA mg/m ³	STEL ppm	STEL mg/m ³	Note
Austria	50	150	200	600	
Belgium	50	154			
Denmark	50	150	50	150	
France	50	150			
Germany (AGS)	100	310	100 (1)	310 (1)	15 minutes average value
Germany (DFG)	100	310	100	310	
Ireland	50	150	75 (1)	225 (1)	15 minutes average value
Latvia		10			
Poland		100		200	
Spain	50	154			
Sweden	50	150	75 (1)	250 (1)	15 minutes average value
Switzerland	50	150	50	150	
United Kingdom	50	154	75	231	

8.1.2. DNEL/PNEC values

No hazard identified
Low hazard (no threshold derived)
Medium hazard (no threshold derived)
Low hazard (no threshold derived)
No hazard identified
Low hazard (no threshold derived)
Medium hazard (no threshold derived)
310 mg/m^3
Medium hazard (no threshold derived)
No hazard identified

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Acute - systemic effects, inhalation	Low hazard (no threshold derived)
Acute - systemic effects, oral	No hazard identified
Acute - local effects, dermal	Medium hazard (no threshold derived)
Acute - local effects, inhalation	Low hazard (no threshold derived)
Long-term - systemic effects, dermal	No hazard identified
Long-term - systemic effects,	Low hazard (no threshold derived)
inhalation	
Long-term - systemic effects,oral	No hazard identified
Long-term - local effects, dermal	Medium hazard (no threshold derived)
Long-term - local effects, inhalation	55 mg/m^3
Eyes, local effects	Medium hazard (no threshold derived)
PNEC (water)	
PNEC aqua (freshwater)	0.4 mg/L
PNEC aqua (marine water)	0.04 mg/L
PNEC aqua (intermittent, freshwater)	11 mg/L
PNEC (Sediment)	
PNEC sediment (freshwater)	1.56 mg/kg sediment dw
PNEC sediment (marine water)	0.156 mg/kg sediment dw
PNEC (Soil)	
PNEC soil	0.0765 mg/kg soil dw
PNEC (Oral)	
PNEC oral (secondary poisoning)	As the substance is not considered bioaccumulative,
	secondary poisoning is not a relevant exposure route.
PNEC (STP)	
PNEC sewage treatment plant	10 mg/L
0.2 E-maguma controls	

8.2. Exposure controls

Appropriate engineering controls:

Use explosion-proof ventilation equipment. Provide easy access to water supply and eye wash facilities. Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Hand protection:

Suitable chemical resistant safety gloves (EN 374) also with prolonged, direct contact (Recommended: Protective index 6, corresponding > 480 minutes of permeation time according to EN 374): E.g. nitrile rubber (0.4 mm), chloroprene rubber (0.5 mm), butyl rubber (0.7 mm) etc. Supplementary note: The specifications are based on tests, literature data and information of glove manufacturers or are derived from similar substances by analogy. Due to many conditions (e.g. temperature) it must be considered, that the practical usage of a chemical-protective glove in practice may be much shorter than the permeation time determined through testing.

Eye protection:

Tightly fitting safety goggles (splash goggles) (e.g. EN 166)

Skin and body protection:

Body protection must be chosen depending on activity and possible exposure, e.g. apron, protecting boots, chemical-protection suit (according to EN 14605 in case of splashes or EN ISO 13982 in case of dust).

Respiratory protection:

A respiratory protection program compliant with all applicable regulations must be followed

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whenever workplace conditions require the use of a respirator. Under normal use conditions, respirator is not usually required.

Use appropriate respiratory protection if exposure to dust particles, mist or vapours is likely. Use self-contained breathing apparatus for entry into confined space, for other poorly ventilated areas, for large spill clean-up sites, or if exposure limits are exceeded, or if irritation or other symptoms are experienced.

Environmental exposure controls:

Do not contaminate water sources or sewer.

Other information:

<u>Hygiene measures:</u> Observe good industrial hygiene practices. Do not get in eyes. Avoid contact with skin. Wash contaminated clothing before reuse. When using do not smoke. Wash hands before breaks and immediately after handling the product.

For more information please see the relevant exposure scenario in Annex of this SDS.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties			
Physical state at 20 °C	liquid		
and 101.3 kPa			
Melting / freezing point	<-90° C		
Boiling point	108 °C at 1013 hPa		
Relative density	0.8017 g/cm³ at 20° C		
Vapour pressure	< 16 hPa at 20° C		
Surface tension	69.7 mN/m at 20° C (1 g/L)		
Water solubility	70 g/L at 20° C		
Partition coefficient n-	Log Kow (Pow): 1 at 25 °C		
octanol/water (log value)			
Flash point	31° C at 1013 hPa (ISO 2719 closed cup)		
Flammability	Flammable upon ignition.		
	The substance has no pyrophoric properties and does not liberate		
	flammable gases on contact with water.		
Explosive properties	Non explosive		
	There are no chemical groups associated with explosive properties		
	present in the molecule.		
Self-ignition temperature	400° C at 1007 hPa (EU A15)		
Oxidising properties	No oxidizing properties.		
	The substance is incapable of reacting exothermically with combustible		
	materials on the basis of the chemical structure.		
Viscosity	3.1028 mPa s at 20°C		
	(dynamic)		
Granulometry	Not applicable		
	Substance is marketed or used in a non solid or granular form.		
Stability in organic	not applicable		
solvents and identity of	The stability of the substance is not considered as critical.		
relevant degradation			
products			
Dissociation constant	not applicable		
	The substance does not contain any ionic structure.		

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9.2. Other information

Not available.

SECTION 10. STABILITY AND REACTIVITY

10.1. Reactivity

Corrosion to metals: No corrosive effect on metal.

Formation of flammable gases: Forms no flammable gases in the presence of water.

10.2. Chemical stability

The product is stable if stored and handled as prescribed/indicated.

10.3. Possibility of hazardous reactions

Reacts with strong oxidizing agents.

10.4. Conditions to avoid

Heat, sparks, flames.

10.5. Incompatible materials

Strong oxidizing agents.

10.6. Hazardous decomposition products

No hazardous decomposition products if stored and handled as prescribed/indicated. Thermal decomposition or combustion may generate smoke, carbon monoxide, carbon dioxide, and other products of incomplete combustion.

SECTION 11. TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

Acute toxicityThe available data for isobutanol indicate a relative low potential for acute toxicity. The substance has not to be classified for acute toxicity.

acute toxicity. The substance has not to be classified for acute toxicity

according to 1272/2008/EC (CLP) requirements.

2-methyl-propan-1-ol (CA	(S 78-83-1)
LD50, oral, rats, males	>2830 mg/kg bw (EPA OTS 798.1175, OECD 401)
LD50, oral, rats, females	3350 mg/kg bw (EPA OTS 798.1175, OECD 401)
LD50, oral, mouse	3500 mg/kg bw
LD50, oral, rabbit	ca. 3000 mg/kg bw
LC0(6 h), inhalation,	>= 18.2 mg/L (neurotoxicity guideline)
rats	
LC50(4 h), inhalation,	24.6 mg/L
rats	
LC50(4 h), inhalation,	19.6 mg/L (irritation of the respiratory tract)
rats	
LC50(4 h), inhalation,	15.5 mg/L
mouse	
LC50(4 h), inhalation,	26.3 mg/L
rabbit	
LC50(4 h), inhalation,	19.9 mg/L
guinea pig	
LD50, dermal, rabbit,	> 2000 mg/kg bw (OECD 402)
males	,
LD50, dermal, rabbit,	2460 mg/kg bw (OECD 402)
females	



	_
LD50, dermal, rabbit, males	3392 mg/kg bw
Skin corrosion/irritation	Adverse effect observed (moderately irritating). In summary, results of the available studies led to the classification as a skin irritant Cat. 2 according to 1272/2008/EC (CLP) requirements. Classification as corrosive to the skin does not seem warranted.
Additional information	Erythema score: 1.2 of max. 2 (mean) (Time point: 24, 48 and 72 hours) (not fully reversible within: 14 days) (Maximum score observed. One animal had a score of 1 on day 14.) (EPA OTS 798.4470, OECD Guideline 404)
Serious eye	Adverse effect observed (corrosive). Due to the irreversible irritation
damage/irritation Additional information	effects on rabbit eyes, isobutanol has to be classified as posing the risk of serious eye damage Cat. 1 according to 1272/2008/EC (CLP) criteria.
	Cornea score: 1 of max. 1 (mean) (Time point: 24, 48 and 72 hours) (EPA OTS 798.4500, OECD Guideline 405)
Irritation of respiratory tract	Due to the effects observed in an acute inhalation study in rats and with n-butanol in humans, isobutanol has to be classified as irritant to the respiratory tract (STOT SE Cat. 3) according to 1272/2008/EC (CLP) requirements.
Respiratory or skin sensitisation	Not sensitizing.
Additional information	Due to the negative results of a QSAR calculation for isobutanol and of the analogous substance propan-1-ol in a guinea pig maximisation test, isobutanol has not to be classified as skin sensitiser according to 1272/2008/EC (CLP) requirements.
Germ cell mutagenicity	The test substance was not genotoxic in in vitro experiments using human, rodent, and bacterial cells or in vivo experiments in mice. For isobutanol, there is therefore no need for classification for mutagenic effects according to 1272/2008/EC (CLP) requirements.
Additional information	Gene mutation in bacteria: S. typhimurium TA 1535, TA 1537, TA 97, TA 98 and TA 100, with and without metabolic activation (Ames test): negative (standardized test protocol). Gene mutation in mammalian cells:
	CHL V79 cells (HPRT test), with and without metabolic activation: negative.
	Cytogenicity in mammalian cells: CHL V79 cells (in vitro micronucleus test), without metabolic activation: negative. Cytogenicity in vivo:
	NMRI mouse (micronucleus test), up to 2000 mg/kg: negative
Carcinogenicity Additional information	Not classified according to 1272/2008/EC (CLP) requirements. Due to the lack of mutagenicity, a cancerogenic potential of isobutanol based mutagenic effects can widely be ruled out. Additionally, no structural fragments were found in a structure-activity-relationship model (CASE) indicating a carcinogenic potential. Thus, there is at

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present no evidence for a carcinogenic potential of isobutanol. Therefore a carcinogenicity study is not justified.

Toxicity for reproduction

Due to the lack of toxicity on fertility and development in definite studies with isobutanol, there is no need for classification according to reproductive toxicity according to 1272/2008/EC (CLP) requirements.

2-methyl-propan-1-ol (CA	LS 78-83-1)
NOAEL P/F1/F2 (effects	>= ca. 7.5 mg/L (=2500 ppm) (EPA guideline OPPTS 870.3800)
on fertility), inhalation,	
rat, 2-gen	
NOAEL (developmental	>= 10 mg/L (NOAEL, maternal, teratogenicity and fetotoxicity) (OECD
toxicity), inhalation, rat,	414)
gestation day 6-15	
NOAEL (developmental	= 2.5 mg/L (maternal) (due to slight impairment of body weight gain)
toxicity), inhalation,	= 10 mg/L (teratogenicity and fetotoxicity) (OECD 414)
rabbit, gestation day 7-	
19	
STOT-single exposure	Due to the effects observed in an acute inhalation study in rats and with
	n-butanol in humans, isobutanol has to be classified as irritant to the
	respiratory tract (STOT SE Cat. 3) according to 1272/2008/EC (CLP)
	requirements.
Repeated dose toxicity	No adverse systemic effects were observed in any of the available
	studies. Consequently, there is no need for classification of effects
	according to 1272/2008/EC (CLP) requirements due to repeated
	exposure to the test substance.

2-methyl-propan-1-ol (CAS 78-83-1)		
NOAEL, oral, rat (90 d)	>= ca. 1450 mg/kg bw/ day (= 16000 ppm) (OECD 408)	
Dermal, rabbit	(4-6 times 0.3 mL for 24 h within 7 d):	
	occlusive: no systemic toxicity studied;	
	local: highly irritant (TSCATS OTS 0510692),	
NOAEL, inhalation,	>= ca. 7.5 mg/L/day (2500 ppm) (6 h/d, 5 d/wk) (EPA OPPTS	
systemic, rat (90 d)	870.3800; ACC 2003)	

Aspiration hazard Other effects

Not available.

Neurotoxicity

Effects indicative for CNS depression were observed after single and repeated application. Therefore, the substance has to be classified as STOT single exposure, Cat. 3 (for narcotic effects) according to 1272/2008/EC (CLP) criteria.

2-methyl-propan-1-ol (CA	AS 78-83-1)
NOAEL(90 d), rat,	>= 7.5 mg/L (2500 ppm) (neurotoxicity guideline 82-7 F)
neurotoxicity	
NOAEL(90 d), rat,	>= 7.5 mg/L (2500 ppm)(neurotoxicity guideline 85 F)
neurotoxicity/behaviour	
LOEL (acute), rat,	= 4.5 mg/L (1500 ppm) (slight hypoactivation during exposure) (EPA
neurotoxicity	guidelines 798.6050 & 789.6200)

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SECTION 12. ECOLOGICAL INFORMATION

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12.1.	Toxicity
14.1.	IUMICITY

2-methyl-propan-1	-ol (CAS 78-83-1)
Fish (Short-term t	oxicity)
LC50 (96h)	1430 mg/L - Pimephales promelas (Method according to Brooke LT et
	al. (1984))

Fish (Long-term toxicity)

The hazard assessment of iso-butanol reveals neither a need to classify the substance as dangerous for the environment, nor is it a PBT or vPvB substance. Therefore, and for reasons of animal welfare, a long-term toxicity study in fish is not provided.

werrare, a long-term toxicity study in fish is not provided.		
Aquatic invertebrates (Short-term toxicity)		
EC50 (48 h)	1100 mg/L - Daphnia pulex (ASTM Methods (1984))	
Aquatic invertebrates (Long-term toxicity)		
NOEC (21 d)	20 mg/L - Daphnia magna (provisional procedure proposed by the	
	Federal Environmental Agency)	
Algae and aquatic plants		
EC50 (96 h)	1799 mg/L- Pseudokirchnerella subcapitata(OECD Guideline 201,EU	
	Method C.3, EPA OTS 797.1050)	
NOEC (72h)	53 mg/L test(OECD Guideline 201,EU Method C.3, EPA OTS	
	797.1050)	
Toxicity to aquatic micro-organisms		

>1000 mg/L- sewage, industrial (Inhibition Control)

12.2. Persistence and degradability

IC50 (16h)

12.2. I diplotonee and degradability		
Abiotic degradation:	Abiotic hydrolysis: study scientifically unjustified, substance is readily	
	biodegradable	
	Phototransformation in air: After evaporation or exposure to the air, the	
	product will be slowly degraded by photochemical processes. Half-life	
	(DT50): 56 h	
Biodegradation	Substance is readily biodegradable	
	% Degradation of test substance:	
	70 — 80 after 28 d (O2 consumption)	
	90 — 100 after 14 d (O2 consumption)	
	(OECD Guideline 301 D, OECD Guideline 301 C)	
Persistence and	The substance is readily biodegradable according to OECD criteria.	
degradability		

12.3. Bioaccumulative potential

12.5. Dioaceumulative potential		
Aquatic	Regarding the 1-octanol/water partition coefficient, accumulation of the	
bioaccumulation:	test substance in organisms is not to be expected.	
Secondary poisoning:	The substance is readily biodegradable and has a low logKow.	
	Secondary poisoning is not an issue of concern for this substance.	

12.4. Mobility in soil

Biodegradation in soil:	The substance is readily biodegradable and has a low potential for	
	adsorption ($\log Kow = 1$).	

12.5. Results of PBT and vPvB assessment

Regarding all available data on biotic and abiotic degradation, bioaccumulation and toxicity it can be stated that the substance does not fulfil the PBT criteria (not PBT) and not the vPvB criteria (not vPvB).

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12.6. Other adverse effects

Not available.

SECTION 13. DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Waste disposal Waste treatment methods: Must be disposed of or incinerated in

recommendations accordance with local regulations.

> Contaminated packaging: Contaminated packaging should be emptied as far as possible; then it can be passed on for recycling after being

thoroughly cleaned.

DO NOT CUT, DRILL, GRIND, WELD OR PERFORM SIMILAR OPERATIONS ON OR NEAR CONTAINERS EVEN WHEN

EMPTY.

European List of Waste

(LoW) code

Not available.

SECTION 14. TRANSPORT INFORMATION

14.1. Land transport (ADR/RID)

UN-No.

Proper Shipping Name: ISOBUTANOL (ISOBUTYL ALCOHOL)

Hazard class: Ш Packing group:

Hazard label:

Classification Code: F1 Hazard identification 30

number (HIN):

Tunnel restriction code 3(D/E)

(ADR)

Environmental hazard: No

14.2. Inland waterway transport (ADN)

1212 UN-No.

Proper Shipping Name: ISOBUTANOL (ISOBUTYL ALCOHOL)

Hazard class: 3 Packing group: Ш

Hazard label:



Classification Code: F1 Hazard identification 30

number (HIN):

Environmental hazard: No

14.3. Sea transport (IMDG)

UN-No. 1212

Proper Shipping Name: ISOBUTANOL (ISOBUTYL ALCOHOL)

Hazard class: 3

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Packing group: III

Hazard label:



EmS-No. (Fire) F-E EmS-No. (Spillage) S-D Marine pollutant: No

14.4. Air transport (IATA/ICAO)

UN-No. 1212

Proper Shipping Name: ISOBUTANOL (ISOBUTYL ALCOHOL)

Hazard class: 3 Packing group: Ш

Hazard label:



Environmental hazard: No

Special precautions for user

Always transport in closed containers. Ensure that persons transporting the product know what to do in the event of an accident or spillage. For information regarding Exposure Controls/Personal Protection see Section 8 of the SDS

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

Not applicable.

SECTION 15. REGULATORY INFORMATION

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

15.1.1. EU-Regulations

Authorisations and/or restrictions on use (Annex XVII): Not applicable.

2-methyl-propan-1-ol (CAS 78-83-1) is not on the REACH Candidate List. 2-methyl-propan-1-ol (CAS 78-83-1) is not on the REACH Annex XIV List.

Other information, Regulation (EC) No. 1005/2009 on substances that deplete the ozone restriction and layer, Annex I and Regulation (EC) No. 1005/2009 on substances that

prohibition regulations deplete the ozone layer. Annex II - Not listed.

Directive 2012/18/EU on the control of major-accident hazards

involving dangerous substances- (SEVESO III): Physical Hazard – P5b - Flammable liquids.

Directive 2013/39/EU priority substances in the field of water policy (amending Directive 2006/60/EC – Water Framework Directive and Directive 2008/105/EC on environmental quality standards in the field

of water policy): Not listed.

Regulation (EC) No 850/2004 on persistent organic pollutants:

Annex III – Not listed.

Regulation (EC) No 649/2012 of the European Parliament and of the

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Council of 4 July 2012 concerning the export and import of dangerous chemicals: Not listed.

15.1.2. National regulations

Germany, AwSV WGK- 1 (low danger for water pollution)

(Verordnung über Anlagen zum Umgang mit wassergefährdenden Stoffen, vom 18. April 2017)

15.2. Chemical safety assessment

Chemical Safety Report has been performed for 2-methyl-propan-1-ol (CAS 78-83-1).

SECTION 16. OTHER INFORMATION

Indication of changes

Version	Date of	Section	Description of changes
	change		
1	16/03/2010	ALL	Version created according to Regulations (EC) No
			1907/2006 (Article 31.1)
2.1	07/02/2011	ALL	Version created according to Regulation (EC) No
			1272/2008 (Regulation CLP) & 453/2010
2.2	07/04/2011	Appendix II	Appendix II was fully updated.
2.3	11/07/2011	3;	1. Index No (CLP) for hazard impurities was added to
		7; 8; 13; 15;	Section 3.
		16.	2. Section 8 was fully updated
		Appendix II;	3. The link to Appendix II was added to Section 7, 8
		III	4. The link to Appendix III was added to Section 13
			5. Appendix II was renamed into Appendix III.
			6. Appendix II to the eSDS was added.
			7. Section 15, 16 were fully updated
2.4	11/01/2014	APPENDIX	The dossier was updated by the Lead Registrant This
		II	update contains an updated CSR including revised
			exposure scenarios.
3.0	03/04/2018	1-16, Annex	SDS has been corrected in according to new data of
			Registration dossier, Chemical Safety Report, and new
			Transport information.

16.2. Abbreviations and acronyms

10.2. Abbieviations and actoryms	
European Agreement concerning the International Carriage of	
Dangerous Goods by Road	
The German Committee on Hazardous Substances (Ausschuss für	
Gefahrstoffe – AGS)	
Bioconcentration factor	
Germany Research Foundation	
Derived No Effect Level	
International Maritime Dangerous Goods	
Technical Instructions for the Safe Transport of Dangerous Goods by	
Air	
Adsorption coefficient	

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Kow	octanol-water partition coefficient	
LC50	Lethal Concentration to 50 % of a test population	
LD50	Lethal Dose to 50% of a test population (Median Lethal Dose)	
LOAEC	Lowest Observable Adverse Effect Concentration	
LTEL	Long Term Exposure Limit	
NOEC	No Observed Effect Concentration	
NOAEL	No Observed Adverse Effect Level	
OECD	Organization for Economic Co-operation and Development	
OSHA	Occupational Safety & Health Administration (USA)	
PNEC	Predicted No Effect Concentration	
PBT	Persistent, bioaccumulative, toxic chemical	
vPvB	Very Persistent, Very Bioaccumulative	
RID	Regulations concerning the International Carriage of Dangerous Goods	
	by Rail	
SCOEL	Scientific Committee on Occupational Exposure Limits	
STEL	Short Term Exposure Limit	
STP	sewage treatment plant	
STOT	Specific Target Organ Toxicity	
(STOT) RE	Repeated Exposure	
(STOT) SE	Single Exposure	
TWA	Time Weighted Average	
UN	United Nations	
WGK	Wassergefährdungsklasse (German: Water Hazard Class)	

16.3. Full text of H- and EUH-statements:

H226	Flammable Liquid, Category 3	Flammable liquid and vapour.
H315	Skin Irrit., Category 2	Causes skin irritation.
H318	Eye Dam., Category 1	Causes serious eye damage.
H335	STOT Single Exp., Category 3	May cause respiratory irritation.
		Affected organs: respiratory tract.
H336	STOT Single Exp., Category 3	May cause drowsiness or dizziness.
		Affected organs: central nervous system.
H302	Acute Toxicity (oral), Category 4	Harmful if swallowed
H319	Eye Irrit., Category 2	Causes serious eye irritation
H412	Aquatic Chronic, Category 3	Harmful to aquatic life with long-lasting effects

16.4. List of ES (exposure scenario) given in Annex to the extended SDS

ES1	Distribution of substances, p.19	
ES2	Distribution of substances (professional), p.24	
ES3	Formulation & (re)packing of substances and mixtures, p.29	
ES4	Manufacture of substances,p.34	
ES5	Metal working fluids / rolling oils, p. 38	
ES6	Metal working fluids / rolling oils (professional), p.44	
ES7	Production of iso-butanol, p.51	
ES8	Use as consumer care product, p. 52	
ES9	Use as intermediate, p.53	
ES10	Use in cleaning agents, p.57	
ES11	Use in cleaning agents (consumer), p.63	
ES12	Use in cleaning agents (professional), p.71	

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ES13	Use in Coatings (paint, ink, toners, adhesives), p.77	
ES14	Use in Coatings (paints, ink, toners, adhesives), consumer, p. 84	
ES15	Use in Coatings (paints, ink, toners, adhesives), professional, p.96	
ES16	Use in Laboratories, p.104	
ES17	Use in lubricants, p.106	
ES18	Use in Lubricants (consumer), p.114	
ES19	Use in Lubricants (professional), p.121	

16.5. Key literature references and sources

DOCUMENTS, PROVIDED BY FERC CONSORTIUM:

CHEMICAL SAFETY REPORT to 2-methyl-propan-1-ol (CAS 78-83-1).

EU DIRECTIVES

REGULATION (EC) No 1907/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC.

Regulation (EC) No 1272/2008 REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006.

Regulations. Commission regulation (EU) no 2015/830 of 31 May 2015 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH).

Training advice

Personnel handling the product has to be acquainted demonstrably with its hazardous properties, with health and environmental protection principles related to the product and first aid principles.

DISCLAIMER

This information is based on our current level of knowledge. This information may be subject to revision as new knowledge and experience becomes available, and SIBUR makes no warranties and assumes no liability in connection with any use of this information. Since SIBUR cannot be aware of all aspects of your business and the impact the REACH Regulation has for your company, SIBUR strongly encourages you to get familiar with the REACH Regulation in order to comply with its requirements and timelines.

