

Safety data sheet
according to 1907/2006/EC, Article 31

Printing date 14.02.2020

Version number 205

Revision: 09.01.2020

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

- 1.1 Product identifier

- Trade name Isopropanol 99 %

- CAS Number:

67-63-0

- EC number:

200-661-7

- Index number:

603-117-00-0

- REACH-Registration number 01-2119457558-25

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

For details on the identifiable uses according to EC-regulation No. 1907/2006 see annex of this safety data sheet.

- Application of the substance / the mixture Solvents

- 1.3 Details of the supplier of the safety data sheet

- Manufacturer/Supplier:

HÖFER CHEMIE® GmbH

Zur Fabrik 2

D-66271 Kleinblittersdorf

Phone: 00 49 6805 997 80 10

Fax: 00 49 6805 997 80 25

- Informing department:

Olivier Höfer, phone: 00 49 6805 997 80 40

E-mail: olivier.hoefer@hoefer-chemie.de

- 1.4 Emergency telephone number:

National Poisons Information Service (NPIS) - Emergency call (healthcare professionals): (+44) 844 892 0111 - 0344 892 0111

SECTION 2: Hazards identification

- 2.1 Classification of the substance or mixture

- Classification according to Regulation (EC) No 1272/2008

Flam. Liq. 2 H225 Highly flammable liquid and vapour.

Eye Irrit. 2 H319 Causes serious eye irritation.

STOT SE 3 H336 May cause drowsiness or dizziness.

- 2.2 Label elements

- Labelling according to Regulation (EC) No 1272/2008

The substance is classified and labelled according to the CLP regulation.

- Hazard pictograms



GHS02 GHS07

- Signal word Danger

- Hazard statements

H225 Highly flammable liquid and vapour.

H319 Causes serious eye irritation.

H336 May cause drowsiness or dizziness.

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- Precautionary statements

- P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
- P243 Take action to prevent static discharges.
- P280 Wear protective gloves/protective clothing/eye protection/face protection.
- P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].
- P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P312 Call a POISON CENTER/doctor if you feel unwell.
- P403+P233 Store in a well-ventilated place. Keep container tightly closed.

- 2.3 Other hazards

- Results of PBT and vPvB assessment

- **PBT:** Not applicable.
- **vPvB:** Not applicable.

SECTION 3: Composition/information on ingredients

- 3.1 Substances

- CAS No. Designation:

67-63-0 propan-2-ol

- Identification no(s):

- **EC number:** 200-661-7

- **Index number:** 603-117-00-0

SECTION 4: First aid measures

- 4.1 Description of first aid measures

- General advice:

Instantly remove any clothing soiled by the product.

Take affected persons into the open air.

- **After inhalation** Supply fresh air; consult doctor in case of symptoms.

- After skin contact

Instantly wash with water and soap and rinse thoroughly. If skin irritation persists, seek medical advice.

- After eye contact

Rinse immediately opened eye for several minutes under running water. Then consult doctor.

- After swallowing

Rinse out mouth and then drink plenty of water.

Do not induce vomiting; instantly call for medical help.

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

No further relevant information available.

- Information for doctor

Therapy, such as in acute ethanol intoxication. Risk of respiratory paralysis.

Monitor liver and kidney functions. Gastric lavage. If unconscious, gastric lavage without intubation.

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

No further relevant information available.

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SECTION 5: Firefighting measures

- 5.1 Extinguishing media

- Suitable extinguishing agents

CO₂, extinguishing powder or water jet. Fight larger fires with water jet or alcohol-resistant foam.

- For safety reasons unsuitable extinguishing agents

Water with a full water jet.

- 5.2 Special hazards arising from the substance or mixture

Can form explosive gas-air mixtures. In case of incomplete combustion carbon monoxide can arise. Fumes are heavier than air and distributed over ground. Inflammation is possible from a far distance.

- 5.3 Advice for firefighters

- **Protective equipment:** Wear full protective suit with self-contained breathing apparatus.

- Additional information

Endangered containers in the surrounding area should be cooled with a water-hose.

SECTION 6: Accidental release measures

- 6.1 Personal precautions, protective equipment and emergency procedures

Wear protective equipment and keep unprotected persons away.

Extinguish naked flames. Remove flammable sources. No smoking. Avoid sparks. Avoid contact with skin, eyes and clothing. Avoid inhalation of fumes. Air contaminated rooms thoroughly. Protect against electrostatic sparks.

- 6.2 Environmental precautions:

Do not allow to enter drainage system, surface or ground water.

Dilute with much water.

Inform respective authorities in case product reaches water or sewage system.

- 6.3 Methods and material for containment and cleaning up:

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

Ensure adequate ventilation.

Dispose of contaminated material as waste according to item 13.

- 6.4 Reference to other sections

Danger of explosion

SECTION 7: Handling and storage

- 7.1 Precautions for safe handling

Ensure good interior ventilation, especially at floor level. (Fumes are heavier than air).

Avoid repeated or long term skin contact.

- Information about protection against explosions and fires:

Keep ignition sources away - Do not smoke.

Protect against electrostatic charges.

Fumes can combine with air to form an explosive mixture.

- 7.2 Conditions for safe storage, including any incompatibilities

- Storage

Protect against direct sunlight, other sources of heat and ignition.

Store in cool, dry conditions in well sealed containers.

- Requirements to be met by storerooms and containers:

Observe official regulations on storage and handling of water hazardous substances

Suitable material for containers and conduit: steel or stainless steel.

Unsuitable materials: most plastics, aluminum, neoprene rubber.

- Information about storage in one common storage facility:

Keep away from oxidizing agents and strong acids or alkali.

Pay attention to regulations / technical guidelines on mixed storage of toxic substances

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- **Further information about storage conditions:**
- **Recommended storage temperature:** 5 - 25 °C
- **Storage class 3** (VCI - Konzept, 2007)
- **7.3 Specific end use(s)** No further relevant information available.

SECTION 8: Exposure controls/personal protection

- **Additional information about design of technical systems:**
Room ventilation i.e. vacuum suction. Measures to be taken against electro-static sparks.

- 8.1 Control parameters

- **Components with critical values that require monitoring at the workplace:**

67-63-0 propan-2-ol

WEL	Short-term value: 1250 mg/m ³ , 500 ppm Long-term value: 999 mg/m ³ , 400 ppm
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- DNELs

Oral	DNEL (population)	26 mg/kg bw/day (Long-term, systemic effects)
Dermal	DNEL (worker)	888 mg/kg bw/day (Long-term, systemic effects)
	DNEL (population)	319 mg/kg bw/day (Long-term, systemic effects)
Inhalative	DNEL (worker)	500 mg/m ³ (Long-term, systemic effects)
	DNEL (population)	89 mg/m ³ (Long-term, systemic effects)

- PNECs

PNEC water	140.9 mg/l (freshwater)
	140.9 mg/l (marine water)
PNEC	2,251 mg/l (sewage plant)
PNEC sediment	552 mg/kg dw (freshwater)
	552 mg/kg dw (marine water)
PNEC	140.9 (intermittent releases)
PNEC soil	28 mg/kg (soil)

- **Additional information:** The lists that were valid during the compilation were used as basis.

- 8.2 Exposure controls

- Personal protective equipment

- General protective and hygienic measures

- Wash hands during breaks and at the end of the work.
- Keep away from food, beverages and fodder.
- Instantly remove any soiled and impregnated garments.
- Avoid contact with the eyes and skin.
- Gases, fumes and aerosols should not be inhaled.

- Breathing equipment:

- Not necessary if room is well-ventilated.
- Respiratory protection necessary at exposure limit excess, insufficient ventilation, insufficient exhaustion, prolonged exposure, handling of large amounts.

- Recommended filter device for short term use:

Combination filter A-P1

Take care of limitations and rules for the use of breathing protection equipment (DGUV Regel 112-190).

- Protection of hands:

- Protective gloves.
- Check the permeability prior to each renewed use of the glove.

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- Material of gloves

Nitrile rubber, NBR, recommended thickness of the material: ≥ 0.35 mm, penetration time: ≥ 480 min.

Butylrubber, BR, recommended thickness of the material: ≥ 0.5 mm, penetration time: ≥ 480 min.

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

- Penetration time of glove material

Note information regarding permeation rate, penetration times and the degradation supplied by the manufacturer of gloves just as workplace-specific conditions.

Change gloves if notice sign of disenchantment.

- As protection from splashes gloves made of the following materials are suitable:

Chloroprene rubber, CR, recommended thickness of the material: ≥ 0.5 mm, penetration time: ≥ 240 min.

- Not suitable are gloves made of the following materials:

PVC gloves

Natural rubber, NR

- Eye protection: Tightly sealed safety glasses.

- Body protection:

Standard protective working clothes, chemical resistant safety-shoes or wellingtons. If skin contact is possible, wear impenetrable protective clothing.

SECTION 9: Physical and chemical properties

- 9.1 Information on basic physical and chemical properties

- General Information

- Appearance:

Form: Fluid

Colour: Colourless

- Smell: Alcohol-like

- Odour threshold: Not determined

- pH-value: not applicable

- Melting point/freezing point: -89 °C

- Initial boiling point and boiling range: 82 °C (ASTM D 1078)

- Flash point: 12 °C (DIN 51758)

- Ignition temperature: 425 °C (DIN 51794)

- Decomposition temperature: Not determined

- Explosive properties: Product is not explosive. However, formation of explosive air/steam mixtures is possible.

- Critical values for explosion:

Lower: 2 Vol %

Upper: 12 Vol %

- Oxidising properties No oxidizing properties

- Vapour pressure at 20 °C: 42.2 mbar

- Density at 20 °C 0.785 g/cm³ (DIN 51757)

- Relative density Not determined

- Vapour density Not determined

- Evaporation rate Not determined

- Solubility in / Miscibility with

Water: Fully miscible

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- **Partition coefficient: n-octanol/water at 25 °C:** 0.05 log POW

- **Viscosity:**

dynamic at 20 °C:

2.43 mPas (DIN 53015)

kinematic:

Not determined

- **9.2 Other information**

No further relevant information available.

SECTION 10: Stability and reactivity

- **10.1 Reactivity** see section 10.3

- **10.2 Chemical stability**

- **Thermal decomposition / conditions to be avoided:**

Keep away from sources of ignition

No decomposition if used according to specifications.

Can be distilled without decomposing at normal pressure

- **10.3 Possibility of hazardous reactions**

Formation of explosive steam/air mixture likely.

Reacts with strong oxidizing agents

Reacts with strong acids

- **10.4 Conditions to avoid** To avoid: warmth, flames, sparks

- **10.5 Incompatible materials:**

alkalies

strong oxidizing agents

Strong acids

- **10.6 Hazardous decomposition products:**

Thermal decomposition can produce a variety of compounds, the precise nature of which will depend on the decomposition conditions.

Formation of carbon monoxide and carbon dioxide in case of fire.

SECTION 11: Toxicological information

- **11.1 Information on toxicological effects**

- **Acute toxicity** Based on available data, the classification criteria are not met.

- **LD/LC50 values that are relevant for classification:**

Oral	LD50	4,570 mg/kg (rat)
Dermal	LD50	>2,000 mg/kg (rabbit)
		13,400 mg/kg (rab)
Inhalative	LC 50 / 4 h	30 mg/l (rat)

- **Primary irritant effect:**

- **Skin corrosion/irritation** Prolonged or repeated exposure may cause skin irritation.

- **Serious eye damage/irritation**

Causes serious eye irritation.

- **Respiratory or skin sensitisation** Based on available data, the classification criteria are not met.

- **Subacute to chronic toxicity:**

- **Germ cell mutagenicity:** Ames-Test: negativ

- **STOT-repeated exposure:**

Oral	NOAEL	900 mg/kg (rat) ((90d) OECD 408)
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- **CMR effects (carcinogenity, mutagenicity and toxicity for reproduction)**

no CMR effects available in according to present state of knowledge

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- **Germ cell mutagenicity** Based on available data, the classification criteria are not met.
- **Carcinogenicity** Based on available data, the classification criteria are not met.
- **Reproductive toxicity** Based on available data, the classification criteria are not met.
- **STOT-single exposure**
May cause drowsiness or dizziness.
- **STOT-repeated exposure** Based on available data, the classification criteria are not met.
- **Aspiration hazard** Based on available data, the classification criteria are not met.

SECTION 12: Ecological information

- 12.1 Toxicity

- Aquatic toxicity:

LC 50 / 48 h	>100 mg/l (Leuciscus idus)
EC 50 / 48 h	>100 mg/l (Daphnia magna)
EC 50 / 72 h	>100 mg/l (Scenedesmus subspicatus)

- 12.2 Persistence and degradability

Oxidises rapidly by photo-chemical reactions in air.
Readily biodegradable

- 12.3 Bioaccumulative potential

Dissolves in water. Lost within a day by evaporation and dissolution.
Large volumes may penetrate soil and could contaminate groundwater.
Due to the distribution coefficient n-octanol/water an accumulation in organisms is not expected.

- 12.4 Mobility in soil

No further relevant information available.

- Additional ecological information:

- General notes:

Do not allow to enter drainage system, surface or ground water
Water hazard class 1 (Assessment by list): slightly hazardous for water.

- 12.5 Results of PBT and vPvB assessment

- **PBT:** Not applicable.

- **vPvB:** Not applicable.

- **12.6 Other adverse effects** No further relevant information available.

SECTION 13: Disposal considerations

- 13.1 Waste treatment methods

The following advice is related to new material and not to any processed products. In case of a mixture with other products other disposal methods may become necessary. If in doubt seek advice from product supplier or from local authorities.

- Recommendation

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
If possible, send to be recycled, otherwise burn or deposit in a certified facility.

- Waste disposal key number:

Since 01/01/99 the waste code numbers have not only been product-related but are also essentially application-related. The valid waste code number of the application can be obtained from the European waste catalogue.

- Uncleaned packagings:

- Recommendation:

Rented packaging: After optimal emptying, close immediately and return to the supplier without cleaning.
Care should be taken that no other materials get into the packaging.

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Caution: Leftovers in the containers may cause the risk of explosion.
 Uncleaned containers should not be perforated, cut or welded.