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ANNEX. EXPOSURE SCENARIOS

Exposure Scenario 1 (ES1): Distribution of substances

Free short title	Distribution of substances
Systematic title based on use descriptor	ERC 1, 2; PROC 1, 2, 3, 4, 8A, 8B, 9, 15
Name of contributing environmental scenario and corresponding ERC	ERC 1 Production of chemicals ERC 2 Formulation of preparations
Name(s) of contributing worker scenarios and corresponding PROCs	PROC 1 - Use in closed process, no likelihood of exposure PROC 2 - Use in closed, continuous process with occasional controlled exposure PROC 3 - Use in closed batch process (synthesis or formulation) PROC 4 - Use in batch and other process (synthesis) where opportunity for exposure arises PROC 8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities PROC 8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities PROC 9 - Transfer of chemicals into small containers (dedicated filling line) PROC 15 - Use of laboratory reagents in small scale laboratories
Contributing Scenario (1) controlling environmental e	exposure for ERC 1
Contributing Scenario (2) controlling environmental e	exposure for ERC 2
As no environmental hazard was identified no environme	ntal-related exposure assessment and risk characterization was performed.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
Frequency and duration of use	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
Contributing Scenario (3) controlling industrial works	er exposure for PROC 1
Name of contributing scenario	1 - Use in closed process, no likelihood of exposure
Qualitative Risk Assessment	
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.
Eyes	In case of potential exposure: Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
Human factors not influenced by risk management	
Exposed skin surface	240 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion	on and exposure
Local exhaust ventilation	no



Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection	no	
Contributing Scenario (4) controlling industrial worker exposure for PROC 2		
Name of contributing scenario	2 - Use in closed, continuous process with occasional controlled exposure	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	480 cm ²	
Other given operational conditions affecting workers	exposure	
Location	indoors	
Domain	industrial	
Technical conditions and measures to control dispersi	on and exposure	
Local exhaust ventilation	no	
Conditions and measures related to personal protection	on, hygiene and health evaluation	
Respiratory protection	no	
Contributing Scenario (5) controlling industrial works	er exposure for PROC 3	
Name of contributing scenario 3 - Use in closed batch process (synthesis or formulation)		
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	240 cm^2	
Other given operational conditions affecting workers	exposure	
Location	indoors	
Domain	industrial	
Technical conditions and measures to control dispersi	on and exposure	
Local exhaust ventilation	no	
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection	no	
Contributing Scenario (6) controlling industrial worker exposure for PROC 4		
Name of contributing scenario	4 - Use in batch and other process (synthesis) where opportunity for exposure arises	
Qualitative Risk Assessment		



General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	480 cm^2	
Other given operational conditions affecting workers	exposure	
Location	indoors	
Domain	industrial	
Technical conditions and measures to control dispersi	on and exposure	
Local exhaust ventilation	no	
Conditions and measures related to personal protection	on, hygiene and health evaluation	
Respiratory protection	no	
Contributing Scenario (7) controlling industrial works	er exposure for PROC 8A	
Name of contributing scenario	8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management	1	
Exposed skin surface	960 cm ²	
Other given operational conditions affecting workers	exposure	
Location	indoors	
Domain	industrial	
Technical conditions and measures to control dispersi	on and exposure	
Local exhaust ventilation	yes (inhalation 90 %)	
Conditions and measures related to personal protection	on, hygiene and health evaluation	
Respiratory protection	no	
Contributing Scenario (8) controlling industrial works	er exposure for PROC 8B	
Name of contributing scenario	8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	



Human factors not influenced by risk management		
Exposed skin surface	960 cm ²	
Other given operational conditions affecting workers	Other given operational conditions affecting workers exposure	
Location	indoors	
Domain	industrial	
Technical conditions and measures to control dispersion	on and exposure	
Local exhaust ventilation	yes (inhalation 95 %)	
Conditions and measures related to personal protection	n, hygiene and health evaluation	
Respiratory protection	no	
Contributing Scenario (9) controlling industrial works	er exposure for PROC 9	
Name of contributing scenario	9 - Transfer of chemicals into small containers (dedicated filling line)	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	480 cm^2	
Other given operational conditions affecting workers	exposure	
Location	indoors	
Domain	industrial	
Technical conditions and measures to control dispersion and exposure		
Local exhaust ventilation	yes (inhalation 90 %)	
Conditions and measures related to personal protection	on, hygiene and health evaluation	
Respiratory protection	no	
Contributing Scenario (10) controlling industrial world	ser exposure for PROC 15	
Name of contributing scenario	15 - Use of laboratory reagents in small scale laboratories	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	240 cm^2	
Other given operational conditions affecting workers exposure		
Location	indoors	
Domain	industrial	
Technical conditions and measures to control dispersion and exposure		



Local exhaust ventilation	no	
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection	no	

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Exposure Scenario 2 (ES2): Distribution of substances (professional)

Free short title	Distribution of substances (professional)	
Systematic title based on use descriptor	ERC 2, 1; PROC 1, 2, 3, 4, 8A, 8B, 9, 15	
Name of contributing environmental scenario and corresponding ERC	ERC 2 Formulation of preparations ERC 1 Production of chemicals	
Name(s) of contributing worker scenarios and corresponding PROCs	PROC 1 - Use in closed process, no likelihood of exposure PROC 2 - Use in closed, continuous process with occasional controlled exposure PROC 3 - Use in closed batch process (synthesis or formulation) PROC 4 - Use in batch and other process (synthesis) where opportunity for exposure arises PROC 8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities PROC 8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities PROC 9 - Transfer of chemicals into small containers (dedicated filling line) PROC 15 - Use of laboratory reagents in small scale laboratories	
Contributing Scenario (1) controlling environmental e	exposure for ERC 2	
Contributing Scenario (2) controlling environmental e	exposure for ERC 1	
As no environmental hazard was identified no environme	ntal-related exposure assessment and risk characterization was performed.	
Product characteristics		
Physical state	liquid	
Concentration in substance	100 %	
Fugacity / Dustiness	medium	
Frequency and duration of use		
Duration of activity	>4 hours (default)	
Frequency of use	5 days / week	
Contributing Scenario (3) controlling professional wo	rker exposure for PROC 1	
Name of contributing scenario	1 - Use in closed process, no likelihood of exposure	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	In case of potential exposure: Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	240 cm^2	
Other given operational conditions affecting workers	Other given operational conditions affecting workers exposure	
Location	indoors	
Domain	professional	
Technical conditions and measures to control dispersi	on and exposure	
Local exhaust ventilation	no	



Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection	no	
Contributing Scenario (4) controlling professional worker exposure for PROC 2		
Name of contributing scenario	2 - Use in closed, continuous process with occasional controlled exposure	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	480 cm^2	
Other given operational conditions affecting workers	exposure	
Location	indoors	
Domain	professional	
Technical conditions and measures to control dispersion	on and exposure	
Local exhaust ventilation	no	
Conditions and measures related to personal protection	on, hygiene and health evaluation	
Respiratory protection	no	
Contributing Scenario (5) controlling professional wor	rker exposure for PROC 3	
Name of contributing scenario	3 - Use in closed batch process (synthesis or formulation)	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	240 cm^2	
Other given operational conditions affecting workers exposure		
Location	indoors	
Domain	professional	
Technical conditions and measures to control dispersion and exposure		
Local exhaust ventilation	no	
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection	no	
Contributing Scenario (6) controlling professional worker exposure for PROC 4		
Name of contributing scenario	4 - Use in batch and other process (synthesis) where opportunity for exposure arises	
Qualitative Risk Assessment		



General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	480 cm^2	
Other given operational conditions affecting workers	exposure	
Location	indoors	
Domain	professional	
Technical conditions and measures to control dispersi	ion and exposure	
Local exhaust ventilation	no	
Conditions and measures related to personal protection	on, hygiene and health evaluation	
Respiratory protection	no	
Contributing Scenario (7) controlling professional wo	orker exposure for PROC 8A	
Name of contributing scenario	8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management	-	
Exposed skin surface	960 cm ²	
Other given operational conditions affecting workers	exposure	
Location	indoors	
Ventilation	good (30%)	
Domain	professional	
Technical conditions and measures to control dispersi	ion and exposure	
Local exhaust ventilation	no	
Conditions and measures related to personal protection	on, hygiene and health evaluation	
Respiratory protection	no	
Contributing Scenario (8) controlling professional wo	orker exposure for PROC 8B	
Name of contributing scenario	8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	



Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	960 cm ²	
Other given operational conditions affecting workers	exposure	
Location	indoors	
Domain	professional	
Technical conditions and measures to control dispersi	on and exposure	
Local exhaust ventilation	no	
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection	no	
Contributing Scenario (9) controlling professional wo	rker exposure for PROC 9	
Name of contributing scenario	9 - Transfer of chemicals into small containers (dedicated filling line)	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	480 cm^2	
Other given operational conditions affecting workers	exposure	
Location	indoors	
Ventilation	good (30%)	
Domain	professional	
Technical conditions and measures to control dispersi	on and exposure	
Local exhaust ventilation	no	
Conditions and measures related to personal protection	on, hygiene and health evaluation	
Respiratory protection	no	
Contributing Scenario (10) controlling professional we	orker exposure for PROC 15	
Name of contributing scenario	15 - Use of laboratory reagents in small scale laboratories	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	240 cm^2	
Other given operational conditions affecting workers exposure		
Location	indoors	



Domain	professional	
Technical conditions and measures to control dispersion and exposure		
Local exhaust ventilation	no	
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection	no	

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Exposure Scenario 3 (ES3): Formulation & (re)packing of substances and mixtures

Free short title	Formulation & (re)packing of substances and mixtures
Systematic title based on use descriptor	ERC 2; PROC 1, 2, 3, 4, 5, 8A, 8B, 9, 15
Name of contributing environmental scenario and corresponding ERC	ERC 2 Formulation of preparations
Name(s) of contributing worker scenarios and corresponding PROCs	PROC 1 - Use in closed process, no likelihood of exposure PROC 2 - Use in closed, continuous process with occasional controlled exposure PROC 3 - Use in closed batch process (synthesis or formulation) PROC 4 - Use in batch and other process (synthesis) where opportunity for exposure arises PROC 5 - Mixing or blending in batch processes (multistage and/or significant contact) PROC 8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities PROC 8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities PROC 9 - Transfer of chemicals into small containers (dedicated filling line) PROC 15 - Use of laboratory reagents in small scale laboratories
Contributing Scenario (1) controlling environmental of	exposure for ERC 2
As no environmental hazard was identified no environme	ental-related exposure assessment and risk characterization was performed.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
Frequency and duration of use	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
Contributing Scenario (2) controlling industrial work	er exposure for PROC 1
Name of contributing scenario	1 - Use in closed process, no likelihood of exposure
Qualitative Risk Assessment	
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.
Eyes	In case of potential exposure: Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
Human factors not influenced by risk management	
Exposed skin surface	240 cm^2
Other given operational conditions affecting workers	exposure
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	



Local exhaust ventilation	no		
Conditions and measures related to personal protection	on, hygiene and health evaluation		
Respiratory protection	no		
Contributing Scenario (3) controlling industrial work	Contributing Scenario (3) controlling industrial worker exposure for PROC 2		
Name of contributing scenario	2 - Use in closed, continuous process with occasional controlled exposure		
Qualitative Risk Assessment			
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.		
Eyes	Use suitable eye protection.		
Dermal	Use suitable chemically resistant gloves.		
Human factors not influenced by risk management			
Exposed skin surface	480 cm^2		
Other given operational conditions affecting workers	exposure		
Location	indoors		
Domain	industrial		
Technical conditions and measures to control dispersion and exposure			
Local exhaust ventilation	no		
Conditions and measures related to personal protection	on, hygiene and health evaluation		
Respiratory protection	no		
Contributing Scenario (4) controlling industrial work	er exposure for PROC 3		
Name of contributing scenario	3 - Use in closed batch process (synthesis or formulation)		
Qualitative Risk Assessment			
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.		
Eyes	Use suitable eye protection.		
Dermal	Use suitable chemically resistant gloves.		
Human factors not influenced by risk management			
Transmir ractors not influenced by fish management			
Exposed skin surface	240 cm^2		
Exposed skin surface			
Exposed skin surface Other given operational conditions affecting workers	exposure		
Exposed skin surface Other given operational conditions affecting workers Location	indoors industrial		
Exposed skin surface Other given operational conditions affecting workers Location Domain	indoors industrial		
Exposed skin surface Other given operational conditions affecting workers Location Domain Technical conditions and measures to control dispersi	indoors industrial on and exposure no		
Exposed skin surface Other given operational conditions affecting workers Location Domain Technical conditions and measures to control dispersi Local exhaust ventilation	indoors industrial on and exposure no		
Exposed skin surface Other given operational conditions affecting workers Location Domain Technical conditions and measures to control dispersit Local exhaust ventilation Conditions and measures related to personal protection	indoors industrial on and exposure no on, hygiene and health evaluation no		
Exposed skin surface Other given operational conditions affecting workers Location Domain Technical conditions and measures to control dispersi Local exhaust ventilation Conditions and measures related to personal protection	indoors industrial on and exposure no on, hygiene and health evaluation no		



Qualitative Risk Assessment	
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
Human factors not influenced by risk management	;
Exposed skin surface	$480 \mathrm{cm}^2$
Other given operational conditions affecting worke	ers exposure
Location	indoors
Domain	industrial
Technical conditions and measures to control dispe	ersion and exposure
Local exhaust ventilation	no
Conditions and measures related to personal prote	ction, hygiene and health evaluation
Respiratory protection	no
Contributing Scenario (6) controlling industrial wo	orker exposure for PROC 5
Name of contributing scenario	5 - Mixing or blending in batch processes (multistage and/or significant contact)
Qualitative Risk Assessment	
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
Human factors not influenced by risk management	
Exposed skin surface	$480 \mathrm{cm}^2$
Other given operational conditions affecting worke	ers exposure
Location	indoors
Domain	industrial
Technical conditions and measures to control dispe	rsion and exposure
Local exhaust ventilation	yes (inhalation 90 %)
Conditions and measures related to personal prote	ction, hygiene and health evaluation
Respiratory protection	no
Contributing Scenario (7) controlling industrial wo	orker exposure for PROC 8A
Name of contributing scenario	8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities
Qualitative Risk Assessment	
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.
Eyes	Use suitable eye protection.
•	1 7 7



Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management	ose surtable elicilitetti y resistant groves.	
Exposed skin surface	960 cm^2	
Other given operational conditions affecting workers		
Location	indoors	
Domain	industrial	
Technical conditions and measures to control dispersi		
Local exhaust ventilation yes (inhalation 90 %)		
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection	no	
Contributing Scenario (8) controlling industrial works	er exposure for PROC 8B	
Name of contributing scenario	8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	960 cm ²	
Other given operational conditions affecting workers	exposure	
Location	indoors	
Domain	industrial	
Technical conditions and measures to control dispersi	on and exposure	
Local exhaust ventilation	yes (inhalation 95 %)	
Conditions and measures related to personal protection	on, hygiene and health evaluation	
Respiratory protection	no	
Contributing Scenario (9) controlling industrial works	er exposure for PROC 9	
Name of contributing scenario	9 - Transfer of chemicals into small containers (dedicated filling line)	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	480 cm ²	
Other given operational conditions affecting workers exposure		
Location	indoors	



Domain	industrial	
Technical conditions and measures to control dispersion and exposure		
Local exhaust ventilation	yes (inhalation 90 %)	
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection	no	
Contributing Scenario (10) controlling industrial worker exposure for PROC 15		
Name of contributing scenario	15 - Use of laboratory reagents in small scale laboratories	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	240 cm^2	
Other given operational conditions affecting workers exposure		
Location	indoors	
Domain	industrial	
Technical conditions and measures to control dispersion and exposure		
Local exhaust ventilation	no	
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection	no	

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Exposure Scenario 4 (ES4): Manufacture of substances

Free short title	Manufacture of substances	
Systematic title based on use descriptor	ERC 1, 6A, 4; PROC 1, 2, 3, 4, 8A, 8B, 15	
Name of contributing environmental scenario and corresponding ERC	ERC 1 Production of chemicals ERC 6a Industrial use of intermediates ERC 4 Industrial use of processing aids	
Name(s) of contributing worker scenarios and corresponding PROCs	PROC 1 - Use in closed process, no likelihood of exposure PROC 2 - Use in closed, continuous process with occasional controlled exposure PROC 3 - Use in closed batch process (synthesis or formulation) PROC 4 - Use in batch and other process (synthesis) where opportunity for exposure arises PROC 8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities PROC 8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities PROC 15 - Use of laboratory reagents in small scale laboratories	
$Contributing\ Scenario\ (1)\ controlling\ environmental$	exposure for ERC 1	
Contributing Scenario (2) controlling environmental	exposure for ERC 6A	
Contributing Scenario (3) controlling environmental	exposure for ERC 4	
As no environmental hazard was identified no environmental	ental-related exposure assessment and risk characterization was performed.	
Product characteristics		
Physical state	liquid	
Concentration in substance	100 %	
Fugacity / Dustiness	medium	
Frequency and duration of use		
Duration of activity	>4 hours (default)	
Frequency of use	5 days / week	
Contributing Scenario (4) controlling industrial work	ter exposure for PROC 1	
Name of contributing scenario	1 - Use in closed process, no likelihood of exposure	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	In case of potential exposure: Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	240 cm ²	
Other given operational conditions affecting workers exposure		
Location	indoors	
Domain	industrial	
Technical conditions and measures to control dispersion and exposure		
Local exhaust ventilation	no	



Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection	no	
Contributing Scenario (5) controlling industrial worker exposure for PROC 2		
Name of contributing scenario	2 - Use in closed, continuous process with occasional controlled exposure	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	480 cm^2	
Other given operational conditions affecting workers	exposure	
Location	indoors	
Domain	industrial	
Technical conditions and measures to control dispersion	on and exposure	
Local exhaust ventilation	no	
Conditions and measures related to personal protection	on, hygiene and health evaluation	
Respiratory protection	no	
Contributing Scenario (6) controlling industrial works	er exposure for PROC 3	
Name of contributing scenario	3 - Use in closed batch process (synthesis or formulation)	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	240 cm^2	
Other given operational conditions affecting workers exposure		
Location	indoors	
Domain	industrial	
Technical conditions and measures to control dispersion and exposure		
Local exhaust ventilation	no	
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection	no	
Contributing Scenario (7) controlling industrial worker exposure for PROC 4		
Name of contributing scenario	4 - Use in batch and other process (synthesis) where opportunity for exposure arises	
Qualitative Risk Assessment	Qualitative Risk Assessment	



General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	480 cm^2	
Other given operational conditions affecting workers exposure		
Location	indoors	
Domain	industrial	
Technical conditions and measures to control dispersion and exposure		
Local exhaust ventilation	no	
Conditions and measures related to personal protectio	n, hygiene and health evaluation	
Respiratory protection	no	
Contributing Scenario (8) controlling industrial worker exposure for PROC 8A		
Name of contributing scenario	8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	960 cm ²	
Other given operational conditions affecting workers e	exposure	
Location	indoors	
Domain	industrial	
Technical conditions and measures to control dispersion	on and exposure	
Local exhaust ventilation	yes (inhalation 90 %)	
Conditions and measures related to personal protectio	n, hygiene and health evaluation	
Respiratory protection	no	
Contributing Scenario (9) controlling industrial works	er exposure for PROC 8B	
Name of contributing scenario	8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	



Human factors not influenced by risk management		
Exposed skin surface	960 cm ²	
Other given operational conditions affecting workers exposure		
Location	indoors	
Domain	industrial	
Technical conditions and measures to control dispersion and exposure		
Local exhaust ventilation	yes (inhalation 95 %)	
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection	no	
Contributing Scenario (10) controlling industrial worker exposure for PROC 15		
Name of contributing scenario	15 - Use of laboratory reagents in small scale laboratories	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	240 cm^2	
Other given operational conditions affecting workers exposure		
Location	indoors	
Domain	industrial	
Technical conditions and measures to control dispersion and exposure		
Local exhaust ventilation	no	
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection	no	

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Exposure Scenario 5 (ES5): Metal working fluids / rolling oils

Free short title	Metal working fluids / rolling oils
Systematic title based on use descriptor	ERC 4; PROC 1, 2, 3, 5, 7, 8A, 8B, 9, 10, 13, 17
Name of contributing environmental scenario and corresponding ERC	ERC 4 Industrial use of processing aids
Name(s) of contributing worker scenarios and corresponding PROCs	PROC 1 - Use in closed process, no likelihood of exposure PROC 2 - Use in closed, continuous process with occasional controlled exposure PROC 3 - Use in closed batch process (synthesis or formulation) PROC 5 - Mixing or blending in batch processes (multistage and/or significant contact) PROC 7 - Industrial spraying PROC 8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities PROC 8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities PROC 9 - Transfer of chemicals into small containers (dedicated filling line) PROC 10 - Roller application or brushing PROC 13 - Treatment of articles by dipping and pouring PROC 17 - Lubrication at high energy conditions and in partly open process PROC 17 - Lubrication at high energy conditions and in partly open process
Contributing Scenario (1) controlling environmental e	exposure for ERC 4
As no environmental hazard was identified no environme	ntal-related exposure assessment and risk characterization was performed.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
Frequency and duration of use	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
Contributing Scenario (2) controlling industrial works	er exposure for PROC 1
Name of contributing scenario	1 - Use in closed process, no likelihood of exposure
Qualitative Risk Assessment	
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.
Eyes	In case of potential exposure: Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
Human factors not influenced by risk management	
Exposed skin surface	240 cm^2
Other given operational conditions affecting workers of	exposure
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	



Local exhaust ventilation	no	
Conditions and measures related to personal protection	on, hygiene and health evaluation	
Respiratory protection	no	
Contributing Scenario (3) controlling industrial work	er exposure for PROC 2	
Name of contributing scenario	2 - Use in closed, continuous process with occasional controlled exposure	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	480 cm^2	
Other given operational conditions affecting workers	exposure	
Location	indoors	
Domain	industrial	
Technical conditions and measures to control dispersion and exposure		
Local exhaust ventilation	no	
Conditions and measures related to personal protection	on, hygiene and health evaluation	
Respiratory protection	no	
Contributing Scenario (4) controlling industrial work	er exposure for PROC 3	
Name of contributing scenario	3 - Use in closed batch process (synthesis or formulation)	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	240 cm^2	
Other given operational conditions affecting workers exposure		
Location	indoors	
Domain	industrial	
Technical conditions and measures to control dispersion and exposure		
Local exhaust ventilation	no	
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection	no	
Contributing Scenario (5) controlling industrial worker exposure for PROC 5		
Name of contributing scenario	5 - Mixing or blending in batch processes (multistage and/or significant contact)	



Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	480 cm^2	
Other given operational conditions affecting workers	exposure	
Location	indoors	
Domain	industrial	
Technical conditions and measures to control dispersion	on and exposure	
Local exhaust ventilation	yes (inhalation 90 %)	
Conditions and measures related to personal protection	on, hygiene and health evaluation	
Respiratory protection	no	
Contributing Scenario (6) controlling industrial works	er exposure for PROC 7	
Name of contributing scenario	7 - Industrial spraying	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m). Ensure that a spraying booth is used. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Regular inspection and maintenance of equipment and machines.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves. Avoid frequent and direct contact with substance.	
Human factors not influenced by risk management		
Exposed skin surface	$1,500 \text{ cm}^2$	
Other given operational conditions affecting workers of	exposure	
Location	indoors	
Domain	industrial	
Technical conditions and measures to control dispersion	on and exposure	
Local exhaust ventilation	no	
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection	no	
Use of external/measured value inhalation	Calculated with Stoffenmanager 6	
Contributing Scenario (7) controlling industrial worker exposure for PROC 8A		
Name of contributing scenario	8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities	
Qualitative Risk Assessment		



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Human factors not influenced by risk management		
Exposed skin surface	480 cm^2	
Other given operational conditions affecting workers exposure		
Location	indoors	
Domain	industrial	
Technical conditions and measures to control dispersion	on and exposure	
Local exhaust ventilation	yes (inhalation 90 %)	
Conditions and measures related to personal protection	n, hygiene and health evaluation	
Respiratory protection	no	
Contributing Scenario (10) controlling industrial work	xer exposure for PROC 10	
Name of contributing scenario	10 - Roller application or brushing	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	960 cm ²	
Other given operational conditions affecting workers of	exposure	
Location	indoors	
Domain	industrial	
Technical conditions and measures to control dispersion and exposure		
Local exhaust ventilation	yes (inhalation 90 %)	
Conditions and measures related to personal protection	n, hygiene and health evaluation	
Respiratory protection	no	
Contributing Scenario (11) controlling industrial work	xer exposure for PROC 13	
Name of contributing scenario	13 - Treatment of articles by dipping and pouring	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	480 cm^2	
Other given operational conditions affecting workers exposure		
Location	indoors	
Domain	industrial	
Technical conditions and measures to control dispersion and exposure		



Local exhaust ventilation	yes (inhalation 90 %)	
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection	no	
Contributing Scenario (12) controlling industrial work	xer exposure for PROC 17	
Name of contributing scenario	17 - Lubrication at high energy conditions and in partly open process	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	960 cm ²	
Other given operational conditions affecting workers e	exposure	
Location	indoors	
Domain	industrial	
Technical conditions and measures to control dispersion and exposure		
Local exhaust ventilation	no	
Conditions and measures related to personal protectio	n, hygiene and health evaluation	
Respiratory protection	no	
Contributing Scenario (13) controlling industrial work	xer exposure for PROC 17	
Name of contributing scenario	17 - Lubrication at high energy conditions and in partly open process	
Scenario subtitle	elevated Temp.	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	960 cm ²	
Other given operational conditions affecting workers exposure		
Location	indoors	
Domain	industrial	
Technical conditions and measures to control dispersion and exposure		
Local exhaust ventilation	yes (inhalation 90 %)	
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection	no	

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Exposure Scenario 6 (ES6): Metal working fluids / rolling oils (professional)