SECTION 14: Transport information

- 14.1 UN-Number	
- ADR, IMDG, IATA	UN1219
- 14.2 UN proper shipping name	
- ADR	1219 ISOPROPANOL (ISOPROPYL ALCOHOL)
- IMDG, IATA	ISOPROPANOL (ISOPROPYL ALCOHOL)
- 14.3 Transport hazard class(es)	
- ADR	
- Class	3 (F1) Flammable liquids.
- Label	3
- IMDG, IATA	
- Class	3 Flammable liquids.
- Label	3
- 14.4 Packing group	
- ADR, IMDG, IATA	II
- 14.5 Environmental hazards:	
- Marine pollutant:	no
- 14.6 Special precautions for user	Warning: Flammable liquids.
- Kemler Number:	33
- EMS Number:	F-E,S-D
- Stowage Category	B
- 14.7 Transport in bulk according to Annex II of Marpol and the IBC Code	Not applicable.
- Transport/Additional information:	
- ADR	
- Limited quantities (LQ)	1L
- Excepted quantities (EQ)	Code: E2 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 500 ml
- Transport category	2
- Tunnel restriction code	D/E
- IMDG	
- Limited quantities (LQ)	1L
- Excepted quantities (EQ)	Código E4 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 500 ml
- UN "Model Regulation":	UN 1219 ISOPROPANOL (ISOPROPYL ALCOHOL), 3, II

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SECTION 15: Regulatory information

- **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**
- **Labelling according to Regulation (EC) No 1272/2008**

The substance is classified and labelled according to the CLP regulation.

- **Hazard pictograms**



GHS02 GHS07

- **Signal word** Danger

- **Hazard statements**

H225 Highly flammable liquid and vapour.

H319 Causes serious eye irritation.

H336 May cause drowsiness or dizziness.

- **Precautionary statements**

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P243 Take action to prevent static discharges.

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

P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P312 Call a POISON CENTER/doctor if you feel unwell.

P403+P233 Store in a well-ventilated place. Keep container tightly closed.

- **Directive 2012/18/EU**

- **Qualifying quantity (tonnes) for the application of lower-tier requirements** 5.000 t

- **Qualifying quantity (tonnes) for the application of upper-tier requirements** 50.000 t

- **REGULATION (EC) No 1907/2006 ANNEX XVII** Conditions of restriction: 3, 40

- **National regulations**

- **Information about limitation of use:**

Employment restrictions concerning young persons must be observed.

- **VOC:** 100%

- **15.2 Chemical safety assessment:** A Chemical Safety Assessment has been carried out.

SECTION 16: Other information

These data are based on our present knowledge. However, they shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- **Department issuing data specification sheet:** see item 1: Informing department

- **Contact:**

Frau S. Ademoglu

Frau L. Hüser

Herr G. März

- **Abbreviations and acronyms:**

NOAEL: No Observed Adverse Effect Level

RPE: Respiratory Protective Equipment

RCR: Risk Characterisation Ratio (RCR= PEC/PNEC)

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

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IATA: International Air Transport Association
GHS: Globally Harmonized System of Classification and Labelling of Chemicals
CLP: Classification, Labelling and Packaging (Regulation (EC) No. 1272/2008)
EINECS: European Inventory of Existing Commercial Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
TRGS: Technische Regeln für Gefahrstoffe (Technical Rules for Dangerous Substances, BAuA, Germany)
DNEL: Derived No-Effect Level (REACH)
PNEC: Predicted No-Effect Concentration (REACH)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
vPvB: very Persistent and very Bioaccumulative
Flam. Liq. 2: Flammable liquids – Category 2
Eye Irrit. 2: Serious eye damage/eye irritation – Category 2
STOT SE 3: Specific target organ toxicity (single exposure) – Category 3

- ANNEX

Exposure Scenarios:

Distribution of the substance
Formulation and (re)packing of substances and mixtures
Uses in Coatings
Use in cleaning agents
Lubricants
Metal working fluids / rolling oils
blowing agent
Use as binders and release agents
Use as a fuel
functional Fluids
Rubber production and processing
Polymer processing
Use for water treatment
Use in Agrochemicals
Use in antifreeze agents
Where appropriate for industry, commerce and consumers

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Annex: Exposure scenario 1

- **Short title of the exposure scenario** *Distribution of the substance*
- **Sector of Use**
 - SU3 *Industrial uses: Uses of substances as such or in preparations at industrial sites*
 - SU8 *Manufacture of bulk, large scale chemicals (including petroleum products)*
 - SU9 *Manufacture of fine chemicals*
- **Process category**
 - PROC1 *Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.*
 - PROC2 *Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions*
 - PROC3 *Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition*
 - PROC4 *Chemical production where opportunity for exposure arises*
 - PROC8a *Transfer of substance or mixture (charging and discharging) at non-dedicated facilities*
 - PROC8b *Transfer of substance or mixture (charging and discharging) at dedicated facilities*
 - PROC9 *Transfer of substance or mixture into small containers (dedicated filling line, including weighing)*
 - PROC15 *Use as laboratory reagent*
- **Environmental release category**
 - ERC1 *Manufacture of the substance*
 - ERC2 *Formulation into mixture*
 - ERC3 *Formulation into solid matrix*
 - ERC4 *Use of non-reactive processing aid at industrial site (no inclusion into or onto article)*
 - ERC5 *Use at industrial site leading to inclusion into/onto article*
 - ERC6a *Use of intermediate*
 - ERC6b *Use of reactive processing aid at industrial site (no inclusion into or onto article)*
 - ERC6c *Use of monomer in polymerisation processes at industrial site (inclusion or not into/onto article)*
 - ERC6d *Use of reactive process regulators in polymerisation processes at industrial site (inclusion or not into/onto article)*
 - ERC7 *Use of functional fluid at industrial site*
- **Description of the activities / processes covered in the Exposure Scenario**

Loading (including marine vessel/barge, rail/road car and IBC loading) and repacking (including drums and small packs) of substance, including its sampling, storage, unloading, distribution and associated laboratory activities.
- **Conditions of use**
- **Duration and frequency**
- **Worker**

*Regular use with exposure up to 8 hrs. per workday.
(unless stated differently)*
- **Environment**

As no environmental hazard was identified no environmental exposure assessment and risk characterization has been carried out.
- **Physical parameters**
- **Physical state**

*Fluid
highly volatile
Vapour pressure: 60.2 hPa (20 °C)*
- **Concentration of the substance in the mixture** *Includes concentrations up to: 100%*
- **Other operational conditions**

The use assumes ≤ 20 °C above ambient temperature, if not indicated otherwise.
- **Other operational conditions affecting worker exposure**

Assumes a good basic standard of occupational hygiene is implemented

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- Risk management measures

General measures (flammable liquid):

Risks of the physicochemical properties of substances, such as flammability or explosiveness, can be controlled by implementing risk management measures. It is recommended to follow the new ATEX Directive 2014/34 / EU. Based on the implementation of a selection of risk management measures for handling and storage for the identified uses, the risk can be viewed as controlled at an acceptable level. Use in closed systems. Avoid ignition sources - Do not smoke. Use in well-ventilated areas to avoid the formation of an explosive atmosphere. Devices and protective systems approved for inflammable substances. Limit the flow rate in the pipes during pumping to avoid electrostatic charging. Clean the tank and the plant to be filled. Use a spark-free tool. Observe relevant EU / national guidelines. Observe additional notes in the SDS.

For following contributing scenarios store substance within a closed system:

General exposures (closed systems): PROC1, PROC2, PROC3

For the following contributing scenarios clean transfer lines before decoupling:

General exposures (open systems): PROC4

Bulk transfers (closed systems): PROC8b

Bulk transfers (open systems): PROC8b

For following contributing scenarios avoid sampling by immersion:

Process sampling: PROC3

Storage (closed system): PROC2

For following contributing scenarios no other specific measures are identified:

Laboratory activities: PROC15

For following contributing scenarios Store substance within a closed system:

Storage: PROC2

For the following contributing scenarios apply access method for containers, including compressed air supply:

Equipment cleaning and maintenance: PROC8a

For the following contributing scenarios clear spills immediately:

Drum and small package filling: PROC9

additional close containers immediately after use with lid.

- Worker protection

- Personal protective measures

For more information on "Personal protective equipment" see section 8 of the MSDS

- Disposal measures

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

If possible, send to be recycled, otherwise burn or deposit in a certified facility.

- Exposure estimation The exposure estimation was carried out in accordance with ECETOC TRA.

- Worker (dermal)

.	Exposure estimation	RCR
PROC1:	1,37 mg/kg/d	0,0015
PROC2:	1,37 mg/kg/d	0,00
PROC3:	0,34 mg/kg/d	0,00
PROC4:	6,86 mg/kg/d	0,01
PROC8a:	13,71 mg/kg/d	0,02
PROC8b:	6,86 mg/kg/d	0,01
PROC9:	6,86 mg/kg/d	0,01
PROC15:	0,34 mg/kg/d	0,00

- Worker (inhalation)

.	Exposure estimation	RCR
PROC1:	0,01 ppm	0,000491
PROC2:	10 ppm	0,05
PROC3:	25 ppm	0,12
PROC4:	20 ppm	0,10
PROC8a:	50 ppm	0,25

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PROC8b: 50 ppm 0,25
PROC9: 50 ppm 0,25
PROC15: 10 ppm 0,05

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- Environment

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

- Guidance for downstream users

Health:

The available data on hazards do not confirm the need for a DNEL value to other health effects.

Expected exposure does not exceed the DNEL / DMEL values when the risk management measures / operating conditions are observed.

Risk management measures are based on the qualitative risk description.

If further risk management measures / operating conditions are adopted, users should ensure that risks are limited to at least an equivalent level.

Available hazard data do not support the need for a DNEL to be established for other health effects.

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/ Operational Conditions are implemented.

Risk Management Measures are based on qualitative risk characterisation.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

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Annex: Exposure scenario 2

- **Short title of the exposure scenario** Formulation and (re)packing of substances and mixtures
- **Sector of Use**
 - SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites
 - SU10 Formulation [mixing] of preparations and/or re-packaging (excluding alloys)
- **Process category**
 - PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.
 - PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
 - PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
 - PROC4 Chemical production where opportunity for exposure arises
 - PROC5 Mixing or blending in batch processes
 - PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
 - PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities
 - PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
 - PROC14 Tableting, compression, extrusion, pelletisation, granulation
 - PROC15 Use as laboratory reagent
- **Environmental release category** ERC2 Formulation into mixture
- **Description of the activities / processes covered in the Exposure Scenario**

Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, tableting, compression, pelletisation, extrusion, large and small scale packing, sampling, maintenance and associated laboratory activities.
- **Conditions of use**
- **Duration and frequency**
- **Worker**

Regular use with exposure up to 8 hrs. per workday.
(unless stated differently)
- **Environment**

As no environmental hazard was identified no environmental exposure assessment and risk characterization has been carried out.
- **Physical parameters**
- **Physical state**

Fluid
highly volatile
Vapour pressure: 60.2 hPa (20 °C)
- **Concentration of the substance in the mixture** Includes concentrations up to: 100%
- **Other operational conditions**

The use assumes ≤ 20 ° C above ambient temperature, if not indicated otherwise.
- **Other operational conditions affecting worker exposure**

Assumes a good basic standard of occupational hygiene is implemented
- **Risk management measures**

General measures (flammable liquid):
Risks of the physicochemical properties of substances, such as flammability or explosiveness, can be controlled by implementing risk management measures. It is recommended to follow the new ATEX Directive 2014/34 / EU. Based on the implementation of a selection of risk management measures for handling and storage for the identified uses, the risk can be viewed as controlled at an acceptable level. Use in closed systems. Avoid ignition sources - Do not smoke. Use in well-ventilated areas to avoid the formation of an explosive atmosphere. Devices and protective systems approved for inflammable substances. Limit the flow rate in the pipes during pumping to avoid electrostatic charging. Clean the tank and the plant to be filled. Use a spark-free tool. Observe relevant EU / national guidelines. Observe additional notes in the SDS.

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For following contributing scenarios store substance within a closed system:
 General exposures (closed systems): PROC1, PROC2, PROC3
 For following contributing scenarios no other specific measures are identified:
 General exposures (open systems): PROC4
 Batch processes at elevated temperatures Operation is carried out at elevated temperature (> 20°C above ambient temperature): PROC3
 Laboratory activities: PROC15
 Mixing operations (open systems): PROC5
 Manual Transfer from/pouring from containers: PROC8a
 Drum/batch transfers: PROC8b
 Production of preparations or articles by tableting, compression, extrusion, pelettisation: PROC14
 For following contributing scenarios avoid sampling by immersion:
 Process sampling: PROC3
 Storage (closed system): PROC2
 For the following contributing scenarios clean transfer lines before decoupling:
 Bulk transfers: PROC8b
 For the following contributing scenarios clear spills immediately:
 Bulk transfers (open systems): PROC8b
 For following contributing scenarios Store substance within a closed system:
 Storage: PROC2
 For the following contributing scenarios apply access method for containers, including compressed air supply:
 Equipment cleaning and maintenance: PROC8a
 For the following contributing scenarios reseal container after use:
 Drum and small package filling: PROC9
 For the following contributing scenarios vapors displaced remotely vent:
 Mass Transfer: PROC 8b

- Worker protection

- Personal protective measures

For more information on "Personal protective equipment" see section 8 of the MSDS

- Disposal measures

Must not be disposed of together with household garbage. Do not allow product to reach sewage system. If possible, send to be recycled, otherwise burn or deposit in a certified facility.

- Exposure estimation The exposure estimation was carried out in accordance with ECETOC TRA.

- Worker (dermal)

	Exposure estimation	RCR
PROC1:	0.34 mg/kg/d	0.00
PROC2:	1.37 mg/kg/d	0.00
PROC3:	0.34 mg/kg/d	0.00
PROC4:	6.86 mg/kg/d	0.01
PROC5:	13.71 mg/kg/d	0.02
PROC8a:	13.71 mg/kg/d	0.02
PROC8b:	6.86 mg/kg/d	0.01
PROC9:	6.86 mg/kg/d	0.01
PROC14:	3.43 mg/kg/d	0.00
PROC15:	0.34 mg/kg/d	0.00

- Worker (inhalation)

	Exposure estimation	RCR
PROC1:	0,01 ppm	0,00
PROC2:	10 ppm	0,05
PROC3:	25 ppm	0,12
	100 ppm	0,49
PROC4:	5 ppm	0,50
	20 ppm	0,10
PROC5:	50 ppm	0,25

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PROC8a:	50	ppm	0,25
PROC8b:	50	ppm	0,25
PROC9:	50	ppm	0,25
PROC14:	50	ppm	0,25
PROC15:	10	ppm	0,05

- Environment

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

- Guidance for downstream users

Health:

The available data on hazards do not confirm the need for a DNEL value to other health effects.

Expected exposure does not exceed the DNEL / DMEL values when the risk management measures / operating conditions are observed.

Risk management measures are based on the qualitative risk description.

If further risk management measures / operating conditions are adopted, users should ensure that risks are limited to at least an equivalent level.

Detailed information on the exposure estimation can be found at <http://www.ecetoc.org/tra>.

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Annex: Exposure scenario 3

- Short title of the exposure scenario

Uses in Coatings

Industrial

- Sector of Use SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites

- Process category

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

PROC4 Chemical production where opportunity for exposure arises

PROC5 Mixing or blending in batch processes

PROC7 Industrial spraying

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

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

PROC10 Roller application or brushing

PROC13 Treatment of articles by dipping and pouring

PROC14 Tableting, compression, extrusion, pelletisation, granulation

PROC15 Use as laboratory reagent

- Environmental release category

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

- Description of the activities / processes covered in the Exposure Scenario

Covers the use in coatings (paints, inks, adhesives, etc.) including exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application by spray, roller, spreader, dip, flow, fluidized bed on production lines and film formation) and equipment cleaning, maintenance and associated laboratory activities.

- Conditions of use

- Duration and frequency

- Worker

Regular use with exposure up to 8 hrs. per workday.

(unless stated differently)

- Environment

As no environmental hazard was identified no environmental exposure assessment and risk characterization has been carried out.

- Physical parameters

- Physical state

Fluid

Vapour pressure: 5 -100 hPa (20 °C)

- Concentration of the substance in the mixture Includes concentrations up to: 100%

- Other operational conditions

The use assumes ≤ 20 °C above ambient temperature, if not indicated otherwise.

- Other operational conditions affecting worker exposure

Assumes a good basic standard of occupational hygiene is implemented

- Risk management measures

General measures (flammable liquid):

Risks of the physicochemical properties of substances, such as flammability or explosiveness, can be controlled by implementing risk management measures. It is recommended to follow the new ATEX Directive 2014/34 / EU. Based on the implementation of a selection of risk management measures for handling and storage for the identified uses, the risk can be viewed as controlled at an acceptable level. Use in closed systems. Avoid ignition sources - Do not smoke. Use in well-ventilated areas to avoid the

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formation of an explosive atmosphere. Devices and protective systems approved for inflammable substances. Limit the flow rate in the pipes during pumping to avoid electrostatic charging. Clean the tank and the plant to be filled. Use a spark-free tool. Observe relevant EU / national guidelines. Observe additional notes in the SDS.

For following contributing scenarios store substance within a closed system:

General exposures (closed systems): PROC1, PROC3

General exposure (closed systems) with sampling Use in closed systems: PROC2

Film formation - force drying, stoving and other technologies: PROC2

Mixing operations (closed systems): PROC3

For following contributing scenarios no other specific measures are identified:

Film formation - air drying: PROC4

Preparation of material for application Mixing operations (open systems): PROC5

Roller, spreader, flow application: PROC10

Laboratory activities: PROC15

Material transfers Drum / batch (filling and pouring from containers): PROC9

Production of preparations or articles by tableting, compression, extrusion, pelettisation: PROC14

For the following contributing scenarios clean transfer lines before decoupling:

Material transfers: PROC8a, PROC8b

For the following contributing scenarios avoid manual contact with wet work pieces:

dipping and pouring: PROC13

For following contributing scenarios, carry out in a vented booth provided with laminar airflow:

Spraying (automatic/robotic): PROC7

For the following contributing scenarios a sufficient measure of controlled ventilation must be ensured (10 to 15 air changes per hour):

Manual Spraying: PROC7

- Worker protection

- Personal protective measures

For more information on "Personal protective equipment" see section 8 of the MSDS

- Disposal measures

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

If possible, send to be recycled, otherwise burn or deposit in a certified facility.

- Exposure estimation The exposure estimation was carried out in accordance with ECETOC TRA.

- Worker (dermal)

	Exposure estimation	RCR
PROC1:	0,34 mg/kg/d	0,0
PROC2:	1,37 mg/kg/d	0,0
PROC3:	0,34 mg/kg/d	0,0
PROC4:	6,86 mg/kg/d	0,0
PROC5:	13,71 mg/kg/d	0,0
PROC7:	42,86 mg/kg/d	0,0
PROC8a:	13,71 mg/kg/d	0,0
PROC8b:	6,86 mg/kg/d	0,0
PROC9:	6,86 mg/kg/d	0,0
PROC10:	27,43 mg/kg/d	0,0
PROC13:	0,69 mg/kg/d	0,0
PROC14:	3,43 mg/kg/d	0,0
PROC15:	0,34 mg/kg/d	0,0

- Worker (inhalation)

	Exposure estimation	RCR
PROC1:	0,01 ppm	0,0
PROC2:	10 ppm	0,0
	50 ppm	0,2
PROC3:	25 ppm	0,1
PROC4:	20 ppm	0,1
PROC5:	50 ppm	0,2

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PROC7:	50	ppm	0,2
	75	ppm	0,4
PROC8a:	75	ppm	0,2
PROC8b:	50	ppm	0,2
PROC9:	50	ppm	0,2
PROC10:	50	ppm	0,2
PROC13:	50	ppm	0,2
PROC14:	50	ppm	0,2
PROC15:	10	ppm	0,0

- Environment

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

- Guidance for downstream users

Health:

The available data on hazards do not confirm the need for a DNEL value to other health effects.

Expected exposure does not exceed the DNEL / DMEL values when the risk management measures / operating conditions are observed.

Risk management measures are based on the qualitative risk description.

If further risk management measures / operating conditions are adopted, users should ensure that risks are limited to at least an equivalent level.

Detailed information on the exposure estimation can be found at <http://www.ecetoc.org/tra>.

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Annex: Exposure scenario 4

- Short title of the exposure scenario

Use in cleaning agents

Industrial

- Sector of Use SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites

- Process category

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

PROC4 Chemical production where opportunity for exposure arises

PROC7 Industrial spraying

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

PROC10 Roller application or brushing

PROC13 Treatment of articles by dipping and pouring

- Environmental release category

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

- Description of the activities / processes covered in the Exposure Scenario

Covers the use as a component of cleaning products including transfers from storage, pouring/unloading from drums or containers. Exposures during mixing/diluting in the preparatory phase and cleaning activities (including spraying, brushing, dipping, wiping, automated and by hand), related equipment cleaning and maintenance.

- Conditions of use

- Duration and frequency

- Worker

Regular use with exposure up to 8 hrs. per workday.

(unless stated differently)

- Environment

As no environmental hazard was identified no environmental exposure assessment and risk characterization has been carried out.

- Physical parameters

- Physical state

Fluid

Vapour pressure: 5 -100 hPa (20 °C)

- Concentration of the substance in the mixture Includes concentrations up to: 100%

- Other operational conditions

The use assumes ≤ 20 ° C above ambient temperature, if not indicated otherwise.

- Other operational conditions affecting worker exposure

Assumes a good basic standard of occupational hygiene is implemented

- Risk management measures

General measures (flammable liquid):

Risks of the physicochemical properties of substances, such as flammability or explosiveness, can be controlled by implementing risk management measures. It is recommended to follow the new ATEX Directive 2014/34 / EU. Based on the implementation of a selection of risk management measures for handling and storage for the identified uses, the risk can be viewed as controlled at an acceptable level. Use in closed systems. Avoid ignition sources - Do not smoke. Use in well-ventilated areas to avoid the formation of an explosive atmosphere. Devices and protective systems approved for inflammable substances. Limit the flow rate in the pipes during pumping to avoid electrostatic charging. Clean the tank and the plant to be filled. Use a spark-free tool. Observe relevant EU / national guidelines. Observe additional notes in the SDS.

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For following contributing scenarios no other specific measures are identified:

Automated process with (semi) closed systems. Use in contained systems: PROC2

Automated process with (semi) closed systems Drum/batch transfers Use in contained systems: PROC3

Application of cleaning products in closed systems: -

Use in closed batch processes: PROC4

Degreasing small objects in cleaning station: PROC13

Cleaning with low-pressure washers: PROC10

Manual surface cleaning: PROC10

For the following contributing scenarios clean transfer lines before decoupling:

Bulk transfers: PROC8a

Filling / preparation of equipment from drums or containers: PROC8b

For the following contributing scenarios a sufficient measure of controlled ventilation must be ensured (10 to 15 air changes per hour):

Cleaning with high pressure washers: PROC7

- Worker protection

- Personal protective measures

For more information on "Personal protective equipment" see section 8 of the MSDS

- Disposal measures

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

If possible, send to be recycled, otherwise burn or deposit in a certified facility.

- Exposure estimation The exposure estimation was carried out in accordance with ECETOC TRA.

- Worker (dermal)

.	Exposure estimation	RCR
PROC2:	1,37 mg/kg/d	0,0
PROC3:	0,34 mg/kg/d	0,0
PROC4:	6,86 mg/kg/d	0,0
PROC7:	42,86 mg/kg/d	0,0
PROC8a:	13,71 mg/kg/d	0,0
PROC8b:	6,86 mg/kg/d	0,0
PROC10:	27,43 mg/kg/d	0,0
	13,71 mg/kg/d	0,0
PROC13:	13,71 mg/kg/d	0,0

- Worker (inhalation)

.	Exposure estimation	RCR
PROC2:	10 ppm	0,0
PROC3:	25 ppm	0,1
PROC4:	100 ppm	0,5
PROC7:	75 ppm	0,4
PROC8a:	50 ppm	0,2
PROC8b:	50 ppm	0,2
PROC10:	50 ppm	0,2
PROC13:	50 ppm	0,2

- Environment

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

- Guidance for downstream users

Health:

The available data on hazards do not confirm the need for a DNEL value to other health effects.

Expected exposure does not exceed the DNEL / DMEL values when the risk management measures / operating conditions are observed.

Risk management measures are based on the qualitative risk description.

If further risk management measures / operating conditions are adopted, users should ensure that risks are limited to at least an equivalent level.

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Detailed information on the exposure estimation can be found at <http://www.ecetoc.org/tra>.

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Annex: Exposure scenario 5

- Short title of the exposure scenario

Lubricants
Industrial

- Sector of Use SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites

- Process category

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

PROC4 Chemical production where opportunity for exposure arises

PROC7 Industrial spraying

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

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

PROC10 Roller application or brushing

PROC13 Treatment of articles by dipping and pouring

PROC17 Lubrication at high energy conditions in metal working operations

PROC18 General greasing /lubrication at high kinetic energy conditions

- Environmental release category

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

ERC7 Use of functional fluid at industrial site

- Description of the activities / processes covered in the Exposure Scenario

Covers the use of formulated lubricants in closed and open systems including material transfers operations, operation of machinery/engines and similar articles, reworking on reject articles, equipment maintenance and disposal of wastes.

- Conditions of use

- Duration and frequency

- Worker

Regular use with exposure up to 8 hrs. per workday.
(unless stated differently)

- Environment

As no environmental hazard was identified no environmental exposure assessment and risk characterization has been carried out.

- Physical parameters

- Physical state

Fluid

Vapour pressure: 62.2 hPa (20 °C)

- Concentration of the substance in the mixture Includes concentrations up to: 100%

- Other operational conditions

The use assumes ≤ 20 °C above ambient temperature, if not indicated otherwise.

- Other operational conditions affecting worker exposure

Assumes a good basic standard of occupational hygiene is implemented

- Risk management measures

General measures (flammable liquid):

Risks of the physicochemical properties of substances, such as flammability or explosiveness, can be controlled by implementing risk management measures. It is recommended to follow the new ATEX Directive 2014/34 / EU. Based on the implementation of a selection of risk management measures for handling and storage for the identified uses, the risk can be viewed as controlled at an acceptable level. Use in closed systems. Avoid ignition sources - Do not smoke. Use in well-ventilated areas to avoid the formation of an explosive atmosphere. Devices and protective systems approved for inflammable

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substances. Limit the flow rate in the pipes during pumping to avoid electrostatic charging. Clean the tank and the plant to be filled. Use a spark-free tool. Observe relevant EU / national guidelines. Observe additional notes in the SDS.

For following contributing scenarios store substance within a closed system:

General exposures (closed systems): PROC1, PROC2, PROC3

For following contributing scenarios Store substance within a closed system:

Storage: PROC1, PROC2

For following contributing scenarios avoid sampling by immersion:

Storage (closed system): PROC1, PROC2

For following contributing scenarios no other specific measures are identified:

General exposures (open systems): PROC4

Filling / preparation of equipment from drums or containers: PROC8a, PROC8b

Initially, factory fill of equipment: PROC9

Roller application or brushing: PROC10

Treatment by dipping and pouring: PROC13

Maintenance (of large systems) and machine set-up operation is carried out at elevated temperature (> 20 ° C above ambient temperature): PROC8b

For the following contributing scenarios clean transfer lines before decoupling:

Bulk transfers (closed systems): PROC8b

Maintenance (of large systems) and machine set-up: PROC8b

For the following contributing scenarios avoid manual contact with wet work pieces:

Maintenance of small installations: PROC8a

For the following contributing scenarios clear spills immediately:

Bulk transfers: PROC8b

For the following contributing scenarios limit access area to the facilities:

Operation and lubrication of open equipment with high energy : PROC17, PROC18

For the following scenarios drain downs in sealed storage pending disposal or for subsequent recycle:

Recycling of rejects: PROC9

Equipment cleaning and maintenance: PROC8a

For the following contributing scenarios minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings (Effectiveness: -)

Spraying: PROC7

For the following scenarios deaerate displaced vapors remotely: (-)

Mass Transfer: PROC 8b

- Worker protection

- Technical protective measures

Replacing, where appropriate, manual processes by automated and/or closed processes. This would avoid irritating mists, sprayings and subsequent potential splashes:

- Use closed systems or covering of open containers (e.g. screens).

- Transport over pipes, technical barrel filling/emptying of barrel with automatic systems (suction pumps etc.).

- Use of pliers, grip arms with long handles with manual use to avoid direct contact and exposure by splashes (no working over one's head).

- Local exhaust ventilation and/or general ventilation is good practice.

- Personal protective measures

For more information on "Personal protective equipment" see section 8 of the MSDS

- Disposal measures

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

If possible, send to be recycled, otherwise burn or deposit in a certified facility.