Free short title	Metal working fluids / rolling oils (professional)
Systematic title based on use descriptor	ERC 8A; PROC 1, 2, 3, 5, 8A, 8B, 10, 11, 13, 17
Name of contributing environmental scenario and corresponding ERC	ERC 8a Wide dispersive indoor use of processing aids in open systems
Name(s) of contributing worker scenarios and corresponding PROCs	PROC 1 - Use in closed process, no likelihood of exposure PROC 2 - Use in closed, continuous process with occasional controlled exposure
	PROC 3 - Use in closed batch process (synthesis or formulation) PROC 5 - Mixing or blending in batch processes (multistage and/or significant contact) PROC 8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities PROC 8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities PROC 10 - Roller application or brushing PROC 11 - Non industrial spraying PROC 11 - Non industrial spraying PROC 13 - Treatment of articles by dipping and pouring PROC 17 - Lubrication at high energy conditions and in partly open process PROC 17 - Lubrication at high energy conditions and in partly open process
Contributing Scenario (1) controlling environmental	exposure for ERC 8A
	ental-related exposure assessment and risk characterization was performed.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
Frequency and duration of use	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
Contributing Scenario (2) controlling professional wo	orker exposure for PROC 1
Name of contributing scenario	1 - Use in closed process, no likelihood of exposure
Qualitative Risk Assessment	
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.
Eyes	In case of potential exposure: Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
Human factors not influenced by risk management	
Exposed skin surface	240 cm ²
Other given operational conditions affecting workers	exposure
Location	indoors
Domain	professional
Technical conditions and measures to control dispers	. ,



Local exhaust ventilation	no	
Conditions and measures related to personal protection	on, hygiene and health evaluation	
Respiratory protection	no	
Contributing Scenario (3) controlling professional wo	rker exposure for PROC 2	
Name of contributing scenario	2 - Use in closed, continuous process with occasional controlled exposure	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	480 cm^2	
Other given operational conditions affecting workers	exposure	
Location	indoors	
Domain	professional	
Technical conditions and measures to control dispersion and exposure		
Local exhaust ventilation	no	
Conditions and measures related to personal protection	on, hygiene and health evaluation	
Respiratory protection	no	
Contributing Scenario (4) controlling professional wo	rker exposure for PROC 3	
Name of contributing scenario	3 - Use in closed batch process (synthesis or formulation)	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	240 cm^2	
Other given operational conditions affecting workers exposure		
Location	indoors	
Domain	professional	
Technical conditions and measures to control dispersion and exposure		
Local exhaust ventilation	no	
Conditions and measures related to personal protection	on, hygiene and health evaluation	
Respiratory protection	no	
Contributing Scenario (5) controlling professional wo	rker exposure for PROC 5	
Name of contributing scenario	5 - Mixing or blending in batch processes (multistage and/or significant contact)	



Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	480 cm^2	
Other given operational conditions affecting workers	exposure	
Location	indoors	
Ventilation	good (30%)	
Domain	professional	
Technical conditions and measures to control dispersion	on and exposure	
Local exhaust ventilation	no	
Conditions and measures related to personal protection	on, hygiene and health evaluation	
Respiratory protection	no	
Contributing Scenario (6) controlling professional worker exposure for PROC 8A		
Name of contributing scenario	8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	960 cm ²	
Other given operational conditions affecting workers	exposure	
Location	indoors	
Ventilation	good (30%)	
Domain	professional	
Technical conditions and measures to control dispersion and exposure		
Local exhaust ventilation	no	
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection	no	
Contributing Scenario (7) controlling professional worker exposure for PROC 8B		
Name of contributing scenario	8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities	
Qualitative Risk Assessment		



General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.		
Eyes	Use suitable eye protection.		
Dermal	Use suitable chemically resistant gloves.		
Human factors not influenced by risk management			
Exposed skin surface	960 cm ²		
Other given operational conditions affecting workers	exposure		
Location	indoors		
Domain	professional		
Technical conditions and measures to control dispersion	on and exposure		
Local exhaust ventilation	no		
Conditions and measures related to personal protection	on, hygiene and health evaluation		
Respiratory protection	no		
Contributing Scenario (8) controlling professional wor	rker exposure for PROC 10		
Name of contributing scenario	10 - Roller application or brushing		
Qualitative Risk Assessment			
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.		
Eyes	Use suitable eye protection.		
Dermal	Use suitable chemically resistant gloves.		
Human factors not influenced by risk management			
Exposed skin surface	960 cm ²		
Other given operational conditions affecting workers	exposure		
Location	indoors		
Ventilation	good (30%)		
Domain	professional		
Technical conditions and measures to control dispersion	on and exposure		
Local exhaust ventilation	no		
Conditions and measures related to personal protection	on, hygiene and health evaluation		
Respiratory protection	no		
Contributing Scenario (9) controlling professional wor	Contributing Scenario (9) controlling professional worker exposure for PROC 11		
Name of contributing scenario	11 - Non industrial spraying		
Scenario subtitle	Automatic		
Qualitative Risk Assessment			
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Ensure that a spraying booth is used. Clean equipment and the work area every day. Regular inspection and maintenance of equipment and machines.		



Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves. Avoid frequent and direct contact with substance.	
Human factors not influenced by risk management		
Exposed skin surface	$1,500 \text{ cm}^2$	
Other given operational conditions affecting workers of	exposure	
Location	indoors	
Domain	professional	
Technical conditions and measures to control dispersion	on and exposure	
Local exhaust ventilation	no	
Conditions and measures related to personal protection	on, hygiene and health evaluation	
Respiratory protection	no	
Use of external/measured value inhalation	Calculated with Stoffenmanager 6	
Contributing Scenario (10) controlling professional we	orker exposure for PROC 11	
Name of contributing scenario	11 - Non industrial spraying	
Scenario subtitle	Manual	
Qualitative Risk Assessment		
General	Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Regular inspection and maintenance of equipment and machines. Ensure that the task is not carried out overhead. Use equipment with a fixed capturing hood exhaust ventilation. In case no suitable local exhaust ventilation is present: Wear suitable respiratory protection.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves. Avoid frequent and direct contact with substance.	
Product characteristics		
Physical state	liquid	
Concentration in substance	10 %, concentration has been considered linearly (justification: ART input value: max. concentration Application rate < 3L/min (surface spraying) Room size >= 300m³ (large workrooms))	
Fugacity / Dustiness	medium	
Human factors not influenced by risk management		
Exposed skin surface	$1,500 \text{ cm}^2$	
Other given operational conditions affecting workers exposure		
Location	indoors	
Domain	professional	
Technical conditions and measures to control dispersion and exposure		
Local exhaust ventilation	no	
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection	no	
Use of external/measured value inhalation	Calculated with ART v1.5	



Contributing Scenario (11) controlling professional worker exposure for PROC 13		
Name of contributing scenario	13 - Treatment of articles by dipping and pouring	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	480 cm^2	
Other given operational conditions affecting workers of	exposure	
Location	indoors	
Ventilation	good (30%)	
Domain	professional	
Technical conditions and measures to control dispersion	on and exposure	
Local exhaust ventilation	no	
Conditions and measures related to personal protection	n, hygiene and health evaluation	
Respiratory protection	no	
Contributing Scenario (12) controlling professional we	orker exposure for PROC 17	
Name of contributing scenario	17 - Lubrication at high energy conditions and in partly open process	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	960 cm^2	
Other given operational conditions affecting workers of	exposure	
Location	indoors	
Domain	professional	
Technical conditions and measures to control dispersion and exposure		
Local exhaust ventilation	yes (inhalation 80 %)	
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection	no	
Contributing Scenario (13) controlling professional worker exposure for PROC 17		
Name of contributing scenario	17 - Lubrication at high energy conditions and in partly open process	
Scenario subtitle	elevated Temp.	
Qualitative Risk Assessment		



General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. In case no suitable local exhaust ventilation is present: Wear suitable respiratory protection.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Product characteristics		
Physical state	liquid	
Concentration in substance	100 %	
Process temperature	108 °C	
Fugacity / Dustiness	high	
Frequency and duration of use		
Duration of activity	>4 hours (default)	
Frequency of use	5 days / week	
Human factors not influenced by risk management		
Exposed skin surface	960 cm ²	
Other given operational conditions affecting workers exposure		
Location	indoors	
Ventilation	good (30%)	
Domain	professional	
Technical conditions and measures to control dispersion and exposure		
Local exhaust ventilation	yes (inhalation 80 %)	
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection	no	

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Exposure Scenario 7 (ES7): Production of iso-butanol

Free short title	Production of iso-butanol	
Systematic title based on use descriptor	ERC 1; PROC 1	
Name of contributing environmental scenario and corresponding ERC	ERC 1 Production of chemicals	
Name(s) of contributing worker scenarios and corresponding PROCs	PROC 1 - Use in closed process, no likelihood of exposure	
Contributing Scenario (1) controlling environmental e	xposure for ERC 1	
As no environmental hazard was identified no environmental	ntal-related exposure assessment and risk characterization was performed.	
Contributing Scenario (2) controlling industrial works	er exposure for PROC 1	
Name of contributing scenario	1 - Use in closed process, no likelihood of exposure	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	In case of potential exposure: Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Product characteristics		
Physical state	liquid	
Concentration in substance	100 %	
Fugacity / Dustiness	medium	
Frequency and duration of use		
Duration of activity	>4 hours (default)	
Frequency of use	5 days / week	
Human factors not influenced by risk management		
Exposed skin surface	240 cm^2	
Other given operational conditions affecting workers exposure		
Location	indoors	
Domain	industrial	
Technical conditions and measures to control dispersion and exposure		
Local exhaust ventilation	no	
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection	no	

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Exposure Scenario 8 (ES8): Use as consumer care product

Free short title	Use as consumer care product	
Systematic title based on use descriptor	ERC 8A, 8D; PC 28, 39	
Name of contributing environmental scenario and corresponding ERC	ERC 8a Wide dispersive indoor use of processing aids in open systems ERC 8d Wide dispersive outdoor use of processing aids in open systems	
Name(s) of contributing consumer scenarios and corresponding PCs/ACs	PC 28 Perfumes, Fragrances PC 39 Cosmetics	
Contributing Scenario (1) controlling environmental exposure for ERC 8A		
Contributing Scenario (2) controlling environmental exposure for ERC 8D		
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.		
Contributing Scenario (3) controlling consumer exposure for PC 28		
Name of contributing scenario	PC 28 Perfumes, Fragrances	
This scenario has not been calculated. Justification:	In accordance to the Article 14 (5b) of the REACh Regulation (EC) No 1907/2006, exposure estimation and risk characterisation needs not to be performed for end uses in cosmetic products within the scope of Directive 76/768/EEC.	
Contributing Scenario (4) controlling consumer exposure for PC 39		
Name of contributing scenario	PC 39 Cosmetics	
This scenario has not been calculated. Justification:	In accordance to the Article 14 (5b) of the REACh Regulation (EC) No 1907/2006, exposure estimation and risk characterisation needs not to be performed for end uses in cosmetic products within the scope of Directive 76/768/EEC.	

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Exposure Scenario 9 (ES9): Use as intermediate

Free short title	Use as intermediate	
Systematic title based on use descriptor	ERC 6A; PROC 1, 2, 3, 4, 8A, 8B, 9	
Name of contributing environmental scenario and corresponding ERC	ERC 6a Industrial use of intermediates	
Name(s) of contributing worker scenarios and corresponding PROCs	PROC 1 - Use in closed process, no likelihood of exposure PROC 2 - Use in closed, continuous process with occasional controlled exposure PROC 3 - Use in closed batch process (synthesis or formulation) PROC 4 - Use in batch and other process (synthesis) where opportunity for exposure arises PROC 8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities PROC 8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities PROC 9 - Transfer of chemicals into small containers (dedicated filling line)	
Contributing Scenario (1) controlling environmental e	exposure for ERC 6A	
As no environmental hazard was identified no environme	ntal-related exposure assessment and risk characterization was performed.	
Product characteristics		
Physical state	liquid	
Concentration in substance	100 %	
Fugacity / Dustiness	medium	
Frequency and duration of use		
Duration of activity	>4 hours (default)	
Frequency of use	5 days / week	
Contributing Scenario (2) controlling industrial works	er exposure for PROC 1	
Name of contributing scenario	1 - Use in closed process, no likelihood of exposure	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	In case of potential exposure: Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	240 cm^2	
Other given operational conditions affecting workers exposure		
Location	indoors	
Domain	industrial	
Technical conditions and measures to control dispersion and exposure		
Local exhaust ventilation	no	
Conditions and measures related to personal protection	on, hygiene and health evaluation	



Contributing Scenario (3) controlling industrial worker exposure for PROC 2			
Name of contributing scenario	2 - Use in closed, continuous process with occasional controlled exposure		
Qualitative Risk Assessment			
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.		
Eyes	Use suitable eye protection.		
Dermal	Use suitable chemically resistant gloves.		
Human factors not influenced by risk management	Human factors not influenced by risk management		
Exposed skin surface	480 cm^2		
Other given operational conditions affecting workers of	exposure		
Location	indoors		
Domain	industrial		
Technical conditions and measures to control dispersion	on and exposure		
Local exhaust ventilation	no		
Conditions and measures related to personal protection, hygiene and health evaluation			
Respiratory protection	no		
Contributing Scenario (4) controlling industrial works	Contributing Scenario (4) controlling industrial worker exposure for PROC 3		
Name of contributing scenario	3 - Use in closed batch process (synthesis or formulation)		
Qualitative Risk Assessment			
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.		
Eyes	Use suitable eye protection.		
Dermal	Use suitable chemically resistant gloves.		
Human factors not influenced by risk management			
Exposed skin surface	240 cm^2		
Other given operational conditions affecting workers of	exposure		
Location	indoors		
Domain	industrial		
Technical conditions and measures to control dispersion	Technical conditions and measures to control dispersion and exposure		
Local exhaust ventilation	no		
Conditions and measures related to personal protection, hygiene and health evaluation			
Respiratory protection	no		
Contributing Scenario (5) controlling industrial worker exposure for PROC 4			
Name of contributing scenario	4 - Use in batch and other process (synthesis) where opportunity for exposure arises		



General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management	,	
Exposed skin surface	480 cm^2	
Other given operational conditions affecting workers	exposure	
Location	indoors	
Domain	industrial	
Technical conditions and measures to control dispersion and exposure		
Local exhaust ventilation	no	
Conditions and measures related to personal protection	on, hygiene and health evaluation	
Respiratory protection	no	
Contributing Scenario (6) controlling industrial worker exposure for PROC 8A		
Name of contributing scenario	8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	$960 \mathrm{cm}^2$	
Other given operational conditions affecting workers	exposure	
Location	indoors	
Domain	industrial	
Technical conditions and measures to control dispersi	on and exposure	
Local exhaust ventilation	yes (inhalation 90 %)	
Conditions and measures related to personal protection	on, hygiene and health evaluation	
Respiratory protection	no	
Contributing Scenario (7) controlling industrial work	er exposure for PROC 8B	
Name of contributing scenario	8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
	•	



Human factors not influenced by risk management		
Exposed skin surface	960 cm ²	
Other given operational conditions affecting workers e	exposure	
Location	indoors	
Domain	industrial	
Technical conditions and measures to control dispersion	on and exposure	
Local exhaust ventilation	yes (inhalation 95 %)	
Conditions and measures related to personal protection	n, hygiene and health evaluation	
Respiratory protection	no	
Contributing Scenario (8) controlling industrial worker exposure for PROC 9		
Name of contributing scenario	9 - Transfer of chemicals into small containers (dedicated filling line)	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	480 cm^2	
Other given operational conditions affecting workers exposure		
Location	indoors	
Domain	industrial	
Technical conditions and measures to control dispersion and exposure		
Local exhaust ventilation	yes (inhalation 90 %)	
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection	no	

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Exposure Scenario 10 (ES10): Use in cleaning agents

Free short title	Use in cleaning agents
Systematic title based on use descriptor	ERC 4; PROC 1, 2, 3, 4, 7, 8A, 8B, 9, 10, 13
Name of contributing environmental scenario and corresponding ERC	ERC 4 Industrial use of processing aids
Name(s) of contributing worker scenarios and corresponding PROCs	PROC 1 - Use in closed process, no likelihood of exposure PROC 2 - Use in closed, continuous process with occasional controlled exposure PROC 3 - Use in closed batch process (synthesis or formulation) PROC 4 - Use in batch and other process (synthesis) where opportunity for exposure arises PROC 7 - Industrial spraying PROC 8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities PROC 8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities PROC 9 - Transfer of chemicals into small containers (dedicated filling line) PROC 10 - Roller application or brushing PROC 13 - Treatment of articles by dipping and pouring
Contributing Scenario (1) controlling environmental e	exposure for ERC 4
As no environmental hazard was identified no environme	ntal-related exposure assessment and risk characterization was performed.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
Frequency and duration of use	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
Contributing Scenario (2) controlling industrial work	er exposure for PROC 1
Name of contributing scenario	1 - Use in closed process, no likelihood of exposure
Qualitative Risk Assessment	
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.
Eyes	In case of potential exposure: Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
Human factors not influenced by risk management	
Exposed skin surface	240 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
	1



Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection	no	
Contributing Scenario (3) controlling industrial works	er exposure for PROC 2	
Name of contributing scenario	2 - Use in closed, continuous process with occasional controlled exposure	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	480 cm^2	
Other given operational conditions affecting workers	exposure	
Location	indoors	
Domain	industrial	
Technical conditions and measures to control dispersion	on and exposure	
Local exhaust ventilation	no	
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection	no	
Contributing Scenario (4) controlling industrial works	er exposure for PROC 3	
Name of contributing scenario	3 - Use in closed batch process (synthesis or formulation)	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	240 cm^2	
Other given operational conditions affecting workers	exposure	
Location	indoors	
Domain	industrial	
Technical conditions and measures to control dispersion and exposure		
Local exhaust ventilation	no	
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection	no	
Contributing Scenario (5) controlling industrial worker exposure for PROC 4		
Name of contributing scenario	4 - Use in batch and other process (synthesis) where opportunity for exposure arises	
Qualitative Risk Assessment		



	-	
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	$480 \mathrm{cm}^2$	
Other given operational conditions affecting workers	exposure	
Location	indoors	
Domain	industrial	
Technical conditions and measures to control dispersi	on and exposure	
Local exhaust ventilation	no	
Conditions and measures related to personal protection	on, hygiene and health evaluation	
Respiratory protection	no	
Contributing Scenario (6) controlling industrial works	er exposure for PROC 7	
Name of contributing scenario	7 - Industrial spraying	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m). Ensure that a spraying booth is used. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Regular inspection and maintenance of equipment and machines.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves. Avoid frequent and direct contact with substance.	
Human factors not influenced by risk management		
Exposed skin surface	1,500 cm ²	
Other given operational conditions affecting workers	exposure	
Location	indoors	
Domain	industrial	
Technical conditions and measures to control dispersi	on and exposure	
Local exhaust ventilation	no	
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection	no	
Use of external/measured value inhalation	Calculated with Stoffenmanager 6	
Contributing Scenario (7) controlling industrial worker exposure for PROC 8A		
Name of contributing scenario	8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities	
Qualitative Risk Assessment		
-		



General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.		
Eyes	Use suitable eye protection.		
Dermal	Use suitable chemically resistant gloves.		
Human factors not influenced by risk management			
Exposed skin surface	960 cm ²		
Other given operational conditions affecting workers	exposure		
Location	indoors		
Domain	industrial		
Technical conditions and measures to control dispersi	on and exposure		
Local exhaust ventilation	yes (inhalation 90 %)		
Conditions and measures related to personal protection	on, hygiene and health evaluation		
Respiratory protection	no		
Contributing Scenario (8) controlling industrial work	er exposure for PROC 8B		
Name of contributing scenario	8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities		
Qualitative Risk Assessment			
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.		
Eyes	Use suitable eye protection.		
Dermal	Use suitable chemically resistant gloves.		
Human factors not influenced by risk management			
Exposed skin surface	960 cm ²		
Other given operational conditions affecting workers	exposure		
Location	indoors		
Domain	industrial		
Technical conditions and measures to control dispersi	on and exposure		
Local exhaust ventilation	yes (inhalation 95 %)		
Conditions and measures related to personal protection	on, hygiene and health evaluation		
Respiratory protection	no		
Contributing Scenario (9) controlling industrial work	er exposure for PROC 9		
Name of contributing scenario	9 - Transfer of chemicals into small containers (dedicated filling line)		
Qualitative Risk Assessment			
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.		
Eyes	Use suitable eye protection.		
Dermal	Use suitable chemically resistant gloves.		



Human factors not influenced by risk management		
Exposed skin surface	480 cm^2	
Other given operational conditions affecting workers of	exposure	
Location	indoors	
Domain	industrial	
Technical conditions and measures to control dispersion	on and exposure	
Local exhaust ventilation	yes (inhalation 90 %)	
Conditions and measures related to personal protection	n, hygiene and health evaluation	
Respiratory protection	no	
Contributing Scenario (10) controlling industrial work	xer exposure for PROC 10	
Name of contributing scenario	10 - Roller application or brushing	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	960 cm ²	
Other given operational conditions affecting workers of	exposure	
Location	indoors	
Domain	industrial	
Technical conditions and measures to control dispersion and exposure		
Local exhaust ventilation	yes (inhalation 90 %)	
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection	no	
Contributing Scenario (11) controlling industrial work	xer exposure for PROC 13	
Name of contributing scenario	13 - Treatment of articles by dipping and pouring	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	480 cm^2	
Other given operational conditions affecting workers exposure		
Location	indoors	
Domain	industrial	
Technical conditions and measures to control dispersion and exposure		



Local exhaust ventilation	yes (inhalation 90 %)	
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection	no	

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Exposure Scenario 11 (ES11): Use in cleaning agents (consumer)

Free short title	Use in cleaning agents (consumer)	
Systematic title based on use descriptor	ERC 8A, 8D; PC 4, 9a, 9c, 24, 35, 38	
Name of contributing environmental scenario and corresponding ERC	ERC 8a Wide dispersive indoor use of processing aids in open systems ERC 8d Wide dispersive outdoor use of processing aids in open systems	
Name(s) of contributing consumer scenarios and corresponding PCs/ACs	PC 4 Anti-Freeze and De-icing products PC 4 Anti-Freeze and De-icing products PC 4 Anti-Freeze and De-icing products PC 9a Coatings and Paints, thinners, paint removers PC 9c Face and finger paints PC 24 Lubricants, Greases and Release Products PC 35 Washing and Cleaning Products (including solvent based products) PC 35 Washing and Cleaning Products (including solvent based products) PC 35 Washing and Cleaning Products (including solvent based products) PC 35 Washing and Cleaning Products (including solvent based products) PC 38 Welding and soldering products, flux products	
Contributing Scenario (1) controlling environmental	exposure for ERC 8A	
Contributing Scenario (2) controlling environmental	exposure for ERC 8D	
As no environmental hazard was identified no environmental	ental-related exposure assessment and risk characterization was performed.	
Contributing Scenario (3) controlling consumer expos	sure for PC 4	
Name of contributing scenario	PC 4 Anti-Freeze and De-icing products	
Scenario subtitle	Refill antifreeze	
Calculation model	ConsExpo	
Frequency and duration of use		
Inhalation		
Exposure calculation result type	Mean concentration on day of exposure	
Frequency of use	1 per day	
Product characteristics		
Spray application	no	
Product ingredient fraction by weight	10 %	
Amounts used		
Inhalation	2,000 g	
Human factors not influenced by risk management	-	
Other given operational conditions affecting consumers exposure		
Inhalation		
Room volume	34 m ³	
Ventilation rate	1.5 1/h	
Contributing Scenario (4) controlling consumer expos	sure for PC 4	
Name of contributing scenario	PC 4 Anti-Freeze and De-icing products	
0 ' 144	Lock de-icing	
Scenario subtitle	Lock do leng	

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Frequency and duration of use		
Inhalation		
Exposure calculation result type	Mean concentration on day of exposure	
Frequency of use	1 per day	
Product characteristics		
Spray application	yes	
Product ingredient fraction by weight	50 %	
Amounts used		
Inhalation	4 g	
Human factors not influenced by risk management		
Other given operational conditions affecting consumer	rs exposure	
Inhalation		
Room volume	34 m ³	
Ventilation rate	1.5 1/h	
Contributing Scenario (5) controlling consumer expos	ure for PC 4	
Name of contributing scenario	PC 4 Anti-Freeze and De-icing products	
Scenario subtitle	Washing car windows	
Calculation model	ConsExpo	
Frequency and duration of use		
Inhalation		
Exposure calculation result type	Mean concentration on day of exposure	
Frequency of use	1 per day	
Product characteristics		
Spray application	no	
Product ingredient fraction by weight	50 %	
Amounts used		
Inhalation	15 g	
Human factors not influenced by risk management		
Other given operational conditions affecting consumers exposure		
Inhalation		
Room volume	34 m ³	
Ventilation rate	1.5 1/h	
Contributing Scenario (6) controlling consumer exposure for PC 9a		
Name of contributing scenario	PC 9a Coatings and Paints, thinners, paint removers	
Calculation model	ConsExpo water borne paint - Application	
Frequency and duration of use		
Inhalation		
Exposure calculation result type	Mean concentration on day of exposure	
Frequency of use	1 per year	