- Exposure estimation The exposure estimation was carried out in accordance with ECETOC TRA.

- Worker (dermal)

	Exposure estimation	RCR
PROC1:	1,37 mg/kg/d	0,00
PROC2:	1,37 mg/kg/d	0,00
PROC3:	0,34 mg/kg/d	0,00

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PROC4:	0,69 mg/kg/d	0,00
PROC7:	2,14 mg/kg/d	0,00
PROC8a:	13,71 mg/kg/d	0,02
	6,86 mg/kg/d	0,01
PROC8b:	6,86 mg/kg/d	0,01
	0,69 mg/kg/d	0,00
PROC9:	6,86 mg/kg/d	0,01
	0,69 mg/kg/d	0,00
PROC10:	27,43 mg/kg/d	0,03
PROC13:	13,71 mg/kg/d	0,02
PROC17:	1,37 mg/kg/d	0,00
PROC18:	0,69 mg/kg/d	0,00

- Worker (inhalation)

	Exposure estimation	RCR
PROC1:	10 ppm	0,05
PROC2:	10 ppm	0,05
PROC3:	25 ppm	0,12
PROC4:	5 ppm	0,50
	20 ppm	0,10
PROC7:	1 ppm	0,10
	12,5 ppm	0,06
PROC8a:	50 ppm	0,25
PROC8b:	50 ppm	0,25
	150 ppm	0,74
PROC9:	50 ppm	0,25
PROC10:	50 ppm	0,25
PROC13:	50 ppm	0,25
PROC17:	50 ppm	0,25
	4 ppm	0,40
PROC18:	50 ppm	0,25
	4 ppm	0,40

- Environment

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

- Guidance for downstream users

Health:

The available data on hazards do not confirm the need for a DNEL value to other health effects.

Expected exposure does not exceed the DNEL / DMEL values when the risk management measures / operating conditions are observed.

Risk management measures are based on the qualitative risk description.

If further risk management measures / operating conditions are adopted, users should ensure that risks are limited to at least an equivalent level.

Detailed information on the exposure estimation can be found at <http://www.ecetoc.org/tra>.

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Annex: Exposure scenario 6

- Short title of the exposure scenario

Metal working fluids / rolling oils

Industrial

- Sector of Use SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites

- Process category

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

PROC4 Chemical production where opportunity for exposure arises

PROC5 Mixing or blending in batch processes

PROC7 Industrial spraying

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

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

PROC10 Roller application or brushing

PROC13 Treatment of articles by dipping and pouring

PROC17 Lubrication at high energy conditions in metal working operations

- Environmental release category

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

- Description of the activities / processes covered in the Exposure Scenario

Covers the use in formulated metal working fluids/rolling oils including transfer operations, rolling and annealing

activities, cutting/machining activities, automated and manual application of corrosion protections (including brushing,

dipping and spraying), equipment maintenance, draining and disposal of waste oils.

- Conditions of use

- Duration and frequency

- Worker

Regular use with exposure up to 8 hrs. per workday.

(unless stated differently)

- Environment

As no environmental hazard was identified no environmental exposure assessment and risk characterization has been carried out.

- Physical parameters

- Physical state

Fluid

Vapour pressure: 62.2 hPa (20 °C)

- Concentration of the substance in the mixture Includes concentrations up to: 100%

- Other operational conditions

The use assumes ≤ 20 °C above ambient temperature, if not indicated otherwise.

- Other operational conditions affecting worker exposure

Assumes a good basic standard of occupational hygiene is implemented

- Risk management measures

General measures (flammable liquid):

Risks of the physicochemical properties of substances, such as flammability or explosiveness, can be controlled by implementing risk management measures. It is recommended to follow the new ATEX Directive 2014/34 / EU. Based on the implementation of a selection of risk management measures for handling and storage for the identified uses, the risk can be viewed as controlled at an acceptable level. Use in closed systems. Avoid ignition sources - Do not smoke. Use in well-ventilated areas to avoid the

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formation of an explosive atmosphere. Devices and protective systems approved for inflammable substances. Limit the flow rate in the pipes during pumping to avoid electrostatic charging. Clean the tank and the plant to be filled. Use a spark-free tool. Observe relevant EU / national guidelines. Observe additional notes in the SDS.

For following contributing scenarios store substance within a closed system:

General exposures (closed systems): PROC1, PROC2, PROC3

For following contributing scenarios Store substance within a closed system:

Storage: PROC1, PROC2

For following contributing scenarios no other specific measures are identified:

General exposures (open systems): PROC4

Filling / preparation of equipment from drums or containers: PROC5, PROC8b, PROC9

Automated metal rolling and forming operation is carried out at elevated temperature (> 20 ° C above ambient temperature). Contained use: PROC2

For the following contributing scenarios clean transfer lines before decoupling:

Bulk transfers: PROC8b

For the following contributing scenarios using special equipment:

Process sampling: PROC8b

For the following contributing scenarios limit access area to the facilities:

Metalworking activities: PROC17

For the following contributing scenarios give the product time to drain from the workpiece:

dipping and pouring: PROC13

For the following contributing scenarios minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings (Effectiveness: -)

Spraying: PROC7

Semiautomatic metal rolling and metal forming operation is carried out at elevated temperature (> 20 ° C above ambient temperature): PROC17

For the following scenarios drain downs in sealed storage pending disposal or for subsequent recycle:

Equipment cleaning and maintenance: PROC8a, PROC8b

- Worker protection

- Technical protective measures

Replacing, where appropriate, manual processes by automated and/or closed processes. This would avoid irritating mists, sprayings and subsequent potential splashes:

- Use closed systems or covering of open containers (e.g. screens).

- Transport over pipes, technical barrel filling/emptying of barrel with automatic systems (suction pumps etc.).

- Use of pliers, grip arms with long handles with manual use to avoid direct contact and exposure by splashes (no working over one's head).

- Local exhaust ventilation and/or general ventilation is good practice.

Avoid splashes.

- Personal protective measures

For more information on "Personal protective equipment" see section 8 of the MSDS

- Disposal measures

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

If possible, send to be recycled, otherwise burn or deposit in a certified facility.

- Exposure estimation The exposure estimation was carried out in accordance with ECETOC TRA.

- Worker (dermal)

	Exposure estimation	RCR
PROC1:	1,37 mg/kg/d	0,00
PROC2:	1,37 mg/kg/d	0,00
	0,14 mg/kg/d	0,00
PROC3:	0,34 mg/kg/d	0,00
PROC4:	6,86 mg/kg/d	0,01
PROC5:	13,71 mg/kg/d	0,02
PROC7:	2,14 mg/kg/d	0,00
	42,86 mg/kg/d	0,00

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PROC8a:	13,71 mg/kg/d	0,02
PROC8b:	6,86 mg/kg/d	0,01
PROC9:	6,86 mg/kg/d	0,01
PROC10:	27,43 mg/kg/d	0,03
PROC13:	13,71 mg/kg/d	0,02
PROC17:	1,37 mg/kg/d	0,00
	27,43 mg/kg/d	0,00

- Worker (inhalation)

	Exposure estimation	RCR
PROC1:	10 ppm	0,05
	20 ppm	0,10
PROC2:	10 ppm	0,05
	20 ppm	0,10
	50 ppm	0,25
PROC3:	25 ppm	0,12
PROC4:	20 ppm	0,10
	100 ppm	0,49
PROC5:	50 ppm	0,25
PROC7:	4 ppm	0,40
	50 ppm	0,25
PROC8a:	50 ppm	0,25
PROC8b:	50 ppm	0,25
PROC9:	50 ppm	0,25
PROC10:	50 ppm	0,25
PROC13:	50 ppm	0,25
PROC17:	100 ppm	0,49
	50 ppm	0,25
	2 ppm	0,20

- Environment

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

- Guidance for downstream users

Health:

The available data on hazards do not confirm the need for a DNEL value to other health effects.

Expected exposure does not exceed the DNEL / DMEL values when the risk management measures / operating conditions are observed.

Risk management measures are based on the qualitative risk description.

If further risk management measures / operating conditions are adopted, users should ensure that risks are limited to at least an equivalent level.

Detailed information on the exposure estimation can be found at <http://www.ecetoc.org/tra>.

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Annex: Exposure scenario 7

- Short title of the exposure scenario

blowing agent

Industrial

- **Sector of Use** SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites

- Process category

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

PROC4 Chemical production where opportunity for exposure arises

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

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

PROC12 Use of blowing agents in manufacture of foam

- Environmental release category

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

- Description of the activities / processes covered in the Exposure Scenario

Use as a blowing agent for hard and soft foams, including material transfer, mixing and spraying, hardening, cutting, storage and packaging.

- Conditions of use

- Duration and frequency

- Worker

Regular use with exposure up to 8 hrs. per workday.

(unless stated differently)

- Environment

As no environmental hazard was identified no environmental exposure assessment and risk characterization has been carried out.

- Physical parameters

- Physical state

Fluid

Vapour pressure: 62.2 hPa (20 °C)

- **Concentration of the substance in the mixture** Includes concentrations up to: 100%

- Other operational conditions

The use assumes ≤ 20 °C above ambient temperature, if not indicated otherwise.

- Other operational conditions affecting worker exposure

Assumes a good basic standard of occupational hygiene is implemented

- Risk management measures

General measures (flammable liquid):

Risks of the physicochemical properties of substances, such as flammability or explosiveness, can be controlled by implementing risk management measures. It is recommended to follow the new ATEX Directive 2014/34 / EU. Based on the implementation of a selection of risk management measures for handling and storage for the identified uses, the risk can be viewed as controlled at an acceptable level.

Use in closed systems. Avoid ignition sources - Do not smoke. Use in well-ventilated areas to avoid the formation of an explosive atmosphere. Devices and protective systems approved for inflammable substances. Limit the flow rate in the pipes during pumping to avoid electrostatic charging. Clean the tank and the plant to be filled. Use a spark-free tool. Observe relevant EU / national guidelines. Observe additional notes in the SDS.

For following contributing scenarios no other specific measures are identified:

Mixing operations (closed systems): PROC1

Storage: PROC12

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Extrusion and expansion of the polymer composition: PROC12

Cutting and planing: PROC12

Collection and recycling of shavings, pieces of wood, etc.: PROC12

Product packaging: PROC12

Mixing operations (closed systems) operation is carried out at elevated temperature (> 20 ° C above ambient temperature): PROC3

Storage of polymer intermediates operation is carried out at elevated temperature (> 20 ° C above ambient temperature): PROC3

Centrifugation including emptying operation is carried out at elevated temperature (> 20 ° C above ambient temperature): PROC3

Drying and storage: PROC12

packing medium-sized amounts: PROC8b

Behandlung durch Erhitzen Betrieb erfolgt bei erhöhter Temperatur (>20°C über Umgebungstemperatur): PROC12

Cast product operation is carried out at elevated temperature (> 20 ° C below ambient temperature): PROC12

Cutting with hot wire Manual: PROC12

For the following contributing scenarios clean transfer lines before decoupling:

Bulk transfers: PROC8b

If, possible use vapor recovery systems.

- Worker protection

- Personal protective measures

For more information on "Personal protective equipment" see section 8 of the MSDS

- Disposal measures

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

If possible, send to be recycled, otherwise burn or deposit in a certified facility.

- Exposure estimation The exposure estimation was carried out in accordance with ECETOC TRA.

- Worker (dermal)

	Exposure estimation	RCR
PROC1:	0,34 mg/kg/d	0,00
PROC3:	0,34 mg/kg/d	0,00
PROC8b:	6,86 mg/kg/d	0,01
PROC12:	0,34 mg/kg/d	0,00

- Worker (inhalation)

	Exposure estimation	RCR
PROC1:	0,01 ppm	0,00
PROC3:	50 ppm	0,25
PROC8b:	150 ppm	0,74
PROC12:	100 ppm	0,49

- Environment

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

- Guidance for downstream users

Health:

The available data on hazards do not confirm the need for a DNEL value to other health effects.

Expected exposure does not exceed the DNEL / DMEL values when the risk management measures / operating conditions are observed.

Risk management measures are based on the qualitative risk description.

If further risk management measures / operating conditions are adopted, users should ensure that risks are limited to at least an equivalent level.

Detailed information on the exposure estimation can be found at <http://www.ecetoc.org/tra>.

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Trade name: Isopropanol 99%

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Annex: Exposure scenario 8

- Short title of the exposure scenario

Use as binders and release agents
Industrial

- Sector of Use SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites

- Process category

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

PROC4 Chemical production where opportunity for exposure arises

PROC6 Calendering operations

PROC7 Industrial spraying

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

PROC10 Roller application or brushing

PROC13 Treatment of articles by dipping and pouring

PROC14 Tableting, compression, extrusion, pelletisation, granulation

- Environmental release category

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

- Description of the activities / processes covered in the Exposure Scenario

Covers the use as binders and release agents including material transfers, mixing, application (including spraying and brushing), mould forming and casting, and handling of waste.

- Conditions of use

- Duration and frequency

- Worker

Regular use with exposure up to 8 hrs. per workday.
(unless stated differently)

- Environment

As no environmental hazard was identified no environmental exposure assessment and risk characterization has been carried out.

- Physical parameters

- Physical state

Fluid

Vapour pressure: 62.2 hPa (20 °C)

- Concentration of the substance in the mixture Includes concentrations up to: 100%

- Other operational conditions

The use assumes ≤ 20 ° C above ambient temperature, if not indicated otherwise.

- Other operational conditions affecting worker exposure

Assumes a good basic standard of occupational hygiene is implemented

- Risk management measures

General measures (flammable liquid):

Risks of the physicochemical properties of substances, such as flammability or explosiveness, can be controlled by implementing risk management measures. It is recommended to follow the new ATEX Directive 2014/34 / EU. Based on the implementation of a selection of risk management measures for handling and storage for the identified uses, the risk can be viewed as controlled at an acceptable level. Use in closed systems. Avoid ignition sources - Do not smoke. Use in well-ventilated areas to avoid the formation of an explosive atmosphere. Devices and protective systems approved for inflammable substances. Limit the flow rate in the pipes during pumping to avoid electrostatic charging. Clean the tank and the plant to be filled. Use a spark-free tool. Observe relevant EU / national guidelines. Observe additional notes in the SDS.