Exposure time	132 min	
Application duration 120 min		
Product characteristics		
Spray application	no	
Product ingredient fraction by weight	1.5 %	
Mol weight matrix	45 g/mol	
Mass transfer rate	- m/min	
Amounts used	1,050	
Inhalation	1,250 g	
Human factors not influenced by risk management		
Other given operational conditions affecting consumer	rs exposure	
Inhalation		
Room volume	20 m ³	
Ventilation rate	0.600 1/h	
Release area increases over time		
Release area	1.00E5 cm ²	
Release temperature	20 °C	
Contributing Scenario (7) controlling consumer expos	ure for PC 9a	
Name of contributing scenario	PC 9a Coatings and Paints, thinners, paint removers	
Calculation model	ConsExpo high solid paint - Application	
Frequency and duration of use		
Inhalation		
Exposure calculation result type	Mean concentration on day of exposure	
Frequency of use	1 per year	
Exposure time	132 min	
Application duration	120 min	
Product characteristics		
Spray application	no	
Product ingredient fraction by weight	2 %	
Mol weight matrix	550 g/mol	
Mass transfer rate	- m/min	
Amounts used		
Inhalation	1,300 g	
Human factors not influenced by risk management		
Other given operational conditions affecting consumers exposure		
Inhalation		
Room volume	20 m ³	
Ventilation rate	0.600 1/h	



Release area	1.00E5 cm ²	
Release temperature	20 °C	
Contributing Scenario (8) controlling consumer expos	ure for PC 9a	
Name of contributing scenario	PC 9a Coatings and Paints, thinners, paint removers	
Calculation model	ConsExpo spray can - Application	
Frequency and duration of use	spray can Appreciation	
Inhalation		
Exposure calculation result type	Mean concentration on day of exposure	
Frequency of use	2 per year	
Product characteristics		
Spray application	yes	
Product ingredient fraction by weight	25 %	
Amounts used		
Inhalation	400 g	
Human factors not influenced by risk management		
Other given operational conditions affecting consumer	rs exposure	
Inhalation		
Room volume	34 m ³	
Ventilation rate	1.5 1/h	
Ventilation rate Contributing Scenario (9) controlling consumer expos		
Contributing Scenario (9) controlling consumer expos	oure for PC 9a	
Contributing Scenario (9) controlling consumer expos	PC 9a Coatings and Paints, thinners, paint removers ConsExpo	
Contributing Scenario (9) controlling consumer expos Name of contributing scenario Calculation model	PC 9a Coatings and Paints, thinners, paint removers ConsExpo	
Contributing Scenario (9) controlling consumer expos Name of contributing scenario Calculation model Frequency and duration of use	PC 9a Coatings and Paints, thinners, paint removers ConsExpo	
Contributing Scenario (9) controlling consumer expos Name of contributing scenario Calculation model Frequency and duration of use Inhalation	PC 9a Coatings and Paints, thinners, paint removers ConsExpo Glue remover - Application	
Contributing Scenario (9) controlling consumer expos Name of contributing scenario Calculation model Frequency and duration of use Inhalation Exposure calculation result type	PC 9a Coatings and Paints, thinners, paint removers ConsExpo Glue remover - Application Mean concentration on day of exposure	
Contributing Scenario (9) controlling consumer expos Name of contributing scenario Calculation model Frequency and duration of use Inhalation Exposure calculation result type Frequency of use	PC 9a Coatings and Paints, thinners, paint removers ConsExpo Glue remover - Application Mean concentration on day of exposure 0.250 per year	
Contributing Scenario (9) controlling consumer expose Name of contributing scenario Calculation model Frequency and duration of use Inhalation Exposure calculation result type Frequency of use Exposure time	PC 9a Coatings and Paints, thinners, paint removers ConsExpo Glue remover - Application Mean concentration on day of exposure 0.250 per year 240 min	
Contributing Scenario (9) controlling consumer expose Name of contributing scenario Calculation model Frequency and duration of use Inhalation Exposure calculation result type Frequency of use Exposure time Application duration	PC 9a Coatings and Paints, thinners, paint removers ConsExpo Glue remover - Application Mean concentration on day of exposure 0.250 per year 240 min	
Contributing Scenario (9) controlling consumer expose Name of contributing scenario Calculation model Frequency and duration of use Inhalation Exposure calculation result type Frequency of use Exposure time Application duration Product characteristics	PC 9a Coatings and Paints, thinners, paint removers ConsExpo Glue remover - Application Mean concentration on day of exposure 0.250 per year 240 min 240 min	
Contributing Scenario (9) controlling consumer expose Name of contributing scenario Calculation model Frequency and duration of use Inhalation Exposure calculation result type Frequency of use Exposure time Application duration Product characteristics Spray application	PC 9a Coatings and Paints, thinners, paint removers ConsExpo Glue remover - Application Mean concentration on day of exposure 0.250 per year 240 min 240 min	
Contributing Scenario (9) controlling consumer expose Name of contributing scenario Calculation model Frequency and duration of use Inhalation Exposure calculation result type Frequency of use Exposure time Application duration Product characteristics Spray application Product ingredient fraction by weight	PC 9a Coatings and Paints, thinners, paint removers ConsExpo Glue remover - Application Mean concentration on day of exposure 0.250 per year 240 min 240 min	
Contributing Scenario (9) controlling consumer expose Name of contributing scenario Calculation model Frequency and duration of use Inhalation Exposure calculation result type Frequency of use Exposure time Application duration Product characteristics Spray application Product ingredient fraction by weight Mol weight matrix	PC 9a Coatings and Paints, thinners, paint removers ConsExpo Glue remover - Application Mean concentration on day of exposure 0.250 per year 240 min 240 min no 3 % 3,000 g/mol	
Contributing Scenario (9) controlling consumer expose Name of contributing scenario Calculation model Frequency and duration of use Inhalation Exposure calculation result type Frequency of use Exposure time Application duration Product characteristics Spray application Product ingredient fraction by weight Mol weight matrix Mass transfer rate	PC 9a Coatings and Paints, thinners, paint removers ConsExpo Glue remover - Application Mean concentration on day of exposure 0.250 per year 240 min 240 min no 3 % 3,000 g/mol	
Contributing Scenario (9) controlling consumer expose Name of contributing scenario Calculation model Frequency and duration of use Inhalation Exposure calculation result type Frequency of use Exposure time Application duration Product characteristics Spray application Product ingredient fraction by weight Mol weight matrix Mass transfer rate Amounts used	PC 9a Coatings and Paints, thinners, paint removers ConsExpo Glue remover - Application Mean concentration on day of exposure 0.250 per year 240 min 240 min no 3 % 3,000 g/mol - m/min	
Contributing Scenario (9) controlling consumer expose Name of contributing scenario Calculation model Frequency and duration of use Inhalation Exposure calculation result type Frequency of use Exposure time Application duration Product characteristics Spray application Product ingredient fraction by weight Mol weight matrix Mass transfer rate Amounts used Inhalation	PC 9a Coatings and Paints, thinners, paint removers ConsExpo Glue remover - Application Mean concentration on day of exposure 0.250 per year 240 min 240 min no 3 % 3,000 g/mol - m/min	



Room volume	30 m ³	
Ventilation rate	1.5 1/h	
Release area increases over time		
Release area	5.00E4 cm ²	
Release temperature	20 °C	
Contributing Scenario (10) controlling consumer expo	sure for PC 9c	
Name of contributing scenario	PC 9c Face and finger paints	
Calculation model	Ecetoc TRA	
Frequency and duration of use		
Frequency of use	365 times/year (Frequent)	
Product characteristics		
Product ingredient fraction by weight	50 %	
Human factors not influenced by risk management		
Skin surface area dermal	hands	
Skin surface area oral	-	
Tranfer factor dermal	100 %	
Transfer factor ingestion	100 %	
Other given operational conditions affecting consumer	rs exposure	
Contributing Scenario (11) controlling consumer expo	sure for PC 24	
Name of contributing scenario	PC 24 Lubricants, Greases and Release Products	
This scenario has not been calculated. Justification:	Exposure of the consumer can be ruled out. Use in closed system is assumed	
Contributing Scenario (12) controlling consumer expo	sure for PC 35	
Name of contributing scenario	PC 35 Washing and Cleaning Products (including solvent based products)	
Calculation model	Ecetoc TRA	
Product subcategory	Laundry and dish washing products	
Frequency and duration of use		
Frequency of use	365 times/year (Frequent)	
Exposure time	1 h	
Product characteristics		
Spray application	no	
Product ingredient fraction by weight	5 %	
Amounts used		
Amounts used	15 g	
Human factors not influenced by risk management		
Skin surface area dermal	hands	
Skin surface area oral	-	
Tranfer factor dermal	100 %	
Other given operational conditions affecting consumers exposure		
Room volume	20 m^3	



Release fraction to air	100.0 %	
Contributing Scenario (13) controlling consumer exposure for PC 35		
Name of contributing scenario	PC 35 Washing and Cleaning Products (including solvent based products)	
Scenario subtitle	Mixing and loading	
Calculation model	ConsExpo Floor cleaning liquid - Mixing & Loading	
Frequency and duration of use		
Inhalation		
Exposure calculation result type	Mean concentration on day of exposure	
Frequency of use	104 per year	
Exposure time	0.750 min	
Application duration	0.300 min	
Product characteristics		
Spray application	no	
Product ingredient fraction by weight	50 %	
Mol weight matrix	22 g/mol	
Mass transfer rate	- m/min	
Amounts used		
Inhalation	500 g	
Human factors not influenced by risk management		
Other given operational conditions affecting consume	ers exposure	
Inhalation		
Room volume	1 m ³	
Ventilation rate	0.500 1/h	
Release are is constant		
Release area	20 cm ²	
Release temperature	20 °C	
Contributing Scenario (14) controlling consumer expo	osure for PC 35	
Name of contributing scenario	PC 35 Washing and Cleaning Products (including solvent based products)	
Scenario subtitle	Application	
Calculation model	ConsExpo Floor cleaning liquid - Application	
Frequency and duration of use		
Inhalation		
Exposure calculation result type	Mean concentration on day of exposure	
Frequency of use	104 per year	
Exposure time	240 min	
Application duration	30 min	
Product characteristics		
Spray application	no	



Product ingredient fraction by weight	4 %	
Mol weight matrix	18 g/mol	
Mass transfer rate	- m/min	
Amounts used		
Inhalation	880 g	
Human factors not influenced by risk management		
Other given operational conditions affecting consumers exposure		
Inhalation		
Room volume	58 m ³	
Ventilation rate	0.500 1/h	
Release area increases over time		
Release area	$2.20E5 \text{ cm}^2$	
Release temperature	20 °C	
Contributing Scenario (15) controlling consumer expo	sure for PC 35	
Name of contributing scenario	PC 35 Washing and Cleaning Products (including solvent based products)	
Calculation model	ConsExpo Bathroom cleaning spray - Application: cleaning	
Frequency and duration of use		
Inhalation		
Exposure calculation result type	Mean concentration on day of exposure	
Frequency of use	52 per year	
Exposure time	25 min	
Application duration	20 min	
Product characteristics		
Spray application	yes	
Product ingredient fraction by weight	20 %	
Mol weight matrix	36 g/mol	
Mass transfer rate	- m/min	
Amounts used		
Inhalation	30 g	
Human factors not influenced by risk management		
Other given operational conditions affecting consumers exposure		
Inhalation		
Room volume	10 m ³	
Ventilation rate	2 1/h	
Release are is constant		
Release area	$6.40E4 \text{ cm}^2$	
Release temperature	20 °C	
Contributing Scenario (16) controlling consumer exposure for PC 38		
Name of contributing scenario	PC 38 Welding and soldering products, flux products	



Calculation model	ConsExpo	
Frequency and duration of use		
Inhalation		
Exposure calculation result type	Mean concentration on day of exposure	
Frequency of use	1 per day	
Product characteristics		
Spray application	no	
Product ingredient fraction by weight	10 %	
Amounts used		
Inhalation	12 g	
Human factors not influenced by risk management		
Other given operational conditions affecting consumers exposure		
Inhalation		
Room volume	20 m ³	
Ventilation rate	0.600 1/h	

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Exposure Scenario 12 (ES12): Use in cleaning agents (professional)

Free short title	Use in cleaning agents (professional)
Systematic title based on use descriptor	ERC 8A, 8D; PROC 1, 2, 3, 4, 8A, 8B, 9, 10, 11, 13
Name of contributing environmental scenario and corresponding ERC	ERC 8a Wide dispersive indoor use of processing aids in open systems ERC 8d Wide dispersive outdoor use of processing aids in open systems
Name(s) of contributing worker scenarios and corresponding PROCs	PROC 1 - Use in closed process, no likelihood of exposure PROC 2 - Use in closed, continuous process with occasional controlled exposure PROC 3 - Use in closed batch process (synthesis or formulation) PROC 4 - Use in batch and other process (synthesis) where opportunity for exposure arises PROC 8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities PROC 8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities PROC 9 - Transfer of chemicals into small containers (dedicated filling line) PROC 10 - Roller application or brushing PROC 11 - Non industrial spraying PROC 13 - Treatment of articles by dipping and pouring
Contributing Scenario (1) controlling environmental	exposure for ERC 8A
Contributing Scenario (2) controlling environmental	exposure for ERC 8D
As no environmental hazard was identified no environmental	ental-related exposure assessment and risk characterization was performed.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
Frequency and duration of use	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
Contributing Scenario (3) controlling professional wo	rker exposure for PROC 1
Name of contributing scenario	1 - Use in closed process, no likelihood of exposure
Qualitative Risk Assessment	
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.
Eyes	In case of potential exposure: Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
Human factors not influenced by risk management	
Exposed skin surface	240 cm^2
Other given operational conditions affecting workers	exposure
Location	indoors
Domain	professional
Technical conditions and measures to control dispersi	ion and exposure



Local exhaust ventilation	no	
Conditions and measures related to personal protection	on, hygiene and health evaluation	
Respiratory protection	no	
Contributing Scenario (4) controlling professional wo	orker exposure for PROC 2	
Name of contributing scenario	2 - Use in closed, continuous process with occasional controlled exposure	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	480 cm^2	
Other given operational conditions affecting workers	exposure	
Location	indoors	
Domain	professional	
Technical conditions and measures to control dispersion and exposure		
Local exhaust ventilation	no	
Conditions and measures related to personal protection	on, hygiene and health evaluation	
Respiratory protection	no	
Contributing Scenario (5) controlling professional wo	rker exposure for PROC 3	
Name of contributing scenario	3 - Use in closed batch process (synthesis or formulation)	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	240 cm^2	
Other given operational conditions affecting workers	exposure	
Location	indoors	
Domain	professional	
Technical conditions and measures to control dispersi	ion and exposure	
Local exhaust ventilation	no	
Conditions and measures related to personal protection	on, hygiene and health evaluation	
Respiratory protection	no	
Contributing Scenario (6) controlling professional wo	rker exposure for PROC 4	
Name of contributing scenario	4 - Use in batch and other process (synthesis) where opportunity for exposure arises	



Qualitative Risk Assessment	
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
Human factors not influenced by risk management	
Exposed skin surface	480 cm ²
Other given operational conditions affecting workers	exposure
Location	indoors
Domain	professional
Technical conditions and measures to control dispersi	on and exposure
Local exhaust ventilation	no
Conditions and measures related to personal protection	on, hygiene and health evaluation
Respiratory protection	no
Contributing Scenario (7) controlling professional wor	rker exposure for PROC 8A
Name of contributing scenario	8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities
Qualitative Risk Assessment	
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
Human factors not influenced by risk management	
Exposed skin surface	960 cm ²
Other given operational conditions affecting workers	exposure
Location	indoors
Ventilation	good (30%)
Domain	professional
Technical conditions and measures to control dispersi	on and exposure
Local exhaust ventilation	no
Conditions and measures related to personal protection	on, hygiene and health evaluation
Respiratory protection	no
Contributing Scenario (8) controlling professional wo	rker exposure for PROC 8B
Name of contributing scenario	8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Qualitative Risk Assessment	
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.



Demnal factors not influenced by risk management Exposed skin surface 960 cm² Cheation Indoors Domain professional Technical conditions and measures to control dispersional accountering the professional stream and exposure Local exhaust ventilation Conditions and measures related to personal protection no Contributing Securic (9) controlling professional were exposure for PROC 9 Name of contributing Securic (9) controlling professional were exposure for PROC 9 Parasser entimization of manual phases. General Ensure minimization of manual phases. General Ensure minimization of manual phases. Qualitative Risk Assessment Ensure minimization of manual phases. Eyes Use satiable chemically resistant gloves. Eyes Use satiable experiodection. Dermal Use satiable experiodection. Unusual factors not influenced by risk management Use satiable experiodection. Exposed skin surface 480 cm² Other given operational conditions affecting workers *** *** Vecludation po (30%) Domain no Centical exhaust ventilation <th>Eyes</th> <th>Use suitable eye protection.</th>	Eyes	Use suitable eye protection.		
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Dermal Use suitable chemically resistant gloves. Human factors not influenced by risk management Exposed skin surface 960 cm ²	General	Supervision in place to check that the RMMs in place are being used correctly and OCs followed.		
Human factors not influenced by risk management Exposed skin surface 960 cm ²	Eyes	Use suitable eye protection.		
Exposed skin surface 960 cm ²	Dermal	Use suitable chemically resistant gloves.		
	Human factors not influenced by risk management			
Other given operational conditions affecting workers exposure	Exposed skin surface 960 cm ²			
	Other given operational conditions affecting workers of	exposure		



Location	indoors		
Ventilation	good (30%)		
Domain	professional		
Technical conditions and measures to control dispersion	on and exposure		
Local exhaust ventilation	no		
Conditions and measures related to personal protectio	n, hygiene and health evaluation		
Respiratory protection	no		
Contributing Scenario (11) controlling professional wo	orker exposure for PROC 11		
Name of contributing scenario	11 - Non industrial spraying		
Qualitative Risk Assessment			
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Ensure that a spraying booth is used. Clean equipment and the work area every day. Regular inspection and maintenance of equipment and machines.		
Eyes	Use suitable eye protection.		
Dermal	Use suitable chemically resistant gloves. Avoid frequent and direct contact with substance.		
Human factors not influenced by risk management	Human factors not influenced by risk management		
Exposed skin surface	$1,500 \text{ cm}^2$		
Other given operational conditions affecting workers of	Other given operational conditions affecting workers exposure		
Location	indoors		
Domain	professional		
Technical conditions and measures to control dispersion	on and exposure		
Local exhaust ventilation	no		
Conditions and measures related to personal protectio	n, hygiene and health evaluation		
Respiratory protection	no		
Use of external/measured value inhalation	Calculated with Stoffenmanager 6		
Contributing Scenario (12) controlling professional wo	Contributing Scenario (12) controlling professional worker exposure for PROC 11		
Name of contributing scenario	11 - Non industrial spraying		
Qualitative Risk Assessment			
General	Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Regular inspection and maintenance of equipment and machines. Ensure that the task is not carried out overhead. Use equipment with a fixed capturing hood exhaust ventilation. In case no suitable local exhaust ventilation is present: Wear suitable respiratory protection.		
Eyes	Use suitable eye protection.		
Dermal	Use suitable chemically resistant gloves. Avoid frequent and direct contact with substance.		
Product characteristics			
Physical state	liquid		



Concentration in substance	10 %, concentration has been considered linearly (justification: ART input value: max. concentration Application rate < 3L/min (surface spraying) Room size >= 300m³ (large workrooms))
Fugacity / Dustiness	medium
Human factors not influenced by risk management	
Exposed skin surface	$1,500 \text{ cm}^2$
Other given operational conditions affecting worker	s exposure
Location	indoors
Domain	professional
Technical conditions and measures to control disper	sion and exposure
Local exhaust ventilation	no
Conditions and measures related to personal protect	ion, hygiene and health evaluation
Respiratory protection	no
Use of external/measured value inhalation	Calculated with ART v1.5
Contributing Scenario (13) controlling professional	worker exposure for PROC 13
Name of contributing scenario	13 - Treatment of articles by dipping and pouring
Qualitative Risk Assessment	
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting worker	s exposure
Location	indoors
Ventilation	good (30%)
Domain	professional
Technical conditions and measures to control disper	sion and exposure
Local exhaust ventilation	no
Conditions and measures related to personal protect	ion, hygiene and health evaluation
Respiratory protection	no

DATE CREATED: 03/04/2018 LANGUAGE: ENGLISH



Exposure Scenario 13 (ES13): Use in Coatings (paint,ink,toners,adhesives)

Free short title	Use in Coatings (paint,ink,toners,adhesives)
Systematic title based on use descriptor	ERC 4; PROC 1, 2, 3, 4, 5, 7, 8A, 8B, 9, 10, 13, 15
Name of contributing environmental scenario and corresponding ERC	ERC 4 Industrial use of processing aids
Name(s) of contributing worker scenarios and corresponding PROCs	PROC 1 - Use in closed process, no likelihood of exposure PROC 2 - Use in closed, continuous process with occasional controlled exposure PROC 3 - Use in closed batch process (synthesis or formulation) PROC 4 - Use in batch and other process (synthesis) where opportunity for exposure arises PROC 5 - Mixing or blending in batch processes (multistage and/or significant contact) PROC 7 - Industrial spraying PROC 8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities PROC 8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities PROC 9 - Transfer of chemicals into small containers (dedicated filling line) PROC 10 - Roller application or brushing PROC 13 - Treatment of articles by dipping and pouring PROC 15 - Use of laboratory reagents in small scale laboratories
Contributing Scenario (1) controlling environmental of	exposure for ERC 4
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.	
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
Frequency and duration of use	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
Contributing Scenario (2) controlling industrial work	er exposure for PROC 1
Name of contributing scenario	1 - Use in closed process, no likelihood of exposure
Qualitative Risk Assessment	
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.
Eyes	In case of potential exposure: Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
Human factors not influenced by risk management	
Exposed skin surface	240 cm^2
Other given operational conditions affecting workers	exposure
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersi	on and exposure



Local exhaust ventilation	no		
Conditions and measures related to personal protection	on, hygiene and health evaluation		
Respiratory protection	no		
Contributing Scenario (3) controlling industrial works	er exposure for PROC 2		
Name of contributing scenario	2 - Use in closed, continuous process with occasional controlled exposure		
Qualitative Risk Assessment			
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.		
Eyes	Use suitable eye protection.		
Dermal	Use suitable chemically resistant gloves.		
Human factors not influenced by risk management			
Exposed skin surface	480 cm^2		
Other given operational conditions affecting workers	exposure		
Location	indoors		
Domain	industrial		
Technical conditions and measures to control dispersion and exposure			
Local exhaust ventilation	no		
Conditions and measures related to personal protection	on, hygiene and health evaluation		
Respiratory protection	no		
Contributing Scenario (4) controlling industrial worker exposure for PROC 3			
Name of contributing scenario	3 - Use in closed batch process (synthesis or formulation)		
Qualitative Risk Assessment			
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.		
Eyes	Use suitable eye protection.		
Dermal	Use suitable chemically resistant gloves.		
Human factors not influenced by risk management	Human factors not influenced by risk management		
Exposed skin surface	240 cm^2		
Other given operational conditions affecting workers exposure			
Location	indoors		
Domain	industrial		
Technical conditions and measures to control dispersion and exposure			
Local exhaust ventilation	no		
Conditions and measures related to personal protection, hygiene and health evaluation			
Respiratory protection	no		
Contributing Scenario (5) controlling industrial worker exposure for PROC 4			
Name of contributing scenario	4 - Use in batch and other process (synthesis) where opportunity for exposure arises		
	on postare united		



Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	480 cm^2	
Other given operational conditions affecting workers e	exposure	
Location	indoors	
Domain	industrial	
Technical conditions and measures to control dispersion	on and exposure	
Local exhaust ventilation	no	
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection	no	
Contributing Scenario (6) controlling industrial worker exposure for PROC 5		
Name of contributing scenario	5 - Mixing or blending in batch processes (multistage and/or significant contact)	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	480 cm^2	
Other given operational conditions affecting workers exposure		
Location	indoors	
Domain	industrial	
Technical conditions and measures to control dispersion and exposure		
Local exhaust ventilation	yes (inhalation 90 %)	
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection	no	
Contributing Scenario (7) controlling industrial works	er exposure for PROC 7	
Name of contributing scenario	7 - Industrial spraying	
Qualitative Risk Assessment		



General	Ensure minimization of manual phases. Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m). Ensure that a spraying booth is used. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Regular inspection and maintenance of equipment and machines.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves. Avoid frequent and direct contact with substance.
Human factors not influenced by risk management	
Exposed skin surface	$1,500 \text{ cm}^2$
Other given operational conditions affecting workers	exposure
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersi	on and exposure
Local exhaust ventilation	no
Conditions and measures related to personal protection	on, hygiene and health evaluation
Respiratory protection	no
Use of external/measured value inhalation	Calculated with Stoffenmanager 6
Contributing Scenario (8) controlling industrial works	er exposure for PROC 8A
Name of contributing scenario	8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities
Qualitative Risk Assessment	
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
Human factors not influenced by risk management	,
Exposed skin surface	960 cm ²
Other given operational conditions affecting workers	exposure
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersi	on and exposure
Local exhaust ventilation	yes (inhalation 90 %)
Conditions and measures related to personal protection	on, hygiene and health evaluation
Respiratory protection	no
Contributing Scenario (9) controlling industrial works	er exposure for PROC 8B
Name of contributing scenario	8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Qualitative Risk Assessment	1



General	Ensure minimization of manual phases.	
	Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
	Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	960 cm ²	
Other given operational conditions affecting workers e	exposure	
Location	indoors	
Domain	industrial	
Technical conditions and measures to control dispersion	on and exposure	
Local exhaust ventilation	yes (inhalation 95 %)	
Conditions and measures related to personal protection	n, hygiene and health evaluation	
Respiratory protection	no	
Contributing Scenario (10) controlling industrial work	xer exposure for PROC 9	
Name of contributing scenario	9 - Transfer of chemicals into small containers (dedicated filling line)	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management	ese summer enemically resistant groves.	
Exposed skin surface	480 cm^2	
Other given operational conditions affecting workers e		
Location	indoors	
Domain	industrial	
Technical conditions and measures to control dispersion		
Local exhaust ventilation	yes (inhalation 90 %)	
Conditions and measures related to personal protectio	<u> • </u>	
Respiratory protection	no	
Contributing Scenario (11) controlling industrial work		
Name of contributing scenario	10 - Roller application or brushing	
Qualitative Risk Assessment	To Rober approaction of ortaining	
General	Ensure minimization of manual phases.	
Conciu	Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		



conditions and measures related to personal protection, hygiene espiratory protection no contributing Scenario (12) controlling industrial worker exposure ame of contributing scenario 13 - Treatment unalitative Risk Assessment Ensure min Supervisio correctly a Avoid frequency of the suitable of the su	and health evaluation	
cechnical conditions and measures to control dispersion and experienced exhaust ventilation yes (inhala conditions and measures related to personal protection, hygiene espiratory protection no contributing Scenario (12) controlling industrial worker exposure ame of contributing scenario 13 - Treatment and the separation of the separat	and health evaluation re for PROC 13 ment of articles by dipping and pouring nimization of manual phases. on in place to check that the RMMs in place are being used and OCs followed. quent and direct contact with substance. le eye protection.	
cechnical conditions and measures to control dispersion and experience of call exhaust ventilation and measures related to personal protection, hygiene respiratory protection are spiratory protection of the contributing Scenario (12) controlling industrial worker exposure arms of contributing scenario arms of contributing scenario arms of the contribution arms of the contributing scenario arms of the contributing scenario arms of the contribution arms of the contribu	and health evaluation re for PROC 13 ment of articles by dipping and pouring nimization of manual phases. on in place to check that the RMMs in place are being used and OCs followed. quent and direct contact with substance. le eye protection.	
pocal exhaust ventilation yes (inhalation onditions and measures related to personal protection, hygiene espiratory protection no ontributing Scenario (12) controlling industrial worker exposure ame of contributing scenario 13 - Treatment and the contribution of the	and health evaluation re for PROC 13 ment of articles by dipping and pouring nimization of manual phases. on in place to check that the RMMs in place are being used and OCs followed. quent and direct contact with substance. le eye protection.	
conditions and measures related to personal protection, hygiene espiratory protection no contributing Scenario (12) controlling industrial worker exposure ame of contributing scenario 13 - Treatment and the scenario Ensure min Supervisio correctly a Avoid frequency was used to be suitable to the scenario Use suitable to the scenario	and health evaluation re for PROC 13 ment of articles by dipping and pouring nimization of manual phases. on in place to check that the RMMs in place are being used and OCs followed. quent and direct contact with substance. le eye protection.	
espiratory protection no contributing Scenario (12) controlling industrial worker exposur ame of contributing scenario 13 - Treatr ualitative Risk Assessment eneral Ensure min Supervisio correctly a Avoid frequency. Ves Use suitab	ment of articles by dipping and pouring mimization of manual phases. on in place to check that the RMMs in place are being used and OCs followed. quent and direct contact with substance. le eye protection.	
ontributing Scenario (12) controlling industrial worker exposur ame of contributing scenario 13 - Treatr ualitative Risk Assessment Ensure min Supervisio correctly a Avoid freq yes Use suitab	nimization of manual phases. on in place to check that the RMMs in place are being used and OCs followed. quent and direct contact with substance.	
ame of contributing scenario 13 - Treatment ualitative Risk Assessment Ensure min Supervision correctly a Avoid frequency ves Use suitab	nimization of manual phases. on in place to check that the RMMs in place are being used and OCs followed. quent and direct contact with substance.	
eneral Ensure min Supervisio correctly a Avoid freques Use suitab	nimization of manual phases. on in place to check that the RMMs in place are being used and OCs followed. quent and direct contact with substance. le eye protection.	
eneral Ensure min Supervisio correctly a Avoid freques Use suitab	on in place to check that the RMMs in place are being used and OCs followed. quent and direct contact with substance. le eye protection.	
Supervisio correctly a Avoid freques Use suitab	on in place to check that the RMMs in place are being used and OCs followed. quent and direct contact with substance. le eye protection.	
	• •	
ermal Use suitab	le chemically resistant gloves.	
<u></u>		
Human factors not influenced by risk management		
sposed skin surface 480 cm ²		
Other given operational conditions affecting workers exposure		
ocation indoors		
omain industrial		
echnical conditions and measures to control dispersion and expe	osure	
ocal exhaust ventilation yes (inhala	ation 90 %)	
onditions and measures related to personal protection, hygiene	and health evaluation	
espiratory protection no		
ontributing Scenario (13) controlling industrial worker exposur	re for PROC 15	
ame of contributing scenario 15 - Use or	f laboratory reagents in small scale laboratories	
ualitative Risk Assessment		
Supervisio correctly a	nimization of manual phases. on in place to check that the RMMs in place are being used and OCs followed. quent and direct contact with substance.	
ves Use suitab	le eye protection.	
ermal Use suitab	le chemically resistant gloves.	
Human factors not influenced by risk management		
sposed skin surface 240 cm ²		
Other given operational conditions affecting workers exposure		
ocation indoors		
omain industrial		
Technical conditions and measures to control dispersion and exposure		
ocal exhaust ventilation no		



Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection	no

DATE CREATED: 03/04/2018 LANGUAGE: ENGLISH



Exposure Scenario 14 (ES14): Use in Coatings (paints, ink, toners, adhesives), consumer

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Human factors not influenced by risk management		
Skin surface area dermal	fingertips	
Skin surface area oral	-	
Tranfer factor dermal	100 %	
Other given operational conditions affecting consumer	rs exposure	
Room volume	20 m ³	
Release fraction to air	100.0 %	
Contributing Scenario (6) controlling consumer expos	ure for PC 1	
Name of contributing scenario	PC 1 Adhesives, Sealants	
Calculation model	ConsExpo Carpet glue - Application	
Frequency and duration of use		
Inhalation		
Exposure calculation result type	Mean concentration on day of exposure	
Frequency of use	0.250 per year	
Exposure time	75 min	
Application duration	75 min	
Product characteristics		
Spray application	no	
Product ingredient fraction by weight	2 %	
Mol weight matrix	3,000 g/mol	
Mass transfer rate	- m/min	
Amounts used		
Inhalation	9,000 g	
Human factors not influenced by risk management		
Other given operational conditions affecting consumers exposure		
Inhalation		
Room volume	58 m ³	
Ventilation rate	2.5 1/h	
Release are is constant		
Release area	4.00E4 cm ²	
Release temperature	20 °C	
Contributing Scenario (7) controlling consumer exposure for PC 1		
Name of contributing scenario	PC 1 Adhesives, Sealants	
Calculation model	ConsExpo Spray glue - Application	
Frequency and duration of use		
Inhalation		
Exposure calculation result type	Mean concentration on day of exposure	
Frequency of use	12 per year	

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VERSION: 3.0



Exposure time	240 min	
Application duration	3 min	
Product characteristics		
Spray application	yes	
Product ingredient fraction by weight	6 %	
Mol weight matrix	100 g/mol	
Mass transfer rate	- m/min	
Amounts used		
Inhalation	204 g	
Human factors not influenced by risk management		
Other given operational conditions affecting consume	rs exposure	
Inhalation		
Room volume	20 m ³	
Ventilation rate	0.600 1/h	
Release are is constant		
Release area	$2.00E4 \text{ cm}^2$	
Release temperature	20 °C	
Contributing Scenario (8) controlling consumer expos	sure for PC 1	
Name of contributing scenario	PC 1 Adhesives, Sealants	
Calculation model	ConsExpo Joint sealant - Application	
Frequency and duration of use		
Inhalation		
Exposure calculation result type	Mean concentration on day of exposure	
Frequency of use	3 per year	
Exposure time	45 min	
Application duration	30 min	
Product characteristics		
Spray application	no	
Product ingredient fraction by weight	12 %	
Mol weight matrix	3,000 g/mol	
Mass transfer rate	- m/min	
Amounts used		
Inhalation	75 g	
Human factors not influenced by risk management		
Other given operational conditions affecting consumers exposure		
Inhalation		
Room volume	10 m ³	
Ventilation rate	2 1/h	
Release area increases over time		



Release area	250 cm^2	
Release temperature	20 °C	
Contributing Scenario (9) controlling consumer expos	sure for PC 4	
Name of contributing scenario	PC 4 Anti-Freeze and De-icing products	
Scenario subtitle	Refill antifreeze	
Calculation model	ConsExpo	
Frequency and duration of use		
Inhalation		
Exposure calculation result type	Mean concentration on day of exposure	
Frequency of use	1 per day	
Product characteristics		
Spray application	no	
Product ingredient fraction by weight	10 %	
Amounts used		
Inhalation	2,000 g	
Human factors not influenced by risk management		
Other given operational conditions affecting consumers exposure		
Inhalation		
Room volume	34 m^3	
Ventilation rate	1.5 1/h	
Contributing Scenario (10) controlling consumer expo	osure for PC 4	
Name of contributing scenario	PC 4 Anti-Freeze and De-icing products	
Scenario subtitle	Lock de-icing	
Calculation model	ConsExpo	
Frequency and duration of use		
Inhalation		
Exposure calculation result type	Mean concentration on day of exposure	
Frequency of use	1 per day	
Product characteristics		
Spray application	yes	
Product ingredient fraction by weight	50 %	
Amounts used		
Inhalation	4 g	
Human factors not influenced by risk management		
Other given operational conditions affecting consumer	rs exposure	
Other given operational conditions affecting consumer Inhalation		
	34 m ³	
Inhalation		
Inhalation Room volume	34 m ³ 1.5 1/h	



Scenario subtitle	Weshing our windows	
	Washing car windows	
Calculation model	ConsExpo	
Frequency and duration of use		
Inhalation		
Exposure calculation result type	Mean concentration on day of exposure	
Frequency of use	1 per day	
Product characteristics	T	
Spray application	no	
Product ingredient fraction by weight	50 %	
Amounts used		
Inhalation	15 g	
Human factors not influenced by risk management		
Other given operational conditions affecting consumer	rs exposure	
Inhalation		
Room volume	34 m ³	
Ventilation rate	1.5 1/h	
Contributing Scenario (12) controlling consumer exposure for PC 9a		
Name of contributing scenario	PC 9a Coatings and Paints, thinners, paint removers	
Calculation model	ConsExpo water borne paint - Application	
Frequency and duration of use		
Inhalation		
Exposure calculation result type	Mean concentration on day of exposure	
Frequency of use	1 per year	
Exposure time	132 min	
Application duration	120 min	
Product characteristics		
Spray application	no	
Product ingredient fraction by weight	1.5 %	
Mol weight matrix	45 g/mol	
Mass transfer rate	- m/min	
Amounts used		
Inhalation	1,250 g	
Human factors not influenced by risk management		
Other given operational conditions affecting consumers exposure		
Inhalation		
Room volume	20 m ³	
Ventilation rate	0.600 1/h	
Release area increases over time	,	
Release area	1.00E5 cm ²	
L	1	



Release temperature	20 °C	
Contributing Scenario (13) controlling consumer expo	sure for PC 9a	
Name of contributing scenario	PC 9a Coatings and Paints, thinners, paint removers	
Calculation model	ConsExpo high solid paint - Application	
Frequency and duration of use		
Inhalation		
Exposure calculation result type	Mean concentration on day of exposure	
Frequency of use	1 per year	
Exposure time	132 min	
Application duration	120 min	
Product characteristics		
Spray application	no	
Product ingredient fraction by weight	2 %	
Mol weight matrix	550 g/mol	
Mass transfer rate	- m/min	
Amounts used		
Inhalation	1,300 g	
Human factors not influenced by risk management		
Other given operational conditions affecting consumer	rs exposure	
Inhalation		
Room volume	20 m ³	
Ventilation rate	0.600 1/h	
Release area increases over time		
Release area	$1.00E5 \text{ cm}^2$	
Release temperature	20 °C	
Contributing Scenario (14) controlling consumer exposure for PC 9a		
Name of contributing scenario	PC 9a Coatings and Paints, thinners, paint removers	
Calculation model	ConsExpo spray can - Application	
Frequency and duration of use		
Inhalation		
Exposure calculation result type	Mean concentration on day of exposure	
Frequency of use	2 per year	
Product characteristics		
Spray application	yes	
Product ingredient fraction by weight	25 %	
Amounts used		
Inhalation	400 g	
Human factors not influenced by risk management		



Other given operational conditions affecting consumers exposure		
Inhalation		
Room volume	34 m ³	
Ventilation rate	1.5 1/h	
Contributing Scenario (15) controlling consumer expo	sure for PC 9a	
Name of contributing scenario	PC 9a Coatings and Paints, thinners, paint removers	
Calculation model	ConsExpo Glue remover - Application	
Frequency and duration of use		
Inhalation		
Exposure calculation result type	Mean concentration on day of exposure	
Frequency of use	0.250 per year	
Exposure time	240 min	
Application duration	240 min	
Product characteristics		
Spray application	no	
Product ingredient fraction by weight	3 %	
Mol weight matrix	3,000 g/mol	
Mass transfer rate	- m/min	
Amounts used		
Inhalation	2,000 g	
Human factors not influenced by risk management		
Other given operational conditions affecting consumers exposure		
Inhalation		
Room volume	30 m ³	
Ventilation rate	1.5 1/h	
Release area increases over time		
Release area	5.00E4 cm ²	
Release temperature	20 °C	
Contributing Scenario (16) controlling consumer exposure for PC 9c		
Name of contributing scenario	PC 9c Face and finger paints	
Calculation model	Ecetoc TRA	
Frequency and duration of use		
Frequency of use	365 times/year (Frequent)	
Product characteristics		
Product ingredient fraction by weight 15 %		
Human factors not influenced by risk management		
Skin surface area dermal	hands	
Skin surface area oral	-	
Tranfer factor dermal	100 %	



Transfer factor ingestion	100 %	
Other given operational conditions affecting consumer	rs exposure	
Contributing Scenario (17) controlling consumer expo	osure for PC 15	
Name of contributing scenario	PC 15 Non-metal-surface treatment products	
Scenario subtitle	Waterborn paint	
Calculation model	ConsExpo water borne paint - Application	
Frequency and duration of use		
Inhalation		
Exposure calculation result type	Mean concentration on day of exposure	
Frequency of use	1 per year	
Exposure time	132 min	
Application duration	120 min	
Product characteristics		
Spray application	no	
Product ingredient fraction by weight	1.5 %	
Mol weight matrix	45 g/mol	
Mass transfer rate	- m/min	
Amounts used		
Inhalation	1,250 g	
Human factors not influenced by risk management		
Other given operational conditions affecting consumer	rs exposure	
Inhalation		
Room volume	20 m^3	
Ventilation rate	0.600 1/h	
Release area increases over time		
Release area	1.00E5 cm ²	
Release temperature	20 °C	
Contributing Scenario (18) controlling consumer exposure for PC 15		
Name of contributing scenario	PC 15 Non-metal-surface treatment products	
Scenario subtitle	High solid point	
Calculation model	ConsExpo high solid paint - Application	
Frequency and duration of use		
Inhalation		
Exposure calculation result type	Mean concentration on day of exposure	
Frequency of use	1 per year	
Exposure time	132 min	
Application duration	120 min	
Product characteristics		



Spray application	no
Product ingredient fraction by weight	2 %
Mol weight matrix	550 g/mol
Mass transfer rate	- m/min
Amounts used	
Inhalation	1,300 g
Human factors not influenced by risk management	
Other given operational conditions affecting consumer	rs exposure
Inhalation	
Room volume	20 m ³
Ventilation rate	0.600 1/h
Release area increases over time	
Release area	1.00E5 cm ²
Release temperature	20 °C
Contributing Scenario (19) controlling consumer exposure for PC 15	
Name of contributing scenario	PC 15 Non-metal-surface treatment products
Scenario subtitle	Spray paint
Calculation model	ConsExpo
	spray can - Application
Frequency and duration of use	
Inhalation	
Exposure calculation result type	Mean concentration on day of exposure
Frequency of use	2 per year
Product characteristics	T
Spray application	yes
Product ingredient fraction by weight	25 %
Amounts used	
Inhalation	400 g
Human factors not influenced by risk management	
Other given operational conditions affecting consumers exposure	
Inhalation	Tay 3
Room volume	34 m ³
Ventilation rate	1.5 1/h
Contributing Scenario (20) controlling consumer expo	
Name of contributing scenario	PC 15 Non-metal-surface treatment products
Scenario subtitle	Removers (glue remover as worst case)
Calculation model	ConsExpo Glue remover - Application
Frequency and duration of use	1
Inhalation	



Exposure calculation result type	Mean concentration on day of exposure	
Frequency of use	0.250 per year	
Exposure time	240 min	
Application duration	240 min	
Product characteristics		
Spray application	no	
Product ingredient fraction by weight	3 %	
Mol weight matrix	3,000 g/mol	
Mass transfer rate	- m/min	
Amounts used		
Inhalation	2,000 g	
Human factors not influenced by risk management		
Other given operational conditions affecting consumers exposure		
Inhalation		
Room volume	30 m ³	
Ventilation rate	1.5 1/h	
Release area increases over time		
Release area	5.00E4 cm ²	
Release temperature	20 °C	
Contributing Scenario (21) controlling consumer exposure for PC 18		
Name of contributing scenario	PC 18 Ink and Toners	
Calculation model	ConsExpo	
Frequency and duration of use		
Inhalation		
Exposure calculation result type	Mean concentration on day of exposure	
Frequency of use	1 per day	
Product characteristics		
Spray application	no	
Product ingredient fraction by weight	4 %	
Amounts used		
Inhalation	40 g	
Human factors not influenced by risk management		
Other given operational conditions affecting consumers exposure		
Inhalation		
Room volume	20 m ³	
Ventilation rate	0.600 1/h	
Contributing Scenario (22) controlling consumer exposure for PC 23		
Name of contributing scenario	PC 23 Leather tanning, dye, finishing, impregnation and care products	
Scenario subtitle	includes spray applications	
Calculation model	ConsExpo	
	1	



Inhabitation	Frequency and duration of use		
Exposure calculation result type Mean concentration on day of exposure Frequency of use 1 per day Emission duration 240 min Product characteristies Spray application no Product ingredient fraction by weight 30 % Amounts used Inhalation 150 g Unimar factors not influenced by risk managements—Theorem operational conditions affecting consumer exposure Inhalation 58 m³ Ventiation rate 0.600 th Contributing Scenario (23) controlling consumer exposure Color theorem of PC 24 Name of contributing scenario PC 24 Lubricants, Greases and Release Products This scenario has not been calculated. Justification: Exposure of the consumer can be ruled out. Use in closed system is assumed Contributing Scenario (24) controlling consumer exposure PC 24 Lubricants, Greases and Release Products Calculation model PC 31 Polishes and Wax Blends Calculation model PC 31 Polishes and Wax Blends Calculation model PC 31 Polishes and Wax Blends Frequency and duration of use Inhalation Exposure calculation result type Mean concent			
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Amounts used Inhalation 550 g Human factors not influenced by risk management Other given operational conditions affecting consumers exposure Inhalation	Mol weight matrix	272 g/mol	
Inhalation 550 g Human factors not influenced by risk management Other given operational conditions affecting consumers exposure Inhalation	Mass transfer rate	- m/min	
Human factors not influenced by risk management Other given operational conditions affecting consumers exposure Inhalation	Amounts used		
Human factors not influenced by risk management Other given operational conditions affecting consumers exposure Inhalation	Inhalation	550 g	
Inhalation	Human factors not influenced by risk management		
Inhalation			
Room volume 58 m ³			
	Room volume	58 m ³	

DATE CREATED: 03/04/2018



LANGUAGE: ENGLISH

Ventilation rate	2.5 1/h	
Release area increases over time	Release area increases over time	
Release area	$2.20E5 \text{ cm}^2$	
Release temperature	20 °C	
Contributing Scenario (25) controlling consumer expo	sure for PC 31	
Name of contributing scenario	PC 31 Polishes and Wax Blends	
Calculation model	ConsExpo Furniture polish - Application	
Frequency and duration of use		
Inhalation		
Exposure calculation result type	Mean concentration on day of exposure	
Frequency of use	1 per year	
Exposure time	240 min	
Application duration	90 min	
Product characteristics		
Spray application	no	
Product ingredient fraction by weight	20 %	
Mol weight matrix	272 g/mol	
Mass transfer rate	- m/min	
Amounts used		
Inhalation	550 g	
Human factors not influenced by risk management		
Other given operational conditions affecting consumers exposure		
Inhalation		
Room volume	58 m ³	
Ventilation rate	2.5 1/h	
Release area increases over time		
Release area	$2.20E5 \text{ cm}^2$	
Release temperature	20 °C	

DATE CREATED: 03/04/2018 LANGUAGE: ENGLISH



Exposure Scenario 15(ES15): Use in Coatings (paints, ink, toners, adhesives), professional

Free short title	Use in Coatings (paints, ink, toners,adhesives), professional
Systematic title based on use descriptor	ERC 8F, 8A, 8C, 8D; PROC 1, 2, 3, 4, 5, 8A, 8B, 9, 10, 11, 13, 15, 19
Name of contributing environmental scenario and corresponding ERC	ERC 8f Wide dispersive outdoor use resulting in inclusion into or onto a matrix ERC 8a Wide dispersive indoor use of processing aids in open systems ERC 8c Wide dispersive indoor use resulting in inclusion into or onto a matrix ERC 8d Wide dispersive outdoor use of processing aids in open systems
Name(s) of contributing worker scenarios and corresponding PROCs	PROC 1 - Use in closed process, no likelihood of exposure PROC 2 - Use in closed, continuous process with occasional controlled exposure PROC 3 - Use in closed batch process (synthesis or formulation) PROC 4 - Use in batch and other process (synthesis) where opportunity for exposure arises PROC 5 - Mixing or blending in batch processes (multistage and/or significant contact) PROC 8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities PROC 8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities PROC 9 - Transfer of chemicals into small containers (dedicated filling line) PROC 10 - Roller application or brushing PROC 11 - Non industrial spraying PROC 13 - Treatment of articles by dipping and pouring PROC 15 - Use of laboratory reagents in small scale laboratories PROC 19 - Hand-mixing with intimate contact (only PPE available
Contributing Scenario (1) controlling environmental e	exposure for ERC 8F
Contributing Scenario (2) controlling environmental e	exposure for ERC 8A
Contributing Scenario (3) controlling environmental e	exposure for ERC 8C
Contributing Scenario (4) controlling environmental e	exposure for ERC 8D
As no environmental hazard was identified no environme	ental-related exposure assessment and risk characterization was performed.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
Frequency and duration of use	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
Contributing Scenario (5) controlling professional wo	rker exposure for PROC 1
Name of contributing scenario	1 - Use in closed process, no likelihood of exposure
Qualitative Risk Assessment	
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.