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For following contributing scenarios no other specific measures are identified:

Mixing operations (closed systems): PROC3

Mixing operations (open systems): PROC4

Drum/batch transfers: PROC8b

Mould forming: PROC14

Roller application or brushing: PROC10

For the following contributing scenarios clean transfer lines before decoupling:

Material transfers: PROC1, PROC2, PROC3

For following contributing scenarios Store substance within a closed system:

Storage: PROC1, PROC2

For following contributing scenarios carry out in a vented booth or extracted housing :

Manual Spraying: PROC7

For following contributing scenarios provide extract ventilation to points where emissions occur:

Casting method (open system) operation is carried out at elevated temperature (> 20 ° C above ambient temperature). Aerosol generation through increased processing temperature: PROC6

For the following contributing scenarios minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings (Effectiveness: -)

Spraying Machine: PROC7

If possible, automate activities.

- Worker protection

- Personal protective measures

For more information on "Personal protective equipment" see section 8 of the MSDS

- Disposal measures

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

If possible, send to be recycled, otherwise burn or deposit in a certified facility.

- Exposure estimation The exposure estimation was carried out in accordance with ECETOC TRA.

- Worker (dermal)

	Exposure estimation	RCR
PROC1:	0,14 mg/kg/d	0,00
	1,37 mg/kg/d	0,00
PROC2:	0,14 mg/kg/d	0,00
	1,37 mg/kg/d	0,00
PROC3:	0,14 mg/kg/d	0,00
	0,34 mg/kg/d	0,00
PROC4:	6,86 mg/kg/d	0,01
PROC6:	1,37 mg/kg/d	0,00
	27,43 mg/kg/d	0,03
PROC7:	42,86 mg/kg/d	0,05
	2,14 mg/kg/d	0,00
PROC8b:	6,86 mg/kg/d	0,01
PROC10:	27,43 mg/kg/d	0,03
PROC14:	3,43 mg/kg/d	0,00

- Worker (inhalation)

	Exposure estimation	RCR
PROC1:	10 ppm	0,05
	25 ppm	0,12
PROC2:	10 ppm	0,05
	25 ppm	0,12
PROC3:	25 ppm	0,12
PROC4:	20 ppm	0,10
PROC6:	2,5 ppm	0,25
	25 ppm	0,12
PROC7:	175 ppm	0,86
	5 ppm	0,50
	25 ppm	0,12

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Trade name: Isopropanol 99%

PROC8b: 50 ppm 0,25
PROC10: 50 ppm 0,25
PROC14: 50 ppm 0,25

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- Environment

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

- Guidance for downstream users

Health:

The available data on hazards do not confirm the need for a DNEL value to other health effects.

Expected exposure does not exceed the DNEL / DMEL values when the risk management measures / operating conditions are observed.

Risk management measures are based on the qualitative risk description.

If further risk management measures / operating conditions are adopted, users should ensure that risks are limited to at least an equivalent level.

Detailed information on the exposure estimation can be found at <http://www.ecetoc.org/tra>.

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Trade name: Isopropanol 99%

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Annex: Exposure scenario 9

- Short title of the exposure scenario

Use as a fuel

Industrial

- Sector of Use SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites

- Process category

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

PROC16 Use of fuels

- Environmental release category ERC7 Use of functional fluid at industrial site

- Notes Specific Environmental Release Category: ESVOC 7.12a.v1

- Description of the activities / processes covered in the Exposure Scenario

Covers the use as a fuel (or fuel additive and additive components) and includes activities associated with its transfer, use, equipment maintenance and handling of waste.

- Conditions of use

- Duration and frequency

- Worker

Regular use with exposure up to 8 hrs. per workday.

(unless stated differently)

- Environment

As no environmental hazard was identified no environmental exposure assessment and risk characterization has been carried out.

- Physical parameters

- Physical state

Fluid

Vapour pressure: 62.2 hPa (20 °C)

- Concentration of the substance in the mixture Includes concentrations up to: 100%

- Other operational conditions

The use assumes ≤ 20 °C above ambient temperature, if not indicated otherwise.

- Other operational conditions affecting worker exposure

Assumes a good basic standard of occupational hygiene is implemented

- Risk management measures

General measures (flammable liquid):

Risks of the physicochemical properties of substances, such as flammability or explosiveness, can be controlled by implementing risk management measures. It is recommended to follow the new ATEX Directive 2014/34 / EU. Based on the implementation of a selection of risk management measures for handling and storage for the identified uses, the risk can be viewed as controlled at an acceptable level.

Use in closed systems. Avoid ignition sources - Do not smoke. Use in well-ventilated areas to avoid the formation of an explosive atmosphere. Devices and protective systems approved for inflammable substances. Limit the flow rate in the pipes during pumping to avoid electrostatic charging. Clean the tank and the plant to be filled. Use a spark-free tool. Observe relevant EU / national guidelines. Observe additional notes in the SDS.

For following contributing scenarios store substance within a closed system:

Bulk transfers (closed systems): PROC8b

General exposures (closed systems): PROC1, PROC2

Use as a fuel: PROC3

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For the following contributing scenarios clean transfer lines before decoupling:

Bulk transfers: PROC8b

For the following contributing scenarios clear spills immediately:

Drum/batch transfers: PROC8b

For the following contributing scenarios apply access method for containers, including compressed air supply:

Equipment cleaning and maintenance: PROC8a

Container cleaning: PROC8a

For following contributing scenarios Store substance within a closed system:

Storage: PROC1, PROC2

For following contributing scenarios avoid sampling by immersion:

Storage (closed system): PROC1, PROC2

For following contributing scenarios no other specific measures are identified:

Use as a fuel, general exposures (closed systems): PROC1, PROC2, PROC3, PROC16

- Worker protection

- Personal protective measures

For more information on "Personal protective equipment" see section 8 of the MSDS

- Disposal measures

Must not be disposed of together with household garbage. Do not allow product to reach sewage system. If possible, send to be recycled, otherwise burn or deposit in a certified facility.

- Exposure estimation The exposure estimation was carried out in accordance with ECETOC TRA.

- Worker (dermal)

.	Exposure estimation	RCR
PROC1:	1,37 mg/kg/d	0,00
PROC2:	1,37 mg/kg/d	0,00
PROC3:	0,34 mg/kg/d	0,00
PROC8a:	13.71 mg/kg/d	0,02
PROC8b:	6,86 mg/kg/d	0,01
PROC16:	0,34 mg/kg/d	0,00

- Worker (inhalation)

.	Exposure estimation	RCR
PROC1:	10 ppm	0,05
PROC2:	10 ppm	0,05
PROC3:	25 ppm	0,12
PROC8a:	50 ppm	0,25
PROC8b:	50 ppm	0,25
PROC16:	5 ppm	0,02

- Environment

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

- Guidance for downstream users

Health:

The available data on hazards do not confirm the need for a DNEL value to other health effects.

Expected exposure does not exceed the DNEL / DMEL values when the risk management measures / operating conditions are observed.

Risk management measures are based on the qualitative risk description.

If further risk management measures / operating conditions are adopted, users should ensure that risks are limited to at least an equivalent level.

Detailed information on the exposure estimation can be found at <http://www.ecetoc.org/tra>.

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Annex: Exposure scenario 10

- Short title of the exposure scenario

functional Fluids

Industrial

- Sector of Use SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites

- Process category

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

PROC4 Chemical production where opportunity for exposure arises

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

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

- Environmental release category ERC7 Use of functional fluid at industrial site

- Description of the activities / processes covered in the Exposure Scenario

Use as functional fluids e.g. cable oils, transfer oils, coolants, insulators, refrigerants, hydraulic fluids in industrial equipment including maintenance and related material transfers.

- Conditions of use

- Duration and frequency

- Worker

Regular use with exposure up to 8 hrs. per workday.

(unless stated differently)

- Environment

As no environmental hazard was identified no environmental exposure assessment and risk characterization has been carried out.

- Physical parameters

- Physical state

Fluid

Vapour pressure: 62.2 hPa (20 °C)

- Concentration of the substance in the mixture Includes concentrations up to: 100%

- Other operational conditions

The use assumes ≤ 20 °C above ambient temperature, if not indicated otherwise.

- Other operational conditions affecting worker exposure

Assumes a good basic standard of occupational hygiene is implemented

- Risk management measures

General measures (flammable liquid):

Risks of the physicochemical properties of substances, such as flammability or explosiveness, can be controlled by implementing risk management measures. It is recommended to follow the new ATEX Directive 2014/34 / EU. Based on the implementation of a selection of risk management measures for handling and storage for the identified uses, the risk can be viewed as controlled at an acceptable level.

Use in closed systems. Avoid ignition sources - Do not smoke. Use in well-ventilated areas to avoid the formation of an explosive atmosphere. Devices and protective systems approved for inflammable substances. Limit the flow rate in the pipes during pumping to avoid electrostatic charging. Clean the tank and the plant to be filled. Use a spark-free tool. Observe relevant EU / national guidelines. Observe additional notes in the SDS.

For the following contributing scenarios Transfer via enclosed lines:

Bulk transfers: PROC1, PROC2

For the following contributing scenarios clean transfer lines before decoupling:

Bulk transfers (closed systems): PROC1, PROC2

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For following contributing scenarios no other specific measures are identified:

Drum/batch transfers: PROC8b

Filling of articles / equipment (closed systems): PROC9

General exposures (closed systems): PROC2

General exposures (open systems): PROC4

General exposures (open systems) Operation is carried out at elevated temperature (> 20°C above ambient temperature): PROC4

For following contributing scenarios use drum pumps or carefully pour out container:

General exposures (closed systems) with occasional controlled exposure: Proc2

For the following scenarios drain downs in sealed storage pending disposal or for subsequent recycle:

Recycling of rejects: PROC9

Equipment maintenance: PROC8a

For following contributing scenarios Store substance within a closed system:

Storage: PROC1, PROC2

- Worker protection

- Personal protective measures

For more information on "Personal protective equipment" see section 8 of the MSDS

- Disposal measures

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

If possible, send to be recycled, otherwise burn or deposit in a certified facility.

- Exposure estimation The exposure estimation was carried out in accordance with ECETOC TRA.

- Worker (dermal)

	Exposure estimation	RCR
PROC1:	1,37 mg/kg/d	0,00
PROC2:	1,37 mg/kg/d	0,00
PROC4:	6,86 mg/kg/d	0,01
PROC8a:	13.71 mg/kg/d	0,02
PROC8b:	6,86 mg/kg/d	0,01
PROC9:	6,86 mg/kg/d	0,01

- Worker (inhalation)

	Exposure estimation	RCR
PROC1:	10 ppm	0,05
PROC2:	10 ppm	0,05
PROC4:	20 ppm	0,10
	25 ppm	0,12
	100 ppm	0,49
PROC8a:	50 ppm	0,25
PROC8b:	50 ppm	0,25
PROC9:	50 ppm	0,25

- Environment

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

- Guidance for downstream users

Health:

The available data on hazards do not confirm the need for a DNEL value to other health effects.

Expected exposure does not exceed the DNEL / DMEL values when the risk management measures / operating conditions are observed.

Risk management measures are based on the qualitative risk description.

If further risk management measures / operating conditions are adopted, users should ensure that risks are limited to at least an equivalent level.

Detailed information on the exposure estimation can be found at <http://www.ecetoc.org/tra>.

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Annex: Exposure scenario 11

- Short title of the exposure scenario

Rubber production and processing
Industrial

- Sector of Use SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites

- Process category

- PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.
PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
PROC4 Chemical production where opportunity for exposure arises
PROC5 Mixing or blending in batch processes
PROC6 Calendering operations
PROC7 Industrial spraying
PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities
PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
PROC13 Treatment of articles by dipping and pouring
PROC14 Tableting, compression, extrusion, pelletisation, granulation
PROC15 Use as laboratory reagent
PROC21 Low energy manipulation and handling of substances bound in/on materials or articles

- Environmental release category

- ERC1 Manufacture of the substance
ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
ERC6d Use of reactive process regulators in polymerisation processes at industrial site (inclusion or not into/onto article)

- Notes Specific Environmental Release Category: ESVOC 4.19.v1

- Description of the activities / processes covered in the Exposure Scenario

Manufacture of tyres and general rubber articles, including processing of raw (uncured) rubber, handling and mixing of rubber additives, vulcanising, cooling and finishing.

- Conditions of use

- Duration and frequency

- Worker

Regular use with exposure up to 8 hrs. per workday.
(unless stated differently)

- Environment

As no environmental hazard was identified no environmental exposure assessment and risk characterization has been carried out.

- Physical parameters

- Physical state

Fluid
Vapour pressure: 62.2 hPa (20 °C)

- Concentration of the substance in the mixture Includes concentrations up to: 100%

- Other operational conditions

The use assumes ≤ 20 °C above ambient temperature, if not indicated otherwise.

- Other operational conditions affecting worker exposure

Assumes a good basic standard of occupational hygiene is implemented

- Risk management measures

General measures (flammable liquid):
Risks of the physicochemical properties of substances, such as flammability or explosiveness, can be controlled by implementing risk management measures. It is recommended to follow the new ATEX

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Directive 2014/34 / EU. Based on the implementation of a selection of risk management measures for handling and storage for the identified uses, the risk can be viewed as controlled at an acceptable level. Use in closed systems. Avoid ignition sources - Do not smoke. Use in well-ventilated areas to avoid the formation of an explosive atmosphere. Devices and protective systems approved for inflammable substances. Limit the flow rate in the pipes during pumping to avoid electrostatic charging. Clean the tank and the plant to be filled. Use a spark-free tool. Observe relevant EU / national guidelines. Observe additional notes in the SDS.

For following contributing scenarios no other specific measures are identified:

Material transfers (closed systems): PROC1, PROC2

Masses weighing: PROC1, PROC2

Small scale weighing: PROC9

Additive premix: PROC3, PROC4, PROC5

Material transfers: PROC8b, PROC9

Pressing uncured rubber blanks: PROC14

Production of products by dipping and pouring: PROC13

Equipment operations: PROC21

Equipment maintenance: PROC8a

For following contributing scenarios Store substance within a closed system:

Storage: PROC1, PROC2

For the following contributing scenarios minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings (Effectiveness: -)

Tire building: PROC7

For the following exposure scenarios by deducting with full enclosure of the operation or equipment minimize:

Calendering (including Banburys), elevated temperature: PROC6

Vulcanization operation is carried out at elevated temperature (> 20 ° C below ambient temperature): PROC6

Cooling cured products operation is carried out at elevated temperature (> 20 ° C above ambient temperature): PROC6

For the following scenarios ensure additional ventilation at transportation points and other openings:

Vulcanization operation is carried out at elevated temperature (> 20 ° C below ambient temperature).