Eyes	In case of potential exposure: Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	240 cm^2	
Other given operational conditions affecting workers	exposure	
Location	indoors	
Domain	professional	
Technical conditions and measures to control dispersion	on and exposure	
Local exhaust ventilation	no	
Conditions and measures related to personal protectio	on, hygiene and health evaluation	
Respiratory protection	no	
Contributing Scenario (6) controlling professional wor	rker exposure for PROC 2	
Name of contributing scenario	2 - Use in closed, continuous process with occasional controlled exposure	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	480 cm^2	
Other given operational conditions affecting workers	exposure	
Location	indoors	
Domain	professional	
Technical conditions and measures to control dispersion	on and exposure	
Local exhaust ventilation	no	
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection	no	
Contributing Scenario (7) controlling professional worker exposure for PROC 3		
Name of contributing scenario	3 - Use in closed batch process (synthesis or formulation)	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal		
	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management	Use suitable chemically resistant gloves.	
	Use suitable chemically resistant gloves. $240\ \mathrm{cm}^2$	



Location	indoors	
Domain	professional	
Technical conditions and measures to control dispersion		
Local exhaust ventilation	no	
Conditions and measures related to personal protection		
Respiratory protection	no	
Contributing Scenario (8) controlling professional wor		
Name of contributing scenario	4 - Use in batch and other process (synthesis) where opportunity for	
Name of contributing scenario	exposure arises	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	480 cm^2	
Other given operational conditions affecting workers of	exposure	
Location	indoors	
Domain	professional	
Technical conditions and measures to control dispersion	on and exposure	
Local exhaust ventilation	no	
Conditions and measures related to personal protection	on, hygiene and health evaluation	
Respiratory protection	no	
Contributing Scenario (9) controlling professional wor	rker exposure for PROC 5	
Name of contributing scenario	5 - Mixing or blending in batch processes (multistage and/or significant contact)	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	480 cm^2	
Other given operational conditions affecting workers exposure		
Location	indoors	
Ventilation	good (30%)	
Domain	professional	
Technical conditions and measures to control dispersion and exposure		
Local exhaust ventilation	no	



Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection	no
Contributing Scenario (10) controlling professional we	orker exposure for PROC 8A
Name of contributing scenario	8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities
Qualitative Risk Assessment	
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
Human factors not influenced by risk management	
Exposed skin surface	960 cm ²
Other given operational conditions affecting workers	exposure
Location	indoors
Ventilation	good (30%)
Domain	professional
Technical conditions and measures to control dispersion	on and exposure
Local exhaust ventilation	no
Conditions and measures related to personal protection	on, hygiene and health evaluation
Respiratory protection	no
Contributing Scenario (11) controlling professional we	orker exposure for PROC 8B
Name of contributing scenario	8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Qualitative Risk Assessment	
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers	exposure
Location	indoors
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection	on, hygiene and health evaluation
Respiratory protection	no
Contributing Scenario (12) controlling professional worker exposure for PROC 9	
Name of contributing scenario	9 - Transfer of chemicals into small containers (dedicated filling line)



Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	480 cm^2	
Other given operational conditions affecting workers of	exposure	
Location	indoors	
Ventilation	good (30%)	
Domain	professional	
Technical conditions and measures to control dispersion	on and exposure	
Local exhaust ventilation	no	
Conditions and measures related to personal protection	n, hygiene and health evaluation	
Respiratory protection	no	
Contributing Scenario (13) controlling professional wo	orker exposure for PROC 10	
Name of contributing scenario	10 - Roller application or brushing	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	960 cm ²	
Other given operational conditions affecting workers of	exposure	
Location	indoors	
Ventilation	good (30%)	
Domain	professional	
Technical conditions and measures to control dispersion and exposure		
Local exhaust ventilation	no	
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection	no	
Contributing Scenario (14) controlling professional worker exposure for PROC 11		
Name of contributing scenario	11 - Non industrial spraying	
Scenario subtitle	Automatic	
Qualitative Risk Assessment		



General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Ensure that a spraying booth is used. Clean equipment and the work area every day. Regular inspection and maintenance of equipment and machines.		
Eyes	Use suitable eye protection.		
Dermal	Use suitable chemically resistant gloves. Avoid frequent and direct contact with substance.		
Human factors not influenced by risk management			
Exposed skin surface	$1,500 \text{ cm}^2$		
Other given operational conditions affecting workers	exposure		
Location	indoors		
Domain	professional		
Technical conditions and measures to control dispersion	on and exposure		
Local exhaust ventilation	no		
Conditions and measures related to personal protection	on, hygiene and health evaluation		
Respiratory protection	no		
Use of external/measured value inhalation	Calculated with Stoffenmanager 6		
Contributing Scenario (15) controlling professional we	Contributing Scenario (15) controlling professional worker exposure for PROC 11		
Name of contributing scenario	11 - Non industrial spraying		
Scenario subtitle	Manual		
Qualitative Risk Assessment			
General	Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Regular inspection and maintenance of equipment and machines. Ensure that the task is not carried out overhead. Use equipment with a fixed capturing hood exhaust ventilation. In case no suitable local exhaust ventilation is present: Wear suitable respiratory protection.		
Eyes	Use suitable eye protection.		
Dermal	Use suitable chemically resistant gloves. Avoid frequent and direct contact with substance.		
Product characteristics			
Physical state	liquid		
Concentration in substance	10 %, concentration has been considered linearly (justification: ART input value: max. concentration Application rate < 3L/min (surface spraying) Room size >= 300m³ (large workrooms))		
Fugacity / Dustiness	medium		
Frequency and duration of use			
Duration of activity	>4 hours (default)		
Frequency of use	5 days / week		
Human factors not influenced by risk management			
Exposed skin surface	$1,500 \text{ cm}^2$		
Other given operational conditions affecting workers exposure			



Domain Professional	Location	indoors	
Local exhaust ventilation	Domain	professional	
Conditions and measures related to personal protection, hygiene and health evaluation Respiratory protection Use of external/measured value inhalation Calculated with ART v1.5 Contributing Scenario (16) controlling professional worker exposure for PROC 13 Name of contributing scenario Qualitative Risk Assessment General Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. Eyes Use suitable eye protection. Use suitable chemically resistant gloves. Human factors not influenced by risk management Exposed skin surface 480 cm² Other given operational conditions affecting workers exposure Location Ventilation good (30%) Domain professional Technical conditions and measures to control dispersion and exposure Local exhaust ventilation no Conditions and measures related to personal protection, hygiene and health evaluation Respiratory protection Contributing Scenario (17) controlling professional worker exposure for PROC 15 Name of contributing scenario Qualitative Risk Assessment Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and CCs followed. Avoid frequent and direct contact with substance. Eyes Use suitable eye protection. Use suitable eye protection. Use suitable perpotection. Use suitable perpotection. Use suitable perpotection. Use suitable chemically resistant gloves. Human factors not influenced by risk management Exposed skin surface 240 cm² Other given operational conditions affecting workers exposure Location indoors	Technical conditions and measures to control dispersion and exposure		
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Contributing Scenario (16) controlling professional worker exposure for PROC 13 Name of contributing scenario 13 - Treatment of articles by dipping and pouring	Respiratory protection	no	
Name of contributing scenario 13 - Treatment of articles by dipping and pouring	Use of external/measured value inhalation	Calculated with ART v1.5	
Continuing Scenario (17) controlling professional worker exposure for PROC 15 Name of contributing Scenario (17) controlling professional worker exposure for PROC 15 Name of contributing Scenario (17) controlling professional worker exposure for PROC 15 Sugain (18) Assessment (Contributing Scenario (16) controlling professional we	orker exposure for PROC 13	
Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. Eyes	Name of contributing scenario	13 - Treatment of articles by dipping and pouring	
Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. Eyes Use suitable eye protection. Dermal Use suitable chemically resistant gloves. Human factors not influenced by risk management Exposed skin surface 480 cm² Other given operational conditions affecting workers exposure Location indoors Ventilation good (30%) Domain professional Technical conditions and measures to control dispersion and exposure Local exhaust ventilation no Conditions and measures related to personal protection, hygiene and health evaluation Respiratory protection no Contributing Scenario 15 - Use of laboratory reagents in small scale laboratories Qualitative Risk Assessment General Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. Eyes Use suitable eye protection. Dermal Use suitable chemically resistant gloves. Human factors not influenced by risk management Exposed skin surface 240 cm² Other given operational conditions affecting workers exposure Location indoors	Qualitative Risk Assessment		
Dermal Use suitable chemically resistant gloves. Human factors not influenced by risk management Exposed skin surface 480 cm² Other given operational conditions affecting workers exposure Location indoors Ventilation good (30%) Domain professional Technical conditions and measures to control dispersion and exposure Local exhaust ventilation no Conditions and measures related to personal protection, hygiene and health evaluation Respiratory protection no Contributing Scenario (17) controlling professional worker exposure for PROC 15 Name of contributing scenario General Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. Eyes Use suitable eye protection. Dermal Use suitable chemically resistant gloves. Human factors not influenced by risk management Exposed skin surface 240 cm² Other given operational conditions affecting workers exposure Location indoors	General	Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
Human factors not influenced by risk management Exposed skin surface 480 cm² Other given operational conditions affecting workers exposure Location indoors Ventilation good (30%) Domain professional Technical conditions and measures to control dispersion and exposure Local exhaust ventilation no Conditions and measures related to personal protection, hygiene and health evaluation Respiratory protection no Contributing Scenario (17) controlling professional worker exposure for PROC 15 Name of contributing scenario Qualitative Risk Assessment General Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. Eyes Use suitable eye protection. Dermal Use suitable eye protection. Dermal Use suitable chemically resistant gloves. Human factors not influenced by risk management Exposed skin surface 240 cm² Other given operational conditions affecting workers exposure Location indoors	Eyes	Use suitable eye protection.	
Exposed skin surface 480 cm² Other given operational conditions affecting workers exposure Location indoors Ventilation good (30%) Domain professional Technical conditions and measures to control dispersion and exposure Local exhaust ventilation no Conditions and measures related to personal protection, hygiene and health evaluation Respiratory protection no Contributing Scenario (17) controlling professional worker exposure for PROC 15 Name of contributing scenario 15 - Use of laboratory reagents in small scale laboratories Qualitative Risk Assessment General Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. Eyes Use suitable eye protection. Dermal Use suitable chemically resistant gloves. Human factors not influenced by risk management Exposed skin surface 240 cm² Other given operational conditions affecting workers exposure Location indoors	Dermal	Use suitable chemically resistant gloves.	
Other given operational conditions affecting workers exposure Location indoors Ventilation good (30%) Domain professional Technical conditions and measures to control dispersion and exposure Local exhaust ventilation no Conditions and measures related to personal protection, hygiene and health evaluation Respiratory protection no Contributing Scenario (17) controlling professional worker exposure for PROC 15 Name of contributing scenario 15 - Use of laboratory reagents in small scale laboratories Qualitative Risk Assessment General Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. Eyes Use suitable eye protection. Dermal Use suitable eye protection. Use suitable chemically resistant gloves. Human factors not influenced by risk management Exposed skin surface 240 cm² Other given operational conditions affecting workers exposure Location indoors	Human factors not influenced by risk management		
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Ventilation good (30%) Domain professional Technical conditions and measures to control dispersion and exposure Local exhaust ventilation no Conditions and measures related to personal protection, hygiene and health evaluation Respiratory protection no Contributing Scenario (17) controlling professional worker exposure for PROC 15 Name of contributing scenario Qualitative Risk Assessment General Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. Eyes Use suitable eye protection. Dermal Use suitable chemically resistant gloves. Human factors not influenced by risk management Exposed skin surface 240 cm² Other given operational conditions affecting workers exposure Location indoors	Other given operational conditions affecting workers of	exposure	
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Conditions and measures related to personal protection, hygiene and health evaluation Respiratory protection no Contributing Scenario (17) controlling professional worker exposure for PROC 15 Name of contributing scenario 15 - Use of laboratory reagents in small scale laboratories Qualitative Risk Assessment General Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. Eyes Use suitable eye protection. Dermal Use suitable chemically resistant gloves. Human factors not influenced by risk management Exposed skin surface 240 cm² Other given operational conditions affecting workers exposure Location indoors	Technical conditions and measures to control dispersion	on and exposure	
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Name of contributing scenario Qualitative Risk Assessment General Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. Eyes Use suitable eye protection. Dermal Use suitable chemically resistant gloves. Human factors not influenced by risk management Exposed skin surface 240 cm² Other given operational conditions affecting workers exposure Location indoors	Respiratory protection	no	
Qualitative Risk Assessment General Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. Eyes Use suitable eye protection. Dermal Use suitable chemically resistant gloves. Human factors not influenced by risk management Exposed skin surface 240 cm² Other given operational conditions affecting workers exposure Location indoors	Contributing Scenario (17) controlling professional we	orker exposure for PROC 15	
Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. Eyes Use suitable eye protection. Dermal Use suitable chemically resistant gloves. Human factors not influenced by risk management Exposed skin surface 240 cm² Other given operational conditions affecting workers exposure Location indoors	Name of contributing scenario	15 - Use of laboratory reagents in small scale laboratories	
Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. Eyes Use suitable eye protection. Dermal Use suitable chemically resistant gloves. Human factors not influenced by risk management Exposed skin surface 240 cm ² Other given operational conditions affecting workers exposure Location indoors	Qualitative Risk Assessment		
Dermal Use suitable chemically resistant gloves. Human factors not influenced by risk management Exposed skin surface 240 cm ² Other given operational conditions affecting workers exposure Location indoors	General	Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
Human factors not influenced by risk management Exposed skin surface 240 cm ² Other given operational conditions affecting workers exposure Location indoors	Eyes	Use suitable eye protection.	
Exposed skin surface 240 cm ² Other given operational conditions affecting workers exposure Location indoors	Dermal	Use suitable chemically resistant gloves.	
Other given operational conditions affecting workers exposure Location indoors	Human factors not influenced by risk management		
Location indoors	Exposed skin surface	240 cm^2	
	Other given operational conditions affecting workers of	Other given operational conditions affecting workers exposure	
Domain professional	Location	indoors	
	Domain	professional	
Technical conditions and measures to control dispersion and exposure			
Local exhaust ventilation no	Local exhaust ventilation	no	



Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection	no	
Contributing Scenario (18) controlling professional we	orker exposure for PROC 19	
Name of contributing scenario	19 - Hand-mixing with intimate contact (only PPE available	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	1,980 cm ²	
Other given operational conditions affecting workers exposure		
Location	indoors	
Domain	professional	
Technical conditions and measures to control dispersion and exposure		
Local exhaust ventilation	no	
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection	95 %	

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Exposure Scenario 16 (ES16): Use in Laboratories

Free short title	Use in Laboratories	
Systematic title based on use descriptor	ERC 8A; PROC 10, 15	
Name of contributing environmental scenario and corresponding ERC	ERC 8a Wide dispersive indoor use of processing aids in open systems	
Name(s) of contributing worker scenarios and corresponding PROCs	PROC 10 - Roller application or brushing PROC 15 - Use of laboratory reagents in small scale laboratories	
Contributing Scenario (1) controlling environmental e	exposure for ERC 8A	
As no environmental hazard was identified no environme	ental-related exposure assessment and risk characterization was performed.	
Product characteristics		
Physical state	liquid	
Concentration in substance	100 %	
Fugacity / Dustiness	medium	
Frequency and duration of use		
Duration of activity	>4 hours (default)	
Frequency of use	5 days / week	
Contributing Scenario (2) controlling professional wo	rker exposure for PROC 10	
Name of contributing scenario	10 - Roller application or brushing	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	960 cm ²	
Other given operational conditions affecting workers	exposure	
Location	indoors	
Ventilation	good (30%)	
Domain	professional	
Technical conditions and measures to control dispersion and exposure		
Local exhaust ventilation	no	
Conditions and measures related to personal protection	on, hygiene and health evaluation	
Respiratory protection	no	
Contributing Scenario (3) controlling professional worker exposure for PROC 15		
Name of contributing scenario	15 - Use of laboratory reagents in small scale laboratories	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	



Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
Human factors not influenced by risk management	
Exposed skin surface	240 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection	no

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Exposure Scenario 17 (ES17): Use in lubricants

Free short title	Use in lubricants
Systematic title based on use descriptor	ERC 7, 4; PROC 1, 2, 3, 4, 7, 8A, 8B, 9, 10, 13, 17, 18
Name of contributing environmental scenario and corresponding ERC	ERC 7 Industrial use of substances in closed systems ERC 4 Industrial use of processing aids
Name(s) of contributing worker scenarios and corresponding PROCs	PROC 1 - Use in closed process, no likelihood of exposure PROC 2 - Use in closed, continuous process with occasional controlled exposure PROC 3 - Use in closed batch process (synthesis or formulation) PROC 4 - Use in batch and other process (synthesis) where opportunity for exposure arises PROC 7 - Industrial spraying PROC 8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities PROC 8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities PROC 9 - Transfer of chemicals into small containers (dedicated filling line) PROC 10 - Roller application or brushing PROC 13 - Treatment of articles by dipping and pouring PROC 17 - Lubrication at high energy conditions and in partly open process PROC 18 - Greasing at high energy conditions PROC 18 - Greasing at high energy conditions
Contributing Scenario (1) controlling environmental of	
Contributing Scenario (2) controlling environmental of	exposure for ERC 4
As no environmental hazard was identified no environmental	ental-related exposure assessment and risk characterization was performed.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
Frequency and duration of use	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
Contributing Scenario (3) controlling industrial work	er exposure for PROC 1
Name of contributing scenario	1 - Use in closed process, no likelihood of exposure
Qualitative Risk Assessment	
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.
Eyes	In case of potential exposure: Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
Human factors not influenced by risk management	
Exposed skin surface	240 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors



Domain	industrial	
Technical conditions and measures to control dispersi	on and exposure	
Local exhaust ventilation	no	
Conditions and measures related to personal protection	on, hygiene and health evaluation	
Respiratory protection	no	
Contributing Scenario (4) controlling industrial works	er exposure for PROC 2	
Name of contributing scenario	2 - Use in closed, continuous process with occasional controlled exposure	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	480 cm^2	
Other given operational conditions affecting workers	exposure	
Location	indoors	
Domain	industrial	
Technical conditions and measures to control dispersi	on and exposure	
Local exhaust ventilation	no	
Conditions and measures related to personal protection	on, hygiene and health evaluation	
Respiratory protection	no	
Contributing Scenario (5) controlling industrial works	er exposure for PROC 3	
Name of contributing scenario	3 - Use in closed batch process (synthesis or formulation)	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases.	
	Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	correctly and OCs followed.	
Eyes Dermal	correctly and OCs followed. Avoid frequent and direct contact with substance.	
•	correctly and OCs followed. Avoid frequent and direct contact with substance. Use suitable eye protection.	
Dermal	correctly and OCs followed. Avoid frequent and direct contact with substance. Use suitable eye protection.	
Dermal Human factors not influenced by risk management	correctly and OCs followed. Avoid frequent and direct contact with substance. Use suitable eye protection. Use suitable chemically resistant gloves.	
Dermal Human factors not influenced by risk management Exposed skin surface	correctly and OCs followed. Avoid frequent and direct contact with substance. Use suitable eye protection. Use suitable chemically resistant gloves.	
Dermal Human factors not influenced by risk management Exposed skin surface Other given operational conditions affecting workers	correctly and OCs followed. Avoid frequent and direct contact with substance. Use suitable eye protection. Use suitable chemically resistant gloves. 240 cm ² exposure	
Dermal Human factors not influenced by risk management Exposed skin surface Other given operational conditions affecting workers Location	correctly and OCs followed. Avoid frequent and direct contact with substance. Use suitable eye protection. Use suitable chemically resistant gloves. 240 cm ² exposure indoors industrial	
Dermal Human factors not influenced by risk management Exposed skin surface Other given operational conditions affecting workers Location Domain	correctly and OCs followed. Avoid frequent and direct contact with substance. Use suitable eye protection. Use suitable chemically resistant gloves. 240 cm ² exposure indoors industrial	
Dermal Human factors not influenced by risk management Exposed skin surface Other given operational conditions affecting workers Location Domain Technical conditions and measures to control dispersi	correctly and OCs followed. Avoid frequent and direct contact with substance. Use suitable eye protection. Use suitable chemically resistant gloves. 240 cm² exposure indoors industrial on and exposure no	
Dermal Human factors not influenced by risk management Exposed skin surface Other given operational conditions affecting workers of Location Domain Technical conditions and measures to control dispersit Local exhaust ventilation	correctly and OCs followed. Avoid frequent and direct contact with substance. Use suitable eye protection. Use suitable chemically resistant gloves. 240 cm² exposure indoors industrial on and exposure no	



Name of contributing scenario	4 - Use in batch and other process (synthesis) where opportunity for exposure arises		
Qualitative Risk Assessment			
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.		
Eyes	Use suitable eye protection.		
Dermal	Use suitable chemically resistant gloves.		
Human factors not influenced by risk management			
Exposed skin surface	480 cm ²		
Other given operational conditions affecting workers	exposure		
Location	indoors		
Domain	industrial		
Technical conditions and measures to control dispersi	on and exposure		
Local exhaust ventilation	no		
Conditions and measures related to personal protection	on, hygiene and health evaluation		
Respiratory protection	no		
Contributing Scenario (7) controlling industrial work	er exposure for PROC 7		
Name of contributing scenario	7 - Industrial spraying		
Qualitative Risk Assessment			
General	Ensure minimization of manual phases. Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m). Ensure that a spraying booth is used. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Regular inspection and maintenance of equipment and machines.		
Eyes	Use suitable eye protection.		
Dermal	Use suitable chemically resistant gloves. Avoid frequent and direct contact with substance.		
Human factors not influenced by risk management			
Exposed skin surface	1,500 cm ²		
Other given operational conditions affecting workers	Other given operational conditions affecting workers exposure		
Location	indoors		
Domain	industrial		
Technical conditions and measures to control dispersion and exposure			
Local exhaust ventilation	no		
Conditions and measures related to personal protection, hygiene and health evaluation			
Respiratory protection	no		
Use of external/measured value inhalation	Calculated with Stoffenmanager 6		
Contributing Scenario (8) controlling industrial work	er exposure for PROC 8A		
Name of contributing scenario	8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities		



Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	960 cm ²	
Other given operational conditions affecting workers	exposure	
Location	indoors	
Domain	industrial	
Technical conditions and measures to control dispersion	on and exposure	
Local exhaust ventilation	yes (inhalation 90 %)	
Conditions and measures related to personal protection	on, hygiene and health evaluation	
Respiratory protection	no	
Contributing Scenario (9) controlling industrial works	er exposure for PROC 8B	
Name of contributing scenario	8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	960 cm ²	
Other given operational conditions affecting workers of	exposure	
Location	indoors	
Domain	industrial	
Technical conditions and measures to control dispersion	on and exposure	
Local exhaust ventilation	yes (inhalation 95 %)	
Conditions and measures related to personal protection	on, hygiene and health evaluation	
Respiratory protection	no	
Contributing Scenario (10) controlling industrial worker exposure for PROC 9		
Name of contributing scenario	9 - Transfer of chemicals into small containers (dedicated filling line)	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	



Dermal Use suitable chemically resistant gloves. Human factors not influenced by risk management Exposed skin surface Indoors		-	
Exposed skin surface 480 cm² Other given operational conditions affecting workers exposure Location indoors Omain indoors Technical conditions and measures to control dispersion and exposure Local exhaust ventilation yes (inhalation 90 %) Conditions and measures related to personal protection, hygiene and health evaluation Respiratory protection no contributing scenario (1) controlling industrial workers graphication or brushing Qualitative Risk Assessment General Ensure minimization of manual phases. Supervision in place to check that the RNMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. Eyes Use suitable eye protection. Dermal Use suitable eye protection. Dermal Use suitable chemically resistant gloves. Human factors not influenced by risk management Exposed skin surface 960 cm² Other given operational conditions affecting workers exposure Location industrial Technical conditions and measures to control dispersion and exposure Local exhaust ventilation protection positions and measures related to personal protection, by given and health evaluation Respiratory protection no Contributing scenario (12) controlling industrial versposure for PROC 13 Name of contributing scenario (12) controlling industrial receptions and exposure General Ensure minimization of manual phases. Supervision in place to check that the RNMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. Fyes Use suitable eye protection. General Is a Treatment of articles by dipping and pouring Qualitative Risk Assessment General Use suitable eye protection. Use suitable eye protection. Questiantly resistant gloves. Fyes Use suitable eye protection. Use suitable eye protection. Use suitable eye protection. Use suitable eye protection. Use suitable eye protection. Use suitable eye protection. Use suitable eye protection. Use suitable eye protection.	Dermal	Use suitable chemically resistant gloves.	
Other given operational conditions affecting workers exposure Location indoors industrial Technical conditions and measures to control dispersion and exposure Local exhaust ventilation yes (inhalation 90 %) Conditions and measures related to personal protection, hygiene and health evaluation Respiratory protection no Contributing Secarario (11) controlling industrial worker* exposure for PROC 10 Name of contributing secarario Qualitative Risk Assessment Esposed skin surface Other given operational conditions affecting workers exposure Location industrial general protection. Contributing Secarario (12) controlling industrial worker exposure for PROC 10 Name of contributing secarario Use suitable chemically resistant gloves. Eyes Dermal Use suitable chemically resistant gloves. Human factors not influenced by risk management Exposed skin surface 960 cm² Other given operational conditions affecting workers exposure Location industrial Technical conditions and measures to control dispersion and exposure Location yes (inhalation 90 %) Conditions and measures related to personal protection, hygiene and health evaluation Respiratory protection Contributing Secarario (12) controlling industrial workers exposure for PROC 13 Name of contributing secarario Qualitative Risk Assessment General Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. Eyes Location Use suitable chemically resistant gloves. Location Uses suitable chemically resistant gloves. Location influenced by risk management Exposed skin surface 480 cm² Other given operational conditions affecting workers exposure Location influenced by risk management	Human factors not influenced by risk management		
Indication Ind	Exposed skin surface	480 cm^2	
Domain	Other given operational conditions affecting workers	exposure	
Technical conditions and measures to control dispersion and exposure Local exhaust ventilation yes (inhalation 90 %) Conditions and measures related to personal protection, hygiene and health evaluation Respiratory protection no To Contributing Scenario 10 - Roller application or brushing Qualitative Risk Assessment General Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and CAS followed. Avoid frequent and direct contact with substance. Eyes Use suitable eye protection. Dermal Use suitable eye protection. Domain indoors Technical conditions affecting workers exposure Location indoors Location indoors Location indoors Conditions and measures to control dispersion and exposure Local exhaust ventilation yes (inhalation 90 %) Conditions and measures related to personal protection, hygiene and health evaluation Respiratory protection no Contributing Scenario (12) controlling industrial worker exposure for PROC 13 Name of contributing scenario 13 - Treatment of articles by dipping and pouring Qualitative Risk Assessment Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. Eyes Use suitable eye protection. Dermal Use suitable eye protection.	Location	indoors	
Local eshaust ventilation yes (inhalation 90 %) Conditions and measures related to personal protection, hygiene and health evaluation Respiratory protection no Contributing Scenario (11) controlling industrial worker exposure for PROC 10 Name of contributing scenario Qualitative Risk Assessment General Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. Eyes Use suitable eye protection. Dermal Use suitable eye protection. Use suitable experimental gloves. Human factors not influenced by risk management Exposed skin surface 960 cm² Other given operational conditions affecting workers exposure Location indoors industrial Technical conditions and measures to control dispersion and exposure Local exhaust ventilation yes (inhalation 90 %) Conditions and measures related to personal protection, hygiene and health evaluation Respiratory protection no Contributing Scenario (12) controlling industrial workers exposure for PROC 13 Name of contributing scenario Qualitative Risk Assessment Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. Eyes Use suitable eye protection. Dermal Use suitable eye protection. Dermal Use suitable eye protection. Dermal Use suitable eye protection. Use suitable eye protection. Dermal Use suitable eye protection. Dermal Use suitable eye protection. Use suitable eye protection. Dermal Use suitable eye prot	Domain	industrial	
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Contributing Scenario (11) controlling industrial worker exposure for PROC 10 Name of contributing scenario 10 - Roller application or brushing	Conditions and measures related to personal protection	on, hygiene and health evaluation	
Name of contributing scenario 10 - Roller application or brushing	Respiratory protection	no	
Contributing Scenario (12) controlling industrial worker exposure (12) contributing Scenario (12) controlling industrial worker exposure for PROC 13 Contributing Scenario (12) controlling industrial worker exposure (12) controlling industrial worker exposure (12) controlling industrial vocario (12) controlling industrial (13) correctly and OCs followed. Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. Eyes	Contributing Scenario (11) controlling industrial world	ker exposure for PROC 10	
Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. Eyes Use suitable eye protection. Dermal Use suitable eye protection. Use suitable chemically resistant gloves. Human factors not influenced by risk management Exposed skin surface 960 cm² Other given operational conditions affecting workers exposure Location indoors Domain industrial Technical conditions and measures to control dispersion and exposure Local exhaust ventilation yes (inhalation 90 %) Conditions and measures related to personal protection, hygiene and health evaluation Respiratory protection no Contributing Scenario (12) controlling industrial worker exposure for PROC 13 Name of contributing scenario 13 - Treatment of articles by dipping and pouring Qualitative Risk Assessment Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. Eyes Use suitable eye protection. Use suitable chemically resistant gloves. Human factors not influenced by risk management Exposed skin surface 480 cm² Other given operational conditions affecting workers exposure Location indoors	Name of contributing scenario	10 - Roller application or brushing	
Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. Eyes	Qualitative Risk Assessment		
Human factors not influenced by risk management Exposed skin surface 960 cm² Other given operational conditions affecting workers ×posure Location indoors Domain industrial Technical conditions and measures to control dispersional protections and measures related to personal protection no personal protection personal protection personal protection pro	General	Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
Human factors not influenced by risk management Exposed skin surface 960 cm² Other given operational conditions affecting workers exposure Location indoors Domain industrial Technical conditions and measures to control dispersional measures to control dispersional measures to control dispersional measures related to personal protectional more resposure for PROC 13 Name of contributing scenario (12) controlling industrial worker exposure for PROC 13 Name of contributing scenario 13 - Treatment of articles by dipping and pouring	Eyes	Use suitable eye protection.	
Exposed skin surface 960 cm² Other given operational conditions affecting workers exposure Location indoors Domain industrial Technical conditions and measures to control dispersion and exposure Local exhaust ventilation yes (inhalation 90 %) Conditions and measures related to personal protection, hygiene and health evaluation Respiratory protection no Contributing Scenario (12) controlling industrial worker exposure for PROC 13 Name of contributing scenario 13 - Treatment of articles by dipping and pouring Qualitative Risk Assessment General Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. Eyes Use suitable eye protection. Dermal Use suitable eye protection. Human factors not influenced by risk management Exposed skin surface 480 cm² Other given operational conditions affecting workers exposure Location indoors	Dermal	Use suitable chemically resistant gloves.	
Other given operational conditions affecting workers exposure Location indoors Domain industrial Technical conditions and measures to control dispersion and exposure Local exhaust ventilation yes (inhalation 90 %) Conditions and measures related to personal protection, hygiene and health evaluation Respiratory protection no Contributing Scenario (12) controlling industrial worker exposure for PROC 13 Name of contributing scenario 13 - Treatment of articles by dipping and pouring Qualitative Risk Assessment General Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. Eyes Use suitable eye protection. Dermal Use suitable chemically resistant gloves. Human factors not influenced by risk management Exposed skin surface 480 cm² Other given operational conditions affecting workers exposure Location indoors	Human factors not influenced by risk management		
Location indoors industrial Technical conditions and measures to control dispersion and exposure Local exhaust ventilation yes (inhalation 90 %) Conditions and measures related to personal protection, hygiene and health evaluation Respiratory protection no Contributing Scenario (12) controlling industrial worker exposure for PROC 13 Name of contributing scenario 13 - Treatment of articles by dipping and pouring Qualitative Risk Assessment General Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. Eyes Use suitable eye protection. Dermal Use suitable eye protection. Human factors not influenced by risk management Exposed skin surface 480 cm² Other given operational conditions affecting workers exposure Location indoors	Exposed skin surface	960 cm ²	
Domain industrial Technical conditions and measures to control dispersion and exposure Local exhaust ventilation yes (inhalation 90 %) Conditions and measures related to personal protection. hygiene and health evaluation Respiratory protection no Contributing Scenario (12) controlling industrial worker exposure for PROC 13 Name of contributing scenario	Other given operational conditions affecting workers	exposure	
Technical conditions and measures to control dispersion and exposure Local exhaust ventilation yes (inhalation 90 %) Conditions and measures related to personal protection, hygiene and health evaluation Respiratory protection no Contributing Scenario (12) controlling industrial worker exposure for PROC 13 Name of contributing scenario 13 - Treatment of articles by dipping and pouring Qualitative Risk Assessment General Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. Eyes Use suitable eye protection. Dermal Use suitable chemically resistant gloves. Human factors not influenced by risk management Exposed skin surface 480 cm² Other given operational conditions affecting workers exposure Location indoors	Location	indoors	
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Conditions and measures related to personal protection, hygiene and health evaluation Respiratory protection no Contributing Scenario (12) controlling industrial worker exposure for PROC 13 Name of contributing scenario 13 - Treatment of articles by dipping and pouring Qualitative Risk Assessment General Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. Eyes Use suitable eye protection. Dermal Use suitable chemically resistant gloves. Human factors not influenced by risk management Exposed skin surface 480 cm² Other given operational conditions affecting workers exposure Location indoors	Technical conditions and measures to control dispersi	on and exposure	
Respiratory protection no Contributing Scenario (12) controlling industrial worker exposure for PROC 13 Name of contributing scenario 13 - Treatment of articles by dipping and pouring Qualitative Risk Assessment General Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. Eyes Use suitable eye protection. Dermal Use suitable chemically resistant gloves. Human factors not influenced by risk management Exposed skin surface 480 cm² Other given operational conditions affecting workers exposure Location indoors	Local exhaust ventilation	yes (inhalation 90 %)	
Contributing Scenario (12) controlling industrial worker exposure for PROC 13 Name of contributing scenario Qualitative Risk Assessment General Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. Eyes Use suitable eye protection. Dermal Use suitable chemically resistant gloves. Human factors not influenced by risk management Exposed skin surface 480 cm² Other given operational conditions affecting workers exposure Location indoors	Conditions and measures related to personal protection	on, hygiene and health evaluation	
Name of contributing scenario 13 - Treatment of articles by dipping and pouring Qualitative Risk Assessment Ensure minimization of manual phases.	Respiratory protection	no	
Qualitative Risk Assessment General Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. Eyes Use suitable eye protection. Dermal Use suitable chemically resistant gloves. Human factors not influenced by risk management Exposed skin surface 480 cm² Other given operational conditions affecting workers exposure Location indoors	Contributing Scenario (12) controlling industrial world	ker exposure for PROC 13	
General Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. Eyes Use suitable eye protection. Dermal Use suitable chemically resistant gloves. Human factors not influenced by risk management Exposed skin surface 480 cm² Other given operational conditions affecting workers exposure Location indoors	Name of contributing scenario	13 - Treatment of articles by dipping and pouring	
Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. Eyes Use suitable eye protection. Dermal Use suitable chemically resistant gloves. Human factors not influenced by risk management Exposed skin surface 480 cm² Other given operational conditions affecting workers exposure Location indoors	Qualitative Risk Assessment		
Dermal Use suitable chemically resistant gloves. Human factors not influenced by risk management Exposed skin surface 480 cm² Other given operational conditions affecting workers exposure Location indoors	General	Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
Human factors not influenced by risk management Exposed skin surface 480 cm ² Other given operational conditions affecting workers exposure Location indoors	Eyes	Use suitable eye protection.	
Exposed skin surface 480 cm ² Other given operational conditions affecting workers exposure Location indoors	Dermal	Use suitable chemically resistant gloves.	
Other given operational conditions affecting workers exposure Location indoors	Human factors not influenced by risk management		
Location indoors	Exposed skin surface	480 cm ²	
	Other given operational conditions affecting workers	exposure	
Domain industrial	Location	indoors	
	Domain	industrial	



Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	yes (inhalation 90 %)
Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection	no
Contributing Scenario (13) controlling industrial work	ker exposure for PROC 17
Name of contributing scenario	17 - Lubrication at high energy conditions and in partly open process
Qualitative Risk Assessment	
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
Human factors not influenced by risk management	
Exposed skin surface	960 cm ²
Other given operational conditions affecting workers	exposure
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersi	on and exposure
Local exhaust ventilation	no
Conditions and measures related to personal protection	on, hygiene and health evaluation
Respiratory protection	no
Contributing Scenario (14) controlling industrial work	ker exposure for PROC 17
	ker exposure for PROC 17 17 - Lubrication at high energy conditions and in partly open process
Contributing Scenario (14) controlling industrial work	1
Contributing Scenario (14) controlling industrial work Name of contributing scenario	1
Contributing Scenario (14) controlling industrial work Name of contributing scenario Qualitative Risk Assessment	17 - Lubrication at high energy conditions and in partly open process Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.
Contributing Scenario (14) controlling industrial work Name of contributing scenario Qualitative Risk Assessment General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.
Contributing Scenario (14) controlling industrial work Name of contributing scenario Qualitative Risk Assessment General Eyes	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. Use suitable eye protection.
Contributing Scenario (14) controlling industrial work Name of contributing scenario Qualitative Risk Assessment General Eyes Dermal	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. Use suitable eye protection.
Contributing Scenario (14) controlling industrial work Name of contributing scenario Qualitative Risk Assessment General Eyes Dermal Product characteristics	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. Use suitable eye protection. Use suitable chemically resistant gloves.
Contributing Scenario (14) controlling industrial work Name of contributing scenario Qualitative Risk Assessment General Eyes Dermal Product characteristics Physical state	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. Use suitable eye protection. Use suitable chemically resistant gloves.
Contributing Scenario (14) controlling industrial work Name of contributing scenario Qualitative Risk Assessment General Eyes Dermal Product characteristics Physical state Concentration in substance	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. Use suitable eye protection. Use suitable chemically resistant gloves.
Contributing Scenario (14) controlling industrial work Name of contributing scenario Qualitative Risk Assessment General Eyes Dermal Product characteristics Physical state Concentration in substance Process temperature	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. Use suitable eye protection. Use suitable chemically resistant gloves.
Contributing Scenario (14) controlling industrial work Name of contributing scenario Qualitative Risk Assessment General Eyes Dermal Product characteristics Physical state Concentration in substance Process temperature Fugacity / Dustiness	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. Use suitable eye protection. Use suitable chemically resistant gloves.
Contributing Scenario (14) controlling industrial work Name of contributing scenario Qualitative Risk Assessment General Eyes Dermal Product characteristics Physical state Concentration in substance Process temperature Fugacity / Dustiness Human factors not influenced by risk management	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. Use suitable eye protection. Use suitable chemically resistant gloves. liquid 100 % 108 °C high
Contributing Scenario (14) controlling industrial work Name of contributing scenario Qualitative Risk Assessment General Eyes Dermal Product characteristics Physical state Concentration in substance Process temperature Fugacity / Dustiness Human factors not influenced by risk management Exposed skin surface	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. Use suitable eye protection. Use suitable chemically resistant gloves. liquid 100 % 108 °C high
Contributing Scenario (14) controlling industrial work Name of contributing scenario Qualitative Risk Assessment General Eyes Dermal Product characteristics Physical state Concentration in substance Process temperature Fugacity / Dustiness Human factors not influenced by risk management Exposed skin surface Other given operational conditions affecting workers of	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. Use suitable eye protection. Use suitable chemically resistant gloves. liquid 100 % 108 °C high 960 cm² exposure



Local exhaust ventilation	yes (inhalation 90 %)	
Conditions and measures related to personal protection	on, hygiene and health evaluation	
Respiratory protection	no	
Contributing Scenario (15) controlling industrial work	ker exposure for PROC 18	
Name of contributing scenario	18 - Greasing at high energy conditions	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	960 cm ²	
Other given operational conditions affecting workers	exposure	
Location	indoors	
Domain	industrial	
Technical conditions and measures to control dispersi	on and exposure	
Local exhaust ventilation	no	
Conditions and measures related to personal protection	on, hygiene and health evaluation	
Respiratory protection	no	
Contributing Scenario (16) controlling industrial work	ker exposure for PROC 18	
Name of contributing scenario	18 - Greasing at high energy conditions	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Product characteristics		
Physical state	liquid	
Concentration in substance	100 %	
Process temperature	108 °C	
Process temperature Fugacity / Dustiness	108 °C high	
Fugacity / Dustiness		
Fugacity / Dustiness Human factors not influenced by risk management	high 960 cm ²	
Fugacity / Dustiness Human factors not influenced by risk management Exposed skin surface	high 960 cm ²	
Fugacity / Dustiness Human factors not influenced by risk management Exposed skin surface Other given operational conditions affecting workers	high 960 cm ² exposure	
Fugacity / Dustiness Human factors not influenced by risk management Exposed skin surface Other given operational conditions affecting workers Location	high 960 cm ² exposure indoors industrial	



Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection	no

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Exposure Scenario 18 (ES18): Use in Lubricants (consumer)

Free short title	Use in Lubricants (consumer)	
Systematic title based on use descriptor	ERC 9B, 9A, 8A, 8D; PC 1, 24, 31, 35	
Name of contributing environmental scenario and corresponding ERC	ERC 9b Wide dispersive outdoor use of substances in closed systems ERC 9a Wide dispersive indoor use of substances in closed systems ERC 8a Wide dispersive indoor use of processing aids in open systems ERC 8d Wide dispersive outdoor use of processing aids in open systems	
Name(s) of contributing consumer scenarios and corresponding PCs/ACs	PC 1 Adhesives, Sealants PC 24 Lubricants, Greases and Release Products PC 31 Polishes and Wax Blends PC 31 Polishes and Wax Blends PC 35 Washing and Cleaning Products (including solvent based products) PC 35 Washing and Cleaning Products (including solvent based products) PC 35 Washing and Cleaning Products (including solvent based products) PC 35 Washing and Cleaning Products (including solvent based products)	
Contributing Scenario (1) controlling environmental e	exposure for ERC 9B	
Contributing Scenario (2) controlling environmental e	exposure for ERC 9A	
Contributing Scenario (3) controlling environmental e	exposure for ERC 8A	
Contributing Scenario (4) controlling environmental e	exposure for ERC 8D	
As no environmental hazard was identified no environme	ntal-related exposure assessment and risk characterization was performed.	
Contributing Scenario (5) controlling consumer expos	ure for PC 1	
Name of contributing scenario	PC 1 Adhesives, Sealants	
Calculation model	Ecetoc TRA	
Product subcategory	Glues, hobby use	
Frequency and duration of use		
Frequency of use	365 times/year (Frequent)	
Exposure time	4 h	
Product characteristics		
Spray application	no	
Product ingredient fraction by weight	30 %	
Amounts used		
Amounts used	9 g	
Human factors not influenced by risk management		
Skin surface area dermal	fingertips	
Skin surface area oral	-	
Tranfer factor dermal	100 %	
Other given operational conditions affecting consumer	Other given operational conditions affecting consumers exposure	
Room volume	20 m ³	
Release fraction to air	100.0 %	
Contributing Scenario (6) controlling consumer expos	ure for PC 1	
Name of contributing scenario	PC 1 Adhesives, Sealants	



Calculation model	ConsExpo	
Frequency and duration of use	Carpet glue - Application	
Inhalation		
Exposure calculation result type	Mean concentration on day of exposure	
Frequency of use	0.250 per year	
Exposure time	75 min	
Application duration	75 min	
Product characteristics		
Spray application	no	
Product ingredient fraction by weight	2 %	
Mol weight matrix	3,000 g/mol	
Mass transfer rate	- m/min	
Amounts used		
Inhalation	9,000 g	
Human factors not influenced by risk management		
Other given operational conditions affecting consumer	rs exposure	
Inhalation		
Room volume	58 m ³	
Ventilation rate	2.5 1/h	
Release are is constant		
Release area	4.00E4 cm^2	
Release temperature	20 °C	
Contributing Scenario (7) controlling consumer expos	ure for PC 1	
Name of contributing scenario	PC 1 Adhesives, Sealants	
Calculation model	ConsExpo Spray glue - Application	
Frequency and duration of use		
Inhalation		
Exposure calculation result type	Mean concentration on day of exposure	
Frequency of use	12 per year	
Exposure time	240 min	
Application duration	3 min	
Product characteristics		
Spray application	yes	
Product ingredient fraction by weight	6 %	
Mol weight matrix	100 g/mol	
Mass transfer rate	- m/min	
Amounts used		
Inhalation	204 g	



Human factors not influenced by risk management		
Other given operational conditions affecting consumers exposure		
Inhalation		
Room volume	20 m ³	
Ventilation rate	0.600 1/h	
Release are is constant		
Release area	$2.00E4 \text{ cm}^2$	
Release temperature	20 °C	
Contributing Scenario (8) controlling consumer expos	ure for PC 1	
Name of contributing scenario	PC 1 Adhesives, Sealants	
Calculation model	ConsExpo Joint sealant - Application	
Frequency and duration of use		
Inhalation		
Exposure calculation result type	Mean concentration on day of exposure	
Frequency of use	3 per year	
Exposure time	45 min	
Application duration	30 min	
Product characteristics		
Spray application	no	
Product ingredient fraction by weight	12 %	
Mol weight matrix	3,000 g/mol	
Mass transfer rate	- m/min	
Amounts used		
Inhalation	75 g	
Human factors not influenced by risk management		
Other given operational conditions affecting consumers exposure		
Inhalation		
Room volume	10 m ³	
Ventilation rate	2 1/h	
Release area increases over time		
Release area	250 cm^2	
Release temperature	20 °C	
Contributing Scenario (9) controlling consumer exposure for PC 24		
Name of contributing scenario	PC 24 Lubricants, Greases and Release Products	
This scenario has not been calculated. Justification:	Exposure of the consumer can be ruled out. Use in closed system is assumed	
Contributing Scenario (10) controlling consumer exposure for PC 31		
Name of contributing scenario	PC 31 Polishes and Wax Blends	
Calculation model	ConsExpo Furniture polish - Application	