Manual: PROC6

For the following scenarios substance in a closed system:

Material transfers: PROC8b

- Worker protection

- Personal protective measures

For more information on "Personal protective equipment" see section 8 of the MSDS

- Disposal measures

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

If possible, send to be recycled, otherwise burn or deposit in a certified facility.

- Exposure estimation The exposure estimation was carried out in accordance with ECETOC TRA.

- Worker (dermal)

	Exposure estimation	RCR
PROC1:	1,37 mg/kg/d	0,00
	0,14 mg/kg/d	0,00
PROC2:	1,37 mg/kg/d	0,00
	0,14 mg/kg/d	0,00
PROC3:	0,34 mg/kg/d	0,00
PROC4:	0,34 mg/kg/d	0,00
PROC5:	13,71 mg/kg/d	0,02
PROC6:	27,43 mg/kg/d	0,03
PROC7:	42,86 mg/kg/d	0,05
PROC8a:	13,71 mg/kg/d	0,02
PROC8b:	6,86 mg/kg/d	0,01
PROC9:	6,86 mg/kg/d	0,01

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PROC13:	13.71 mg/kg/d	0,02
PROC14:	3.43 mg/kg/d	0,00
PROC21:	2,83 mg/kg/d	0,00

- Worker (inhalation)

.	Exposure estimation		RCR
PROC1:	10	ppm	0,05
PROC2:	10	ppm	0,05
PROC3:	25	ppm	0,12
PROC4:	25	ppm	0,12
PROC5:	50	ppm	0,25
PROC6:	25	ppm	0,12
PROC7:	25	ppm	0,12
PROC8a:	50	ppm	0,25
PROC8b:	25	ppm	0,12
	50	ppm	0,25
PROC9:	50	ppm	0,25
PROC13:	50	ppm	0,25
PROC14:	50	ppm	0,25
PROC21:	0	ppm	0,00

- Environment

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

- Guidance for downstream users

Health:

The available data on hazards do not confirm the need for a DNEL value to other health effects.

Expected exposure does not exceed the DNEL / DMEL values when the risk management measures / operating conditions are observed.

Risk management measures are based on the qualitative risk description.

If further risk management measures / operating conditions are adopted, users should ensure that risks are limited to at least an equivalent level.

Detailed information on the exposure estimation can be found at <http://www.ecetoc.org/tra>.

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Trade name: Isopropanol 99%

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Annex: Exposure scenario 12

- Short title of the exposure scenario

Polymer processing
Industrial

- Sector of Use

SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites
SU10 Formulation [mixing] of preparations and/or re-packaging (excluding alloys)

- Process category

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.
PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
PROC4 Chemical production where opportunity for exposure arises
PROC5 Mixing or blending in batch processes
PROC6 Calendering operations
PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities
PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
PROC13 Treatment of articles by dipping and pouring
PROC14 Tableting, compression, extrusion, pelletisation, granulation
PROC21 Low energy manipulation and handling of substances bound in/on materials or articles

- Environmental release category

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

- Description of the activities / processes covered in the Exposure Scenario

Processing of formulated polymers including material transfers, additives handling (e.g. pigments, stabilisers, fillers, plasticisers, etc.), moulding, curing, and forming activities, material re-works, storage and associated maintenance.

- Conditions of use

- Duration and frequency

- Worker

Regular use with exposure up to 8 hrs. per workday.
(unless stated differently)

- Environment

As no environmental hazard was identified no environmental exposure assessment and risk characterization has been carried out.

- Physical parameters

- Physical state

Fluid

Vapour pressure: 62.2 hPa (20 °C)

- Concentration of the substance in the mixture Includes concentrations up to: 100%

- Other operational conditions

The use assumes ≤ 20 °C above ambient temperature, if not indicated otherwise.

- Other operational conditions affecting worker exposure

Assumes a good basic standard of occupational hygiene is implemented

- Risk management measures

General measures (flammable liquid):

Risks of the physicochemical properties of substances, such as flammability or explosiveness, can be controlled by implementing risk management measures. It is recommended to follow the new ATEX Directive 2014/34 / EU. Based on the implementation of a selection of risk management measures for handling and storage for the identified uses, the risk can be viewed as controlled at an acceptable level.

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Trade name: Isopropanol 99%

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Use in closed systems. Avoid ignition sources - Do not smoke. Use in well-ventilated areas to avoid the formation of an explosive atmosphere. Devices and protective systems approved for inflammable substances. Limit the flow rate in the pipes during pumping to avoid electrostatic charging. Clean the tank and the plant to be filled. Use a spark-free tool. Observe relevant EU / national guidelines. Observe additional notes in the SDS.

For following contributing scenarios no other specific measures are identified:

Material transfers (closed systems): PROC1, PROC2

Calendering (including Banburys), elevated temperature: PROC6

Production of products by dipping and pouring: PROC13

Extrusion and granulation: PROC14

Injection molding of products: PROC14

Equipment operations: PROC21

For following contributing scenarios Store substance within a closed system:

Storage: PROC1, PROC2

For following contributing scenarios store substance within a closed system:

Bulk transfers (closed systems): PROC8b

Masses weighing: PROC1, PROC2

For the following scenarios careful handling of the substance to minimize releases:

Small scale weighing: PROC9

Additive premix: PROC3, PROC4

Additive premix avoid activities involving exposure for more than 4 hours: PROC5

For the following contributing scenarios clear spills immediately:

Equipment maintenance: PROC8a

For the following scenarios use dry break couplings for material transfer:

Bulk transfers: PROC8b, PROC9

- Worker protection

- Personal protective measures

For more information on "Personal protective equipment" see section 8 of the MSDS

- Disposal measures

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

If possible, send to be recycled, otherwise burn or deposit in a certified facility.

- Exposure estimation The exposure estimation was carried out in accordance with ECETOC TRA.

- Worker (dermal)

	Exposure estimation	RCR
PROC1:	1,37 mg/kg/d	0,00
PROC2:	1,37 mg/kg/d	0,00
PROC3:	6,86 mg/kg/d	0,01
PROC4:	6,86 mg/kg/d	0,01
PROC5:	13,71 mg/kg/d	0,02
PROC6:	27,43 mg/kg/d	0,03
PROC8a:	13,71 mg/kg/d	0,02
PROC8b:	6,86 mg/kg/d	0,01
PROC9:	6,86 mg/kg/d	0,01
PROC13:	13,71 mg/kg/d	0,02
PROC14:	3,43 mg/kg/d	0,00
PROC21:	2,83 mg/kg/d	0,00

- Worker (inhalation)

	Exposure estimation	RCR
PROC1:	10 ppm	0,05
PROC2:	10 ppm	0,05
PROC3:	25 ppm	0,12
PROC4:	25 ppm	0,12
PROC5:	50 ppm	0,25
PROC6:	25 ppm	0,12
	50 ppm	0,25

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Trade name: Isopropanol 99%

PROC8a:	50	ppm	0,25
PROC8b:	25	ppm	0,12
	50	ppm	0,25
PROC9:	50	ppm	0,25
PROC13:	50	ppm	0,25
PROC14:	50	ppm	0,25
PROC21:	0	ppm	0,00

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- Environment

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

- Guidance for downstream users

Health:

The available data on hazards do not confirm the need for a DNEL value to other health effects.

Expected exposure does not exceed the DNEL / DMEL values when the risk management measures / operating conditions are observed.

Risk management measures are based on the qualitative risk description.

If further risk management measures / operating conditions are adopted, users should ensure that risks are limited to at least an equivalent level.

Detailed information on the exposure estimation can be found at <http://www.ecetoc.org/tra>.

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Trade name: Isopropanol 99%

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Annex: Exposure scenario 13

- Short title of the exposure scenario

Use for water treatment

Industrial

- Sector of Use SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites

- Process category

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

PROC4 Chemical production where opportunity for exposure arises

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

PROC13 Treatment of articles by dipping and pouring

- Environmental release category

ERC3 Formulation into solid matrix

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

- Description of the activities / processes covered in the Exposure Scenario

Covers use of the substance for water treatment in industrial environments in open and closed systems.

- Conditions of use

- Duration and frequency

- Worker

Regular use with exposure up to 8 hrs. per workday.

(unless stated differently)

- Environment

As no environmental hazard was identified no environmental exposure assessment and risk characterization has been carried out.

- Physical parameters

- Physical state

Fluid

Vapour pressure: 62.2 hPa (20 °C)

- Concentration of the substance in the mixture Includes concentrations up to: 100%

- Other operational conditions

The use assumes ≤ 20 °C above ambient temperature, if not indicated otherwise.

- Other operational conditions affecting worker exposure

Assumes a good basic standard of occupational hygiene is implemented

- Risk management measures

General measures (flammable liquid):

Risks of the physicochemical properties of substances, such as flammability or explosiveness, can be controlled by implementing risk management measures. It is recommended to follow the new ATEX Directive 2014/34 / EU. Based on the implementation of a selection of risk management measures for handling and storage for the identified uses, the risk can be viewed as controlled at an acceptable level.

Use in closed systems. Avoid ignition sources - Do not smoke. Use in well-ventilated areas to avoid the formation of an explosive atmosphere. Devices and protective systems approved for inflammable substances. Limit the flow rate in the pipes during pumping to avoid electrostatic charging. Clean the tank and the plant to be filled. Use a spark-free tool. Observe relevant EU / national guidelines. Observe additional notes in the SDS.

For following contributing scenarios store substance within a closed system:

Mass transfer Special plant: PROC2

For following contributing scenarios Store substance within a closed system:

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Trade name: Isopropanol 99%

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Storage: PROC1

For following contributing scenarios use drum pumps or carefully pour out container:

Pouring from small containers: PROC13

For the following scenarios drain downs in sealed storage pending disposal or for subsequent recycle:

Equipment maintenance: PROC8a

For the following contributing scenarios limit access area to the facilities:

General exposures (open systems): PROC4

For the following scenarios avoid spillages when removing the pump:

Drum/batch transfers: PROC8b

For the following contributing scenarios clean transfer lines before decoupling:

Bulk transfers: PROC2

For following contributing scenarios no other specific measures are identified:

General exposures (closed systems): PROC3

- Worker protection

- Personal protective measures

For more information on "Personal protective equipment" see section 8 of the MSDS

- Disposal measures

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

If possible, send to be recycled, otherwise burn or deposit in a certified facility.

- Exposure estimation The exposure estimation was carried out in accordance with ECETOC TRA.

- Worker (dermal)

	Exposure estimation	RCR
PROC1:	0,34 mg/kg/d	0,00
PROC2:	1,37 mg/kg/d	0,00
PROC3:	0,34 mg/kg/d	0,00
PROC4:	6,86 mg/kg/d	0,01
PROC8a:	6,86 mg/kg/d	0,01
PROC8b:	6,86 mg/kg/d	0,01
PROC13:	13.71 mg/kg/d	0,02

- Worker (inhalation)

	Exposure estimation	RCR
PROC1:	0,01 ppm	0,00
PROC2:	10 ppm	0,05
PROC3:	25 ppm	0,12
PROC4:	20 ppm	0,10
PROC8a:	50 ppm	0,25
PROC8b:	50 ppm	0,25
PROC13:	50 ppm	0,25

- Environment

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

- Guidance for downstream users

Health:

The available data on hazards do not confirm the need for a DNEL value to other health effects.

Expected exposure does not exceed the DNEL / DMEL values when the risk management measures / operating conditions are observed.

Risk management measures are based on the qualitative risk description.

If further risk management measures / operating conditions are adopted, users should ensure that risks are limited to at least an equivalent level.

Detailed information on the exposure estimation can be found at <http://www.ecetoc.org/tra>.

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Trade name: Isopropanol 99%

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Annex: Exposure scenario 14

- Short title of the exposure scenario

Uses in Coatings

Professional

- Sector of Use

SU22 Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

- Process category

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

PROC4 Chemical production where opportunity for exposure arises

PROC5 Mixing or blending in batch processes

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

PROC10 Roller application or brushing

PROC11 Non industrial spraying

PROC13 Treatment of articles by dipping and pouring

PROC15 Use as laboratory reagent

PROC19 Manual activities involving hand contact

- Environmental release category

ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)

ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)

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

- Conditions of use

Covers the use in coatings (paints, inks, adhesives, etc) including exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application by spray, roller, brush, spreader by hand or similar methods, and film formation) and equipment cleaning, maintenance and associated laboratory activities.

- Duration and frequency

- Worker

Regular use with exposure up to 8 hrs. per workday.

(unless stated differently)

- Environment

As no environmental hazard was identified no environmental exposure assessment and risk characterization has been carried out.

- Physical parameters

- Physical state

Fluid

Vapour pressure: 5 -100 hPa (20 °C)

- Concentration of the substance in the mixture Includes concentrations up to: 100%

- Other operational conditions

The use assumes ≤ 20 ° C above ambient temperature, if not indicated otherwise.

- Other operational conditions affecting worker exposure

Assumes a good basic standard of occupational hygiene is implemented

- Risk management measures

General measures (flammable liquid):

Risks of the physicochemical properties of substances, such as flammability or explosiveness, can be controlled by implementing risk management measures. It is recommended to follow the new ATEX Directive 2014/34 / EU. Based on the implementation of a selection of risk management measures for handling and storage for the identified uses, the risk can be viewed as controlled at an acceptable level.

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Use in closed systems. Avoid ignition sources - Do not smoke. Use in well-ventilated areas to avoid the formation of an explosive atmosphere. Devices and protective systems approved for inflammable substances. Limit the flow rate in the pipes during pumping to avoid electrostatic charging. Clean the tank and the plant to be filled. Use a spark-free tool. Observe relevant EU / national guidelines. Observe additional notes in the SDS.

For following contributing scenarios store substance within a closed system:

General exposures (closed systems): PROC1, PROC2

Filling / preparation of equipment from drums or containers: PROC2

Film formation - air drying: PROC4

Preparation of material for the application: PROC3, PROC5

Material transfers Drum / batch (filling and pouring from containers): PROC8a, PROC8b

Roller, spreader, flow application: PROC10

Laboratory activities: PROC15

Application by hand - finger paints, crayons, glue, Outdoor: PROC19

For following contributing scenarios carry out in a vented booth or extracted housing :

Manual Spraying, Indoor: PROC11

For following contributing scenarios ensure operation is undertaken outdoors:

Manual Spraying, Outdoor: PROC11

For the following contributing scenarios avoid manual contact with wet work pieces:

dipping and pouring: PROC13

For the following contributing scenarios clear spills immediately:

dipping and pouring, Indoor: PROC13

dipping and pouring, Outdoor: PROC13

For following contributing scenarios a good standard of general ventilation must be ensured (3 to 5 air changes per hour):

Application by hand - finger paints, crayons, glue, Indoor: PROC19

- Worker protection

- Personal protective measures

For more information on "Personal protective equipment" see section 8 of the MSDS

- Disposal measures

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

If possible, send to be recycled, otherwise burn or deposit in a certified facility.

- Exposure estimation The exposure estimation was carried out in accordance with ECETOC TRA.

- Worker (dermal)

	Exposure estimation	RCR
PROC1:	0,34 mg/kg/d	0,0
PROC2:	1,37 mg/kg/d	0,0
PROC3:	0,34 mg/kg/d	0,0
PROC4:	6,86 mg/kg/d	0,0
	0,69 mg/kg/d	0,0
PROC5:	13,71 mg/kg/d	0,0
PROC8a:	13,71 mg/kg/d	0,0
PROC8b:	6,86 mg/kg/d	0,0
PROC10:	27,43 mg/kg/d	0,0
PROC11:	107,14 mg/kg/d	0,1
PROC13:	13,71 mg/kg/d	0,0
PROC15:	0,34 mg/kg/d	0,0
PROC19:	141,43 mg/kg/d	0,2

- Worker (inhalation)

	Exposure estimation	RCR
PROC1:	0,01 ppm	0,0
PROC2:	20 ppm	0,1
PROC3:	25 ppm	0,1
PROC4:	50 ppm	0,2
PROC5:	100 ppm	0,5

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Trade name: Isopropanol 99%

PROC8a:	100	ppm	0,5
PROC8b:	50	ppm	0,2
PROC10:	100	ppm	0,5
PROC11:	100	ppm	0,5
	150	ppm	0,7
PROC13:	100	ppm	0,5
PROC15:	10	ppm	0,0
PROC19:	100	ppm	0,5

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- Environment

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

- Guidance for downstream users

Health:

The available data on hazards do not confirm the need for a DNEL value to other health effects.

Expected exposure does not exceed the DNEL / DMEL values when the risk management measures / operating conditions are observed.

Risk management measures are based on the qualitative risk description.

If further risk management measures / operating conditions are adopted, users should ensure that risks are limited to at least an equivalent level.

Detailed information on the exposure estimation can be found at <http://www.ecetoc.org/tra>.

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Trade name: Isopropanol 99%

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Annex: Exposure scenario 15

- Short title of the exposure scenario

Use in cleaning agents

Professional

- Sector of Use

SU22 Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

- Process category

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

PROC4 Chemical production where opportunity for exposure arises

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

PROC10 Roller application or brushing

PROC11 Non industrial spraying

PROC13 Treatment of articles by dipping and pouring

PROC19 Manual activities involving hand contact

- Environmental release category

ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)

ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)

- Description of the activities / processes covered in the Exposure Scenario

Covers the use as a component of cleaning products including pouring/unloading from drums or containers; and exposures during mixing/diluting in the preparatory phase and cleaning activities (including spraying, brushing, dipping, wiping, automated and by hand).

- Conditions of use

- Duration and frequency

- Worker

Regular use with exposure up to 8 hrs. per workday.

(unless stated differently)

- Environment

As no environmental hazard was identified no environmental exposure assessment and risk characterization has been carried out.

- Physical parameters

- Physical state

Fluid

Vapour pressure: 5 -100 hPa (20 °C)

- Concentration of the substance in the mixture Includes concentrations up to: 100%

- Other operational conditions

The use assumes ≤ 20 °C above ambient temperature, if not indicated otherwise.

- Other operational conditions affecting worker exposure

Assumes a good basic standard of occupational hygiene is implemented

- Risk management measures

General measures (flammable liquid):

Risks of the physicochemical properties of substances, such as flammability or explosiveness, can be controlled by implementing risk management measures. It is recommended to follow the new ATEX Directive 2014/34 / EU. Based on the implementation of a selection of risk management measures for handling and storage for the identified uses, the risk can be viewed as controlled at an acceptable level. Use in closed systems. Avoid ignition sources - Do not smoke. Use in well-ventilated areas to avoid the formation of an explosive atmosphere. Devices and protective systems approved for inflammable substances. Limit the flow rate in the pipes during pumping to avoid electrostatic charging. Clean the tank

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Trade name: Isopropanol 99%

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and the plant to be filled. Use a spark-free tool. Observe relevant EU / national guidelines. Observe additional notes in the SDS.

For following contributing scenarios no other specific measures are identified:

Automated process with (semi) closed systems. Use in contained systems: PROC2

Automated process with (semi) closed systems Drum/batch transfers Use in contained systems: PROC3

Semi Automated process. (e.g.: Semi automatic application of floor care and maintenance products): PROC4

Filling / preparation of equipment from drums or containers: PROC8a, PROC8b

Manual Surfaces Cleaning (Dipping, immersion and pouring): PROC13

Cleaning with low-pressure washers (Rolling, Brushing - no spraying): PROC10

Manual Surfaces Cleaning, Spraying: PROC10

Ad hoc manual application via trigger sprays, dipping, rolling, brushing, etc.: PROC10

Application of cleaning products in closed systems: outdoor

Cleaning of medical devices: PROC4

For following contributing scenarios a good standard of general ventilation must be ensured (3 to 5 air changes per hour):

Cleaning with high pressure washers, Spraying. Indoor: PROC11

For following contributing scenarios ensure operation is undertaken outdoors:

Cleaning with high pressure washers, Spraying, Outdoor: PROC11

Material amount restrict to 5%

- Worker protection

- Personal protective measures

For more information on "Personal protective equipment" see section 8 of the MSDS

- Disposal measures

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

If possible, send to be recycled, otherwise burn or deposit in a certified facility.

- Exposure estimation The exposure estimation was carried out in accordance with ECETOC TRA.

- Worker (dermal)

	Exposure estimation	RCR
PROC2:	1,37 mg/kg/d	0,0
PROC3:	0,34 mg/kg/d	0,0
PROC4:	6,86 mg/kg/d	0,0
PROC8a:	13,71 mg/kg/d	0,0
PROC8b:	13,71 mg/kg/d	0,0
PROC10:	27,43 mg/kg/d	0,0
PROC11:	107,14 mg/kg/d	0,1
PROC13:	13,71 mg/kg/d	0,0

- Worker (inhalation)

	Exposure estimation	RCR
PROC2:	20 ppm	0,1
PROC3:	25 ppm	0,1
PROC4:	50 ppm	0,2
PROC8a:	100 ppm	0,5
PROC8b:	50 ppm	0,2
PROC10:	100 ppm	0,5
PROC11:	150 ppm	0,7
PROC11:	35 ppm	0,2
PROC13:	100 ppm	0,5

- Environment

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

- Guidance for downstream users

Health:

The available data on hazards do not confirm the need for a DNEL value to other health effects.

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Expected exposure does not exceed the DNEL / DMEL values when the risk management measures / operating conditions are observed.

Risk management measures are based on the qualitative risk description.

If further risk management measures / operating conditions are adopted, users should ensure that risks are limited to at least an equivalent level.

Detailed information on the exposure estimation can be found at <http://www.ecetoc.org/tra>.

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Version number 205

Revision: 09.01.2020

Trade name: Isopropanol 99%

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Annex: Exposure scenario 16

- Short title of the exposure scenario

Lubricants
Professional

- Sector of Use

SU22 Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

- Process category

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.
PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
PROC4 Chemical production where opportunity for exposure arises
PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities
PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
PROC10 Roller application or brushing
PROC11 Non industrial spraying
PROC13 Treatment of articles by dipping and pouring
PROC17 Lubrication at high energy conditions in metal working operations
PROC18 General greasing /lubrication at high kinetic energy conditions
PROC20 Use of functional fluids in small devices

- Environmental release category

ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)
ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)
ERC9a Widespread use of functional fluid (indoor)
ERC9b Widespread use of functional fluid (outdoor)

- Description of the activities / processes covered in the Exposure Scenario

Covers the use of formulated lubricants in closed and open systems including material transfers operations, operation of machinery/engines and similar articles, reworking on reject articles, equipment maintenance and disposal of wastes.

- Conditions of use

- Duration and frequency

- Worker

Regular use with exposure up to 8 hrs. per workday.
(unless stated differently)

- Environment

As no environmental hazard was identified no environmental exposure assessment and risk characterization has been carried out.

- Physical parameters

- Physical state

Fluid
Vapour pressure: 5 - 100 hPa (20 °C)

- Concentration of the substance in the mixture Includes concentrations up to: 100%

- Other operational conditions

The use assumes ≤ 20 °C above ambient temperature, if not indicated otherwise.

- Other operational conditions affecting worker exposure

Assumes a good basic standard of occupational hygiene is implemented

- Risk management measures

General measures (flammable liquid):
Risks of the physicochemical properties of substances, such as flammability or explosiveness, can be controlled by implementing risk management measures. It is recommended to follow the new ATEX

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Directive 2014/34 / EU. Based on the implementation of a selection of risk management measures for handling and storage for the identified uses, the risk can be viewed as controlled at an acceptable level. Use in closed systems. Avoid ignition sources - Do not smoke. Use in well-ventilated areas to avoid the formation of an explosive atmosphere. Devices and protective systems approved for inflammable substances. Limit the flow rate in the pipes during pumping to avoid electrostatic charging. Clean the tank and the plant to be filled. Use a spark-free tool. Observe relevant EU / national guidelines. Observe additional notes in the SDS.

For following contributing scenarios store substance within a closed system:

General exposures (closed systems): PROC1, PROC2, PROC3

For following contributing scenarios no other specific measures are identified:

General exposures (closed systems): PROC1, PROC2, PROC3

Use of equipment which engine oil or oil included: PROC20

General exposures (open systems): PROC4

Bulk transfers: PROC8b

Filling / preparation of equipment from drums or containers: PROC8a, PROC8b

Maintenance (of large systems) and machine set-up: PROC8b

Engine lubricant service: PROC9

Roller application or brushing: PROC10

For the following contributing scenarios limit access area to the facilities:

Operation and lubrication of open equipment with high energy : PROC17, PROC18

For following contributing scenarios Store substance within a closed system:

Use in closed batch processes: PROC1, PROC2

For the following scenarios drain downs in sealed storage pending disposal or for subsequent recycle:

Maintenance of small installations operating at elevated temperature (> 20 ° C above ambient temperature): PROC8a

For the following contributing scenarios give the product time to drain from the workpiece:

Treatment by dipping and pouring: PROC13

For following contributing scenarios provide extract ventilation to points where emissions occur:

Operation and lubrication of high energy open equipment with: PROC17, PROC18

For the following contributing scenarios ensure additional ventilation at emission point if contact with hot lubricants (> 50 ° C) is likely:

Maintenance (of large systems) and machine set-up operation is carried out at elevated temperature (> 20 ° C above ambient temperature). PROC8b

For the following contributing scenarios respirator conforming to EN140 with filter Type A/P2 or better wear:

Maintenance of small installations operating at elevated temperature (> 20 ° C above ambient temperature). PROC8a

For the following contributing scenarios Minimise exposure by deduction with partial enclosure of the operation or equipment and air extraction at openings. OR respiratory protection in accordance with EN 140 with filter type A/P2 or better wear. Avoid the execution of the operation for more than 4 hours: spraying PROC11

For the following contributing scenarios minimise exposure by deduction with partial enclosure of the operation or equipment and air extraction at openings. OR ensure a good standard of general ventilation. Respirator conforming to EN140 with filter Type A/P2 or better wear:

Treatment by dipping and pouring PROC13

- Worker protection

- Technical protective measures

Ensure a good standard of general ventilation. Natural ventilation is from doors, windows etc.. Controlled ventilation means the supply or exhaust air by a powered fan.

- Personal protective measures

For more information on "Personal protective equipment" see section 8 of the MSDS

- Disposal measures

Must not be disposed of together with household garbage. Do not allow product to reach sewage system. If possible, send to be recycled, otherwise burn or deposit in a certified facility.

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Trade name: Isopropanol 99%

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- **Exposure estimation** The exposure estimation was carried out in accordance with ECETOC TRA.

- **Worker (dermal)**

	Exposure estimation	RCR
PROC1:	1,37 mg/kg/d	0,00
PROC2:	1,37 mg/kg/d	0,00
PROC3:	0,34 mg/kg/d	0,00
PROC4:	0,69 mg/kg/d	0,00
PROC8a:	13,71 mg/kg/d	0,02
PROC8b:	6,86 mg/kg/d	0,01
	0,69 mg/kg/d	0,00
PROC9:	6,86 mg/kg/d	0,01
PROC10:	27,43 mg/kg/d	0,03
	1,37 mg/kg/d	0,00
PROC11:	107,14 mg/kg/d	0,12
	2,14 mg/kg/d	0,00
PROC13:	13,71 mg/kg/d	0,02
	0,34 mg/kg/d	0,00
PROC17:	27,43 mg/kg/d	0,03
	1,37 mg/kg/d	0,00
PROC18:	1,37 mg/kg/d	0,00
	0,69 mg/kg/d	0,00
PROC20:	1,71 mg/kg/d	0,00

- **Worker (inhalation)**

PROC1:	20 ppm	0,10
PROC2:	20 ppm	0,10
PROC3:	25 ppm	0,12
PROC4:	5 ppm	0,50
	50 ppm	0,25
PROC8a:	50 ppm	0,25
	100 ppm	0,49
PROC8b:	50 ppm	0,25
	25 ppm	0,12
PROC9:	100 ppm	0,49
PROC10:	5 ppm	0,02
	100 ppm	0,49
PROC11:	2 ppm	0,2
	4 ppm	0,4
	50 ppm	0,25
	100 ppm	0,49
PROC13:	3 ppm	0,3
	1 ppm	0,1
PROC17:	140 ppm	0,69
	4,2 ppm	0,42
	5 ppm	0,50
	40 ppm	0,20
PROC18:	60 ppm	0,30
	5 ppm	0,50
PROC20:	20 ppm	0,10

- **Environment**

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

- **Guidance for downstream users**

Health:

The available data on hazards do not confirm the need for a DNEL value to other health effects.

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Trade name: Isopropanol 99%

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Expected exposure does not exceed the DNEL / DMEL values when the risk management measures / operating conditions are observed.