Inhalation Exposure calculation result type Mean concentration on day of exposure Exposure time 240 min Application duration 90 min Product characteristies Spray application no Product ingredient fraction by weight 20 % Mol weight matrix 272 g/mol Muss transfer rate -m/min Amounts used Inhalation 550 g Human factors not influenced by risk management To g Other given operational conditions affecting consumers resoure Inhalation 58 m² Room volume 25 1 h Venilation rate 2.5 1 h Release area increases over time Release area increases over time Release area increases over time Constributing Scenario (11) controlling consumer very ref PS 1 Name of contributing scenario (12) controlling consumer very ref PS 2 Name of contributing scenario (12) controlling consumer very ref PS 2 Prequency and duration of use Pc 31 Polishes and Was Blends Calculation model Pc 31 Polishes and Was Blends Exposure calculation result type M	Frequency and duration of use		
Frequency of use 1 per year Exposure time 240 min Application duration 90 min Product characteristics Spray application Product ingredient fraction by weight 20 % Mol weight matrix 272 g/mol Muss transfer rate -m/min Amounts used Inhabition \$50 g Human factors not influenced by risk management Other given operational conditions affecting consumer exposure Inhabition \$58 m² Room volume \$58 m² Venibilation rate 2,5 1/b Release area increases over time Release area increases over time Release area frequency area increases over time Release temperature Contributing Scenario (11) controlling consumer exposure for PC 31 Name of contributing scenario PC 31 Polishes and Wax Blends Calculation model CoasExpo Furniture polish - Application Exposure calculation fesult type Mean concentration on day of exposure Frequency of use 1 per year Exposure calculation duration 20 min	Inhalation		
Exposure time 240 min Application duration 90 min Product characteristies Total characteristies Sproy application in product ingredient fraction by weight 20 % Mol weight matrix 272 g/mol Mass transfer rate	Exposure calculation result type	Mean concentration on day of exposure	
Application duration 90 min Product characteristies Product ingredient fraction by weight 10 Application no Product ingredient fraction by weight 272 g/mol Mass transfer rate no/min Amounts used The product ingredient fraction by risk management Where you operational conditions affecting consumes exposure Inhabitation 58 m² Ventifiation rate 2.5 1/h Release area increases over time 2.20E5 cm² Release area increases over time 2.20E5 cm² Release temperature 20 C Contributing Scenario (11) controlling consumer exposure 1.00 C Contributing Scenario (12) controlling consumer exposure 1.00 C Calculation model Can PC 31 Polishes and Wax Blends Calculation model ConsExpo Frequency and duration of use Inhalation Frequency and duration of use Inhalation 1 per year Exposure calculation result type Mean concentration on day of exposure Frequency of use 1 per year Exposure time 2.0 min Application	Frequency of use	1 per year	
Product characteristics Spray application no Product ingredient fraction by weight 20 % Mol weight matrix 272 g/mol Amounts used	Exposure time	240 min	
Spray application no Product ingredient fraction by weight 20 % Mol weight matrix 272 g/mol Mass transfer rate - m/min Amounts used Inhalation 550 g Human factors not influenced by risk management Other given operational conditions affecting consumer exposure Inhalation Room volume 58 m³ Ventilation rate 2.0 fb Release area increases over time Release area increases over time Release temperature 2.00 °C Contributing Secnario (11) controlling consumer exporter for PC 31 Name of contributing secnario PC 31 Polishes and Wax Blends Calculation model ConsExpo Frequency and duration of use Inhalation Mean concentration on day of exposure Exposure calculation result type Mean concentration on day of exposure Exposure calculation result type Mean concentration on day of exposure Exposure duration 90 min Product characteristics Product characteristics Spray application <td>Application duration</td> <td>90 min</td>	Application duration	90 min	
Product ingredient fraction by weight 20 % Mol weight matrix 272 g/mol Mass transfer rate "m/min Amounts used Inhalation \$50 g Human factors not influenced by risk management Other given operational conditions affecting consumer exposure Inhalation \$8 m² Room volume \$8 m² Ventilation rate 2.5 l /h Release area increases over time Release area increases over time Release temperature 20 °C Contributing Scenario (11) controlling consumer exposure for PC 31 Name of contributing scenario PC 31 Polishes and Wax Blends Calculation model ConsExpo Furniture polish - Application Prequency and duration of use Inhalation Exposure calculation result type Mean concentration on day of exposure Frequency of use 1 per year Exposure time 240 min Application duration 90 min Product ingredient fraction by weight 20 % Mol weight matrix 272 g/mol Mol weight matrix - m/	Product characteristics		
Mol weight matrix 272 g/mol Mass transfer rate - m/min Amounts used Inhalation S50 g Human factors not influenced by risk management Colspan="2">Colspan	Spray application	no	
Mass transfer rate - m/min Amounts used Inhalation 550 g Human factors not influenced by risk management Other given operational conditions affecting consumer exposure Inhalation Room volume 58 m³ Ventilation rate 2.5 1/h Release area increases over time Release area Release temperature 20 °C Contributing Scenario (11) controlling consumer exposure for PC 31 Name of contributing scenario PC 31 Polishes and Wax Blends Calculation model ConsExpo Frequency and duration of use Inhalation Frequency and duration of use Inhalation Mean concentration on day of exposure Frequency of use 1 per year Exposure calculation result type Mean concentration on day of exposure Frequency of use 1 per year Exposure time 240 min Application duration 90 min Product ingredient fraction by weight 20 % Mol weight matrix 272 g/mol	Product ingredient fraction by weight	20 %	
Amounts used Inhalation 550 g Human factors not influenced by risk management Other given operational conditions affecting consumers exposure Inhalation Room volume 58 m³ Ventilation rate 2.5 1/h Release area increases over time Release area increases over time Release area 2.20E5 cm² Release temperature 20 °C Contributing Scenario (11) controlling consumer exposure for PC 31 Name of contributing scenario PC 31 Polishes and Wax Blends Calculation model ConsExpo Furniture polish - Application Frequency and duration of use Furniture polish - Application Exposure calculation result type Mean concentration on day of exposure Frequency of use 1 per year Exposure time 240 min Application duration no Product characteristics Spray application no Product ingredient fraction by weight 20 % Mol weight matrix 272 g/mol Mass transfer rate - m/min Amounts use	Mol weight matrix	272 g/mol	
550 g Human factors not influenced by risk management Other given operational conditions affecting consumerations. Inhalation Room volume 58 m³ Ventilation rate 2.5 l/h Release area increases over time Release area 2.20E5 cm² Release temperature 20 °C Contributing Scenario (11) controlling consumer experts for PC 31 Name of contributing scenario C 3P C31 Polishes and Wax Blends Calculation model ConsExpo Furniture polish - Application Frequency and duration of use Exposure calculation result type Mean concentration on day of exposure Frequency of use 1 per year Exposure time 240 min Application duration no Product characteristics Spray application no Product ingredient fraction by weight 20 % Mol weight matrix	Mass transfer rate	- m/min	
Human factors not influenced by risk management Other given operational conditions affecting consumer exposure Inhalation 58 m³ Room volume 58 m³ Ventilation rate 2.5 1/h Release area increases over time Release area Release area 2.20E5 cm² Release temperature 20 °C Contributing Scenario (11) controlling consumer exposure for PC 31 Name of contributing scenario PC 31 Polishes and Wax Blends Calculation model ConsExpo Furniture polish - Application Frequency and duration of use Exposure calculation result type Mean concentration on day of exposure Exposure time 240 min Application duration 90 min Product characteristics Spray application no Product ingredient fraction by weight 20 % Mol weight matrix 272 g/mol Mass transfer rate - m/min Amounts used Unuan factors not influenced by risk management	Amounts used		
Other given operational conditions affecting consumer × possure Inhalation Room volume 58 m³ Ventilation rate 2.5 1/h Release area increases over time *** Release area 2.20E5 cm² Release temperature 20 °C Contributing Scenario (11) controlling consumer expurer for PC 31 Name of contributing scenario PC 31 Polishes and Wax Blends Calculation model ConsExpo Funiture polish - Application Frequency and duration of use Exposure calculation result type Mean concentration on day of exposure Frequency of use 1 per year Exposure time 240 min Application duration 90 min Product characteristics Spray application no Product ingredient fraction by weight 20 % Mol weight matrix 272 g/mol Mass transfer rate - m/min Amounts used Human factors not influenced by risk management	Inhalation	550 g	
Inhalation Room volume S8 m³ Ventilation rate 2.5 1/h Release area increases over time Release area 2.20E5 cm² Release temperature 20 °C Contributing Scenario (11) controlling consumer experimental form of contributing scenario PC 31 Polishes and Wax Blends Calculation model ConsExpo Furniture polish - Application Frequency and duration of use Inhalation Exposure calculation result type Mean concentration on day of exposure Frequency of use 1 per year Exposure time Application duration Product characteristics Spray application Product characteristics Spray application No Product ingredient fraction by weight Mol weight matrix 272 g/mol Mass transfer rate Amounts used Inhalation 550 g Human factors not influenced by risk management	Human factors not influenced by risk management		
Room volume 58 m³ Ventilation rate 2.5 l/h Release area increases over time Release area 2.20E5 cm² Release temperature 20 °C Contributing Scenario (11) controlling consumer expoure for PC 31 Name of contributing scenario PC 31 Polishes and Wax Blends Calculation model ConsExpo Furniture polish - Application Frequency and duration of use Inhalation Exposure calculation result type Mean concentration on day of exposure Frequency of use 1 per year Exposure time 240 min Application duration 90 min Product characteristics Spray application no Product ingredient fraction by weight 20 % Mol weight matrix 272 g/mol Mass transfer rate - m/min Amounts used Human factors not influenced by risk management	Other given operational conditions affecting consume	rs exposure	
Ventilation rate 2.5 I/h Release area increases over time Release area Release temperature 20 °C Contributing Scenario (11) controlling consumer exposure for PC 31 Name of contributing scenario Name of contributing scenario PC 31 Polishes and Wax Blends Calculation model ConsExpo Furniture polish - Application Frequency and duration of use Inhalation Exposure calculation result type Mean concentration on day of exposure Frequency of use 1 per year Exposure time 240 min Application duration 90 min Product characteristics Spray application no Product ingredient fraction by weight 20 % Mol weight matrix 272 g/mol Mass transfer rate - m/min Amounts used Inhalation 550 g Human factors not influenced by risk management	Inhalation		
Release area increases over time Release area 2.20E5 cm² Release temperature 20° C Contributing Scenario (11) controlling consumer expoure for PC 31 Name of contributing scenario PC 31 Polishes and Wax Blends Calculation model ConsExpo Furniture polish - Application Frequency and duration of use Inhalation Exposure calculation result type Mean concentration on day of exposure Frequency of use 1 per year Exposure time 240 min Application duration 9 min Product characteristics Spray application no Product ingredient fraction by weight 20 % Mol weight matrix 272 g/mol Mass transfer rate - m/min Amounts used Human factors not influenced by risk management	Room volume	58 m ³	
Release area 2.20E5 cm² Release temperature 20 °C Contributing Scenario (11) controlling consumer expoure for PC 31 Name of contributing scenario PC 31 Polishes and Wax Blends Calculation model ConsExpo Furniture polish - Application Frequency and duration of use Inhalation Exposure calculation result type Mean concentration on day of exposure Frequency of use 1 per year Exposure time 240 min Application duration 90 min Product characteristics Spray application no Product ingredient fraction by weight 20 % Mol weight matrix 272 g/mol Amounts used Human factors not influenced by risk management	Ventilation rate	2.5 1/h	
Release temperature 20 °C Contributing Scenario (11) controlling consumer exposure for PC 31 Name of contributing scenario PC 31 Polishes and Wax Blends Calculation model ConsExpo Furniture polish - Application Frequency and duration of use Inhalation Exposure calculation result type Mean concentration on day of exposure Frequency of use 1 per year Exposure time 240 min Application duration 90 min Product characteristics Spray application no Product ingredient fraction by weight 20 % Mol weight matrix 272 g/mol Ansost ransfer rate - m/min Amounts used Inhalation 550 g Human factors not influenced by risk management	Release area increases over time		
Contributing Scenario (11) controlling consumer exposure for PC 31 Name of contributing scenario Calculation model ConsExpo Furniture polish - Application Frequency and duration of use Inhalation Exposure calculation result type Mean concentration on day of exposure Frequency of use I per year Exposure time Application duration Product characteristics Spray application Product ingredient fraction by weight Moss transfer rate - m/min Amounts used Human factors not influenced by risk management	Release area	2.20E5 cm ²	
Name of contributing scenario PC 31 Polishes and Wax Blends Calculation model ConsExpo Furniture polish - Application Frequency and duration of use Inhalation Exposure calculation result type Mean concentration on day of exposure Frequency of use 1 per year Exposure time 240 min Application duration 90 min Product characteristics Spray application no Product ingredient fraction by weight 20 % Mol weight matrix 272 g/mol Mass transfer rate - m/min Amounts used 550 g Human factors not influenced by risk management	Release temperature	20 °C	
Calculation model ConsExpo Furniture polish - Application Frequency and duration of use Inhalation Exposure calculation result type Mean concentration on day of exposure Frequency of use 1 per year Exposure time 240 min Application duration 90 min Product characteristics Spray application no no no Product ingredient fraction by weight 20 % Mol weight matrix 272 g/mol Mass transfer rate - m/min Amounts used Inhalation 550 g Human factors not influenced by risk management	Contributing Scenario (11) controlling consumer expe	osure for PC 31	
Frequency and duration of use Inhalation Exposure calculation result type Mean concentration on day of exposure Frequency of use 1 per year Exposure time 240 min Application duration 90 min Product characteristics Spray application no Product ingredient fraction by weight 20 % Mol weight matrix 272 g/mol Mass transfer rate - m/min Amounts used Human factors not influenced by risk management	Name of contributing scenario	PC 31 Polishes and Wax Blends	
Inhalation Exposure calculation result type Mean concentration on day of exposure Frequency of use I per year Exposure time Application duration 90 min Product characteristics Spray application Product ingredient fraction by weight Mol weight matrix 272 g/mol Amounts used Inhalation 550 g Human factors not influenced by risk management	Calculation model		
Exposure calculation result type Frequency of use I per year Exposure time Application duration Product characteristics Spray application Product ingredient fraction by weight Mol weight matrix Amounts used Inhalation Mean concentration on day of exposure I per year 240 min 90 min Po min 20 % 10 ** 20 ** 20 ** 272 g/mol 4 ** Amounts used Inhalation S50 g Human factors not influenced by risk management	Frequency and duration of use		
Frequency of use 1 per year Exposure time 240 min Application duration 90 min Product characteristics Spray application no Product ingredient fraction by weight 20 % Mol weight matrix 272 g/mol Mass transfer rate - m/min Amounts used Inhalation 550 g Human factors not influenced by risk management			
Exposure time 240 min 90 min Product characteristics Spray application no no Product ingredient fraction by weight 20 % Mol weight matrix 272 g/mol Mass transfer rate - m/min Amounts used Inhalation 550 g Human factors not influenced by risk management	Exposure calculation result type	Mean concentration on day of exposure	
Application duration 90 min Product characteristics Spray application no Product ingredient fraction by weight 20 % Mol weight matrix 272 g/mol Mass transfer rate - m/min Amounts used Inhalation 550 g Human factors not influenced by risk management	Frequency of use	1 per year	
Product characteristics Spray application no Product ingredient fraction by weight 20 % Mol weight matrix 272 g/mol Mass transfer rate - m/min Amounts used Inhalation 550 g Human factors not influenced by risk management	Exposure time	240 min	
Spray application no Product ingredient fraction by weight 20 % Mol weight matrix 272 g/mol Mass transfer rate -m/min Amounts used Inhalation 550 g Human factors not influenced by risk management	Application duration	90 min	
Product ingredient fraction by weight 20 % Mol weight matrix 272 g/mol Mass transfer rate -m/min Amounts used Inhalation 550 g Human factors not influenced by risk management	Product characteristics		
Mol weight matrix Mass transfer rate - m/min Amounts used Inhalation 550 g Human factors not influenced by risk management	Spray application	no	
Mass transfer rate - m/min Amounts used Inhalation 550 g Human factors not influenced by risk management	Product ingredient fraction by weight	20 %	
Amounts used Inhalation 550 g Human factors not influenced by risk management	Mol weight matrix	272 g/mol	
Inhalation 550 g Human factors not influenced by risk management	Mass transfer rate	- m/min	
Human factors not influenced by risk management	Amounts used		
	Inhalation	550 g	
Other given operational conditions affecting consumers exposure	Human factors not influenced by risk management		
	Other given operational conditions affecting consume	rs exposure	



Inhalation		
Room volume	58 m ³	
Ventilation rate	2.5 1/h	
Release area increases over time		
Release area	$2.20E5 \text{ cm}^2$	
Release temperature	20 °C	
Contributing Scenario (12) controlling consumer expo	sure for PC 35	
Name of contributing scenario	PC 35 Washing and Cleaning Products (including solvent based products)	
Calculation model	Ecetoc TRA	
Product subcategory	Laundry and dish washing products	
Frequency and duration of use		
Frequency of use	365 times/year (Frequent)	
Exposure time	1 h	
Product characteristics		
Spray application	no	
Product ingredient fraction by weight	5 %	
Amounts used		
Amounts used	15 g	
Human factors not influenced by risk management		
Skin surface area dermal	hands	
Skin surface area oral	-	
Tranfer factor dermal	100 %	
Other given operational conditions affecting consumer	s exposure	
Room volume	20 m ³	
Release fraction to air	100.0 %	
Contributing Scenario (13) controlling consumer expo	sure for PC 35	
Name of contributing scenario	PC 35 Washing and Cleaning Products (including solvent based products)	
Scenario subtitle	Mixing and loading	
Calculation model	ConsExpo Floor cleaning liquid - Mixing & Loading	
Frequency and duration of use		
Inhalation		
Exposure calculation result type	Mean concentration on day of exposure	
Frequency of use	104 per year	
Exposure time	0.750 min	
Application duration	0.300 min	
Product characteristics		
Spray application	no	
Product ingredient fraction by weight	50 %	
Mol weight matrix	22 g/mol	



Mass transfer rate	- m/min	
Amounts used		
Inhalation	500 g	
Human factors not influenced by risk management		
Other given operational conditions affecting consumer	rs exposure	
Inhalation		
Room volume	1 m ³	
Ventilation rate	0.500 1/h	
Release are is constant		
Release area	20 cm^2	
Release temperature	20 °C	
Contributing Scenario (14) controlling consumer expo	sure for PC 35	
Name of contributing scenario	PC 35 Washing and Cleaning Products (including solvent based products)	
Scenario subtitle	Application	
Calculation model	ConsExpo Floor cleaning liquid - Application	
Frequency and duration of use		
Inhalation		
Exposure calculation result type	Mean concentration on day of exposure	
Frequency of use	104 per year	
Exposure time	240 min	
Application duration	30 min	
Product characteristics		
Spray application	no	
Product ingredient fraction by weight	4 %	
Mol weight matrix	18 g/mol	
Mass transfer rate	- m/min	
Amounts used		
Inhalation	880 g	
Human factors not influenced by risk management		
Other given operational conditions affecting consumers exposure		
Inhalation		
Room volume	58 m ³	
Ventilation rate	0.500 1/h	
Release area increases over time		
Release area	$2.20E5 \text{ cm}^2$	
Release temperature	20 °C	
Contributing Scenario (15) controlling consumer exposure for PC 35		
Name of contributing scenario	PC 35 Washing and Cleaning Products (including solvent based products)	

ISO-BUTANOL

VERSION: 3.0 DATE CREATED: 03/04/20



	T		
Calculation model	ConsExpo		
	Bathroom cleaning spray - Application: cleaning		
Frequency and duration of use			
Inhalation			
Exposure calculation result type	Mean concentration on day of exposure		
Frequency of use	52 per year		
Exposure time	25 min		
Application duration	20 min		
Product characteristics	Product characteristics		
Spray application	yes		
Product ingredient fraction by weight	20 %		
Mol weight matrix	36 g/mol		
Mass transfer rate	- m/min		
Amounts used			
Inhalation	30 g		
Human factors not influenced by risk management			
Other given operational conditions affecting consumers exposure			
Inhalation			
Room volume	10 m ³		
Ventilation rate	2 1/h		
Release are is constant			
Release area	6.40E4 cm ²		
Release temperature	20 °C		

DATE CREATED: 03/04/2018 LANGUAGE: ENGLISH



Exposure Scenario 19 (ES19): Use in Lubricants (professional)

Free short title	Use in Lubricants (professional)
Systematic title based on use descriptor	ERC 9B, 9A, 8A, 8D; PROC 1, 2, 3, 4, 8A, 8B, 9, 10, 13, 17, 18, 20, 11
Name of contributing environmental scenario and corresponding ERC	ERC 9b Wide dispersive outdoor use of substances in closed systems ERC 9a Wide dispersive indoor use of substances in closed systems ERC 8a Wide dispersive indoor use of processing aids in open systems ERC 8d Wide dispersive outdoor use of processing aids in open systems
Name(s) of contributing worker scenarios and corresponding PROCs	PROC 1 - Use in closed process, no likelihood of exposure PROC 2 - Use in closed, continuous process with occasional controlled exposure PROC 3 - Use in closed batch process (synthesis or formulation) PROC 4 - Use in batch and other process (synthesis) where opportunity for exposure arises PROC 8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities PROC 8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities PROC 9 - Transfer of chemicals into small containers (dedicated filling line) PROC 10 - Roller application or brushing PROC 13 - Treatment of articles by dipping and pouring PROC 17 - Lubrication at high energy conditions and in partly open process PROC 18 - Greasing at high energy conditions PROC 20 - Heat and pressure transfer fluids (closed systems) in dispersive use PROC 17 - Lubrication at high energy conditions and in partly open process PROC 18 - Greasing at high energy conditions PROC 11 - Non industrial spraying PROC 11 - Non industrial spraying
Contributing Scenario (1) controlling environmental e	exposure for ERC 9B
Contributing Scenario (2) controlling environmental e	xposure for ERC 9A
Contributing Scenario (3) controlling environmental e	xposure for ERC 8A
Contributing Scenario (4) controlling environmental e	xposure for ERC 8D
As no environmental hazard was identified no environmental	ntal-related exposure assessment and risk characterization was performed.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
Frequency and duration of use	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
Contributing Scenario (5) controlling professional worker exposure for PROC 1	
Name of contributing scenario	1 - Use in closed process, no likelihood of exposure
Qualitative Risk Assessment	
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly
	and OCs followed. Avoid frequent and direct contact with substance.



Human factors not influenced by risk management		
Exposed skin surface	240 cm ²	
Other given operational conditions affecting workers e	exposure	
Location	indoors	
Domain	professional	
Technical conditions and measures to control dispersion and exposure		
Local exhaust ventilation	no	
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection	no	
Contributing Scenario (6) controlling professional wor	ker exposure for PROC 2	
Name of contributing scenario	2 - Use in closed, continuous process with occasional controlled exposure	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	480 cm^2	
Other given operational conditions affecting workers e	exposure	
Location	indoors	
Domain	professional	
Technical conditions and measures to control dispersion	on and exposure	
Local exhaust ventilation	no	
Conditions and measures related to personal protection	n, hygiene and health evaluation	
Respiratory protection	no	
Contributing Scenario (7) controlling professional wor	eker exposure for PROC 3	
Name of contributing scenario	3 - Use in closed batch process (synthesis or formulation)	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	240 cm^2	
Other given operational conditions affecting workers exposure		
Location	indoors	
Domain	professional	



Technical conditions and measures to control dispersi	Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no	
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection	no	
Contributing Scenario (8) controlling professional wo	rker exposure for PROC 4	
Name of contributing scenario	4 - Use in batch and other process (synthesis) where opportunity for exposure arises	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	480 cm^2	
Other given operational conditions affecting workers exposure		
Location	indoors	
Domain	professional	
Technical conditions and measures to control dispersion and exposure		
Local exhaust ventilation	no	
Conditions and measures related to personal protection	on, hygiene and health evaluation	
Respiratory protection	no	
Contributing Scenario (9) controlling professional worker exposure for PROC 8A		
	Their exposure for 110 C 0.1	
Name of contributing scenario	8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities	
Name of contributing scenario Qualitative Risk Assessment	8a - Transfer of chemicals from/to vessels/ large containers at non dedicated	
-	8a - Transfer of chemicals from/to vessels/ large containers at non dedicated	
Qualitative Risk Assessment	8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
Qualitative Risk Assessment General	8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Qualitative Risk Assessment General Eyes	8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. Use suitable eye protection.	
Qualitative Risk Assessment General Eyes Dermal	8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. Use suitable eye protection.	
Qualitative Risk Assessment General Eyes Dermal Human factors not influenced by risk management	8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. Use suitable eye protection. Use suitable chemically resistant gloves.	
Qualitative Risk Assessment General Eyes Dermal Human factors not influenced by risk management Exposed skin surface	8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. Use suitable eye protection. Use suitable chemically resistant gloves.	
Qualitative Risk Assessment General Eyes Dermal Human factors not influenced by risk management Exposed skin surface Other given operational conditions affecting workers	8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. Use suitable eye protection. Use suitable chemically resistant gloves.	
Qualitative Risk Assessment General Eyes Dermal Human factors not influenced by risk management Exposed skin surface Other given operational conditions affecting workers of Location	8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. Use suitable eye protection. Use suitable chemically resistant gloves. 960 cm² exposure indoors	
Qualitative Risk Assessment General Eyes Dermal Human factors not influenced by risk management Exposed skin surface Other given operational conditions affecting workers of Location Ventilation	8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. Use suitable eye protection. Use suitable chemically resistant gloves. 960 cm² exposure indoors good (30%) professional	
Qualitative Risk Assessment General Eyes Dermal Human factors not influenced by risk management Exposed skin surface Other given operational conditions affecting workers Location Ventilation Domain	8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. Use suitable eye protection. Use suitable chemically resistant gloves. 960 cm² exposure indoors good (30%) professional	
Qualitative Risk Assessment General Eyes Dermal Human factors not influenced by risk management Exposed skin surface Other given operational conditions affecting workers of Location Ventilation Domain Technical conditions and measures to control dispersi	8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. Use suitable eye protection. Use suitable chemically resistant gloves. 960 cm² exposure indoors good (30%) professional on and exposure no	



Contributing Scenario (10) controlling professional worker exposure for PROC 8B	
Name of contributing scenario	8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Qualitative Risk Assessment	
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
Human factors not influenced by risk management	
Exposed skin surface	960 cm ²
Other given operational conditions affecting workers	exposure
Location	indoors
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection	no
Contributing Scenario (11) controlling professional we	orker exposure for PROC 9
Name of contributing scenario	9 - Transfer of chemicals into small containers (dedicated filling line)
Qualitative Risk Assessment	
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
Human factors not influenced by risk management	
Exposed skin surface	480 cm ²
Other given operational conditions affecting workers	exposure
Location	indoors
Ventilation	good (30%)
Domain	professional
Technical conditions and measures to control dispersion	on and exposure
Local exhaust ventilation	no
Conditions and measures related to personal protection	on, hygiene and health evaluation
Respiratory protection	no
Contributing Scenario (12) controlling professional worker exposure for PROC 10	
Name of contributing scenario	10 - Roller application or brushing
Qualitative Risk Assessment	



General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	960 cm ²	
Other given operational conditions affecting workers exposure		
Location	indoors	
Ventilation	good (30%)	
Domain	professional	
Technical conditions and measures to control dispersion	on and exposure	
Local exhaust ventilation	no	
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection	no	
Contributing Scenario (13) controlling professional we	orker exposure for PROC 13	
Name of contributing scenario	13 - Treatment of articles by dipping and pouring	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	480 cm ²	
Other given operational conditions affecting workers of	exposure	
Location	indoors	
Ventilation	good (30%)	
Domain	professional	
Technical conditions and measures to control dispersion	on and exposure	
Local exhaust ventilation	no	
Conditions and measures related to personal protection	n, hygiene and health evaluation	
Respiratory protection	no	
Contributing Scenario (14) controlling professional we	orker exposure for PROC 17	
Name of contributing scenario	17 - Lubrication at high energy conditions and in partly open process	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	



Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	960 cm ²	
Other given operational conditions affecting workers exposure		
Location	indoors	
Domain	professional	
Technical conditions and measures to control dispersion	on and exposure	
Local exhaust ventilation	yes (inhalation 80 %)	
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection	no	
Contributing Scenario (15) controlling professional we	orker exposure for PROC 18	
Name of contributing scenario	18 - Greasing at high energy conditions	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	960 cm^2	
Other given operational conditions affecting workers	exposure	
Location	indoors	
Domain	professional	
Technical conditions and measures to control dispersion	on and exposure	
Local exhaust ventilation	yes (inhalation 80 %)	
Conditions and measures related to personal protection	on, hygiene and health evaluation	
Respiratory protection	no	
Contributing Scenario (16) controlling professional we	orker exposure for PROC 20	
Name of contributing scenario	20 - Heat and pressure transfer fluids (closed systems) in dispersive use	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Human factors not influenced by risk management		
Exposed skin surface	480 cm^2	
Other given operational conditions affecting workers exposure		
Location	indoors	
Domain	professional	



Technical conditions and measures to control dispersion and exposure		
Local exhaust ventilation	no	
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection	no	
Contributing Scenario (17) controlling professional wo	orker exposure for PROC 17	
Name of contributing scenario	17 - Lubrication at high energy conditions and in partly open process	
Scenario subtitle	elevated Temp.	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. In case no suitable local exhaust ventilation is present: Wear suitable respiratory protection.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	
Product characteristics		
Physical state	liquid	
Concentration in substance	100 %	
Process temperature	108 °C	
Fugacity / Dustiness	high	
Human factors not influenced by risk management		
Exposed skin surface	960 cm^2	
Other given operational conditions affecting workers e	exposure	
Location	indoors	
Ventilation	good (30%)	
Domain	professional	
Technical conditions and measures to control dispersion	on and exposure	
Local exhaust ventilation	yes (inhalation 80 %)	
Conditions and measures related to personal protection	n, hygiene and health evaluation	
Respiratory protection	no	
Contributing Scenario (18) controlling professional wo	orker exposure for PROC 18	
Name of contributing scenario	18 - Greasing at high energy conditions	
Scenario subtitle	elevated Temp.	
Qualitative Risk Assessment	Qualitative Risk Assessment	
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. In case no suitable local exhaust ventilation is present: Wear suitable respiratory protection.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves.	



Product characteristics	Product characteristics	
Physical state	liquid	
Concentration in substance	100 %	
Process temperature	108 °C	
Fugacity / Dustiness	high	
Human factors not influenced by risk management		
Exposed skin surface	960 cm ²	
Other given operational conditions affecting workers exposure		
Location	indoors	
Ventilation	good (30%)	
Domain	professional	
Technical conditions and measures to control dispersion	on and exposure	
Local exhaust ventilation	yes (inhalation 80 %)	
Conditions and measures related to personal protection	n, hygiene and health evaluation	
Respiratory protection	no	
Contributing Scenario (19) controlling professional we	orker exposure for PROC 11	
Name of contributing scenario	11 - Non industrial spraying	
Scenario subtitle	Automatic	
Qualitative Risk Assessment		
General	Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Ensure that a spraying booth is used. Clean equipment and the work area every day. Regular inspection and maintenance of equipment and machines.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves. Avoid frequent and direct contact with substance.	
Human factors not influenced by risk management		
Exposed skin surface	$1,500 \text{ cm}^2$	
Other given operational conditions affecting workers	exposure	
Location	indoors	
Domain	professional	
Technical conditions and measures to control dispersion	on and exposure	
Local exhaust ventilation	no	
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection	no	
Use of external/measured value inhalation	Calculated with Stoffenmanager 6	
Contributing Scenario (20) controlling professional worker exposure for PROC 11		
Name of contributing scenario	11 - Non industrial spraying	
Scenario subtitle	Manual	
Qualitative Risk Assessment		

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General	Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Regular inspection and maintenance of equipment and machines. Ensure that the task is not carried out overhead. Use equipment with a fixed capturing hood exhaust ventilation. In case no suitable local exhaust ventilation is present: Wear suitable respiratory protection.	
Eyes	Use suitable eye protection.	
Dermal	Use suitable chemically resistant gloves. Avoid frequent and direct contact with substance.	
Product characteristics		
Physical state	liquid	
Concentration in substance	10 %, concentration has been considered linearly (justification: ART input value: max. concentration Application rate < 3L/min (surface spraying) Room size >= 300m³ (large workrooms))	
Fugacity / Dustiness	medium	
Human factors not influenced by risk management	Human factors not influenced by risk management	
Exposed skin surface	$1,500 \text{ cm}^2$	
Other given operational conditions affecting workers exposure		
Location	indoors	
Domain	professional	
Technical conditions and measures to control dispersion and exposure		
Local exhaust ventilation	no	
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection	no	
Use of external/measured value inhalation	Calculated with ART v1.5	

END OF SAFETY DATA SHEET