Risk management measures are based on the qualitative risk description.

If further risk management measures / operating conditions are adopted, users should ensure that risks are limited to at least an equivalent level.

Detailed information on the exposure estimation can be found at <http://www.ecetoc.org/tra>.

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Trade name: Isopropanol 99%

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Annex: Exposure scenario 17

- Short title of the exposure scenario

Metal working fluids / rolling oils

Professional

- Sector of Use

SU22 Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

- Process category

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

PROC5 Mixing or blending in batch processes

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

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

PROC10 Roller application or brushing

PROC11 Non industrial spraying

PROC13 Treatment of articles by dipping and pouring

PROC17 Lubrication at high energy conditions in metal working operations

- Environmental release category

ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)

ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)

- Description of the activities / processes covered in the Exposure Scenario

Covers the use in formulated MWFs (MWFs) including transfer operations, open and contained cutting/machining activities, automated and manual application of corrosion protections, draining and working on contaminated/ reject articles, and disposal of waste oils.

- Conditions of use

- Duration and frequency

- Worker

Regular use with exposure up to 8 hrs. per workday.

(unless stated differently)

- Environment

As no environmental hazard was identified no environmental exposure assessment and risk characterization has been carried out.

- Physical parameters

- Physical state

Fluid

Vapour pressure: 23.2 hPa (20 °C)

- Concentration of the substance in the mixture Includes concentrations up to: 100%

- Other operational conditions

The use assumes ≤ 20 °C above ambient temperature, if not indicated otherwise.

- Other operational conditions affecting worker exposure

Assumes a good basic standard of occupational hygiene is implemented

- Risk management measures

General measures (flammable liquid):

Risks of the physicochemical properties of substances, such as flammability or explosiveness, can be controlled by implementing risk management measures. It is recommended to follow the new ATEX Directive 2014/34 / EU. Based on the implementation of a selection of risk management measures for handling and storage for the identified uses, the risk can be viewed as controlled at an acceptable level. Use in closed systems. Avoid ignition sources - Do not smoke. Use in well-ventilated areas to avoid the formation of an explosive atmosphere. Devices and protective systems approved for inflammable

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Trade name: Isopropanol 99%

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substances. Limit the flow rate in the pipes during pumping to avoid electrostatic charging. Clean the tank and the plant to be filled. Use a spark-free tool. Observe relevant EU / national guidelines. Observe additional notes in the SDS.

For following contributing scenarios store substance within a closed system:

General exposures (closed systems): PROC1, PROC2, PROC3

For following contributing scenarios Store substance within a closed system:

Storage: PROC1, PROC2

For following contributing scenarios no other specific measures are identified:

General exposures (closed systems): PROC1, PROC2, PROC3

Storage (closed system): PROC1, PROC2

Process sampling: PROC8b

Filling and preparation of equipment from drums or containers Special plant: PROC9

Roller application or brushing: PROC10

For the following scenarios drain downs in sealed storage pending disposal or for subsequent recycle:

Equipment cleaning and maintenance: PROC8a

For the following contributing scenarios give the product time to drain from the workpiece:

Treatment by dipping and pouring: PROC13

For the following contributing scenarios ensure enhanced general ventilation by mechanical means:

Spraying: PROC11

Metalworking activities: PROC17

For the following contributing scenarios avoid activities involving exposure of more than 1 hour (s):

Filling / preparation of equipment from drums or containers: PROC8a

For the following contributing scenarios clean transfer lines before decoupling:

Bulk transfers: PROC8b

Equipment cleaning and maintenance Special plant: PROC8b

Filling and preparation of equipment from drums or containers Special plant: PROC8b

- Worker protection

- Personal protective measures

For more information on "Personal protective equipment" see section 8 of the MSDS

- Disposal measures

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

If possible, send to be recycled, otherwise burn or deposit in a certified facility.

- Exposure estimation The exposure estimation was carried out in accordance with ECETOC TRA.

- Worker (dermal)

	Exposure estimation	RCR
PROC1:	1,37 mg/kg/d	0,00
	0,14 mg/kg/d	0,00
PROC2:	1,37 mg/kg/d	0,00
	0,14 mg/kg/d	0,00
PROC3:	0,34 mg/kg/d	0,00
PROC8a:	13,71 mg/kg/d	0,02
PROC8b:	6,86 mg/kg/d	0,01
	13,71 mg/kg/d	0,02
PROC9:	6,86 mg/kg/d	0,01
PROC10:	27,43 mg/kg/d	0,03
PROC11:	107,14 mg/kg/d	0,12
	2,14 mg/kg/d	0,0
PROC13:	13,71 mg/kg/d	0,02
PROC17:	27,43 mg/kg/d	0,00

- Worker (inhalation)

	Exposure estimation	RCR
PROC1:	20 ppm	0,10
PROC2:	20 ppm	0,10
PROC3:	25 ppm	0,12
PROC8a:	20 ppm	0,10

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Trade name: Isopropanol 99%

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	100	ppm	0,49
PROC8b:	50	ppm	0,25
	10	ppm	0,05
PROC9:	50	ppm	0,25
PROC10:	100	ppm	0,49
PROC11:	4	ppm	0,40
	6	ppm	0,60
	100	ppm	0,49
PROC13:	10	ppm	0,05
	100	ppm	0,49
PROC17:	4	ppm	0,40
	40	ppm	0,20

- Environment

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

- Guidance for downstream users

Health:

The available data on hazards do not confirm the need for a DNEL value to other health effects.

Expected exposure does not exceed the DNEL / DMEL values when the risk management measures / operating conditions are observed.

Risk management measures are based on the qualitative risk description.

If further risk management measures / operating conditions are adopted, users should ensure that risks are limited to at least an equivalent level.

Detailed information on the exposure estimation can be found at <http://www.ecetoc.org/tra>.

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Trade name: Isopropanol 99%

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Annex: Exposure scenario 18

- Short title of the exposure scenario

Use as binders and release agents
Professional

- Sector of Use

SU22 Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

- Process category

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

PROC4 Chemical production where opportunity for exposure arises

PROC6 Calendering operations

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

PROC10 Roller application or brushing

PROC11 Non industrial spraying

PROC14 Tableting, compression, extrusion, pelletisation, granulation

- Environmental release category

ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)

ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)

- Description of the activities / processes covered in the Exposure Scenario

Covers the use as binders and release agents including material transfers, mixing, application by spraying, brushing, and handling of waste.

- Conditions of use

- Duration and frequency

- Worker

Regular use with exposure up to 8 hrs. per workday.
(unless stated differently)

- Environment

As no environmental hazard was identified no environmental exposure assessment and risk characterization has been carried out.

- Physical parameters

- Physical state

Fluid

Vapour pressure: 62.2 hPa (20 °C)

- Concentration of the substance in the mixture Includes concentrations up to: 100%

- Other operational conditions

The use assumes ≤ 20 °C above ambient temperature, if not indicated otherwise.

- Other operational conditions affecting worker exposure

Assumes a good basic standard of occupational hygiene is implemented

- Risk management measures

General measures (flammable liquid):

Risks of the physicochemical properties of substances, such as flammability or explosiveness, can be controlled by implementing risk management measures. It is recommended to follow the new ATEX Directive 2014/34 / EU. Based on the implementation of a selection of risk management measures for handling and storage for the identified uses, the risk can be viewed as controlled at an acceptable level.

Use in closed systems. Avoid ignition sources - Do not smoke. Use in well-ventilated areas to avoid the formation of an explosive atmosphere. Devices and protective systems approved for inflammable substances. Limit the flow rate in the pipes during pumping to avoid electrostatic charging. Clean the tank and the plant to be filled. Use a spark-free tool. Observe relevant EU / national guidelines. Observe

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additional notes in the SDS.

For following contributing scenarios no other specific measures are identified:

Mixing operations (open systems): PROC4

Drum/batch transfers: PROC8b

Mould forming: PROC14

Roller application or brushing: PROC10

For following contributing scenarios Store substance within a closed system:

Material transfers Batch process (closed systems): PROC1, PROC2

For the following scenarios drain downs in sealed storage pending disposal or for subsequent recycle:

Material transfers (closed systems): PROC1, PROC2, PROC3

For following contributing scenarios carry out in a vented booth or extracted housing :

Manual Spraying: PROC11

For the following exposure scenarios by deducting with full enclosure of the operation or equipment minimize:

Spraying Machine: PROC11

For following contributing scenarios provide extract ventilation to points where emissions occur:

Casting method (open system) operation is carried out at elevated temperature (> 20 ° C above ambient temperature). Aerosol generation through increased processing temperature: PROC6

Substance content limit on the product to 25%.

For spray applications: separate activity from other activities.

- Worker protection

- Personal protective measures

For more information on "Personal protective equipment" see section 8 of the MSDS

- Disposal measures

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

If possible, send to be recycled, otherwise burn or deposit in a certified facility.

- Exposure estimation The exposure estimation was carried out in accordance with ECETOC TRA.

- Worker (dermal)

.	Exposure estimation	RCR
PROC1:	1,37 mg/kg/d	0,00
PROC2:	1,37 mg/kg/d	0,00
PROC3:	1,37 mg/kg/d	0,00
	0,34 mg/kg/d	0,00
PROC4:	6,86 mg/kg/d	0,01
PROC6:	1,37 mg/kg/d	0,00
PROC8b:	6,86 mg/kg/d	0,01
PROC10:	27,43 mg/kg/d	0,03
PROC11:	2,14 mg/kg/d	0,00
PROC14:	3,43 mg/kg/d	0,00

- Worker (inhalation)

.	Exposure estimation	RCR
PROC1:	20 ppm	0,10
	25 ppm	0,12
PROC2:	20 ppm	0,10
	25 ppm	0,12
PROC3:	25 ppm	0,12
PROC4:	50 ppm	0,25
PROC6:	6 ppm	0,60
	100 ppm	0,49
PROC8b:	100 ppm	0,49
PROC10:	50 ppm	0,25
PROC11:	3 ppm	0,30
	20 ppm	0,10
	25 ppm	0,12
	50 ppm	0,25

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Trade name: Isopropanol 99%

PROC14: 100 ppm 0,49

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- Environment

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

- Guidance for downstream users

Health:

The available data on hazards do not confirm the need for a DNEL value to other health effects.

Expected exposure does not exceed the DNEL / DMEL values when the risk management measures / operating conditions are observed.

Risk management measures are based on the qualitative risk description.

If further risk management measures / operating conditions are adopted, users should ensure that risks are limited to at least an equivalent level.

Detailed information on the exposure estimation can be found at <http://www.ecetoc.org/tra>.

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Trade name: Isopropanol 99%

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Annex: Exposure scenario 19

- Short title of the exposure scenario

Use in Agrochemicals
Professional

- Sector of Use

SU22 Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

- Process category

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

PROC4 Chemical production where opportunity for exposure arises

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

PROC11 Non industrial spraying

PROC13 Treatment of articles by dipping and pouring

- Environmental release category

ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)

ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)

- Description of the activities / processes covered in the Exposure Scenario

Use as an agrochemical excipient for application by manual or machine spraying, smokes and fogging; including equipment clean-downs and disposal.

- Conditions of use

- Duration and frequency

- Worker

Regular use with exposure up to 8 hrs. per workday.
(unless stated differently)

- Environment

As no environmental hazard was identified no environmental exposure assessment and risk characterization has been carried out.

- Physical parameters

- Physical state

Fluid

Vapour pressure: 62.2 hPa (20 °C)

- Concentration of the substance in the mixture Includes concentrations up to: 100%

- Other operational conditions

The use assumes ≤ 20 °C above ambient temperature, if not indicated otherwise.

- Other operational conditions affecting worker exposure

Assumes a good basic standard of occupational hygiene is implemented

- Risk management measures

General measures (flammable liquid):

Risks of the physicochemical properties of substances, such as flammability or explosiveness, can be controlled by implementing risk management measures. It is recommended to follow the new ATEX Directive 2014/34 / EU. Based on the implementation of a selection of risk management measures for handling and storage for the identified uses, the risk can be viewed as controlled at an acceptable level. Use in closed systems. Avoid ignition sources - Do not smoke. Use in well-ventilated areas to avoid the formation of an explosive atmosphere. Devices and protective systems approved for inflammable substances. Limit the flow rate in the pipes during pumping to avoid electrostatic charging. Clean the tank and the plant to be filled. Use a spark-free tool. Observe relevant EU / national guidelines. Observe additional notes in the SDS.

For following contributing scenarios no other specific measures are identified:

Material transfers Drum / batch (filling and pouring from containers): PROC8b

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Trade name: Isopropanol 99%

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Mixing operations (open systems): PROC4

Ad hoc manual application via trigger sprays, dipping, rolling, brushing, etc.: PROC13

For following contributing scenarios Store substance within a closed system:

Storage: PROC1, PROC2

For the following scenarios drain downs in sealed storage pending disposal or for subsequent recycle:

Equipment cleaning and maintenance: PROC8a

For following contributing scenarios avoid carrying out activities involving exposure for more than 4 hours:

Manual Spraying: PROC11

Substance content limit on the product to 25%.

OR Application in ventilated cage, the filtered pressurized air is supplied with a protection factor of > 20.

- Worker protection

- Personal protective measures

For more information on "Personal protective equipment" see section 8 of the MSDS

- Disposal measures

Disposal must be made according to official regulations.

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

If possible, send to be recycled, otherwise burn or deposit in a certified facility.

- Exposure estimation The exposure estimation was carried out in accordance with ECETOC TRA.

- Worker (dermal)

	Exposure estimation	RCR
PROC1:	0,14 mg/kg/d	0,00
PROC2:	0,14 mg/kg/d	0,00
PROC4:	6,86 mg/kg/d	0,01
PROC8a:	13,71 mg/kg/d	0,02
PROC8b:	6,86 mg/kg/d	0,01
PROC11:	2,14 mg/kg/d	0,00
	107,14 mg/kg/d	0,12
PROC13:	13,71 mg/kg/d	0,02

- Worker (inhalation)

	Exposure estimation	RCR
PROC1:	20 ppm	0,10
PROC2:	20 ppm	0,10
PROC4:	50 ppm	0,25
PROC8a:	100 ppm	0,49
PROC8b:	50 ppm	0,25
PROC11:	100 ppm	0,49
	180 ppm	0,89
PROC13:	100 ppm	0,49

- Environment

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

- Guidance for downstream users

Health:

The available data on hazards do not confirm the need for a DNEL value to other health effects.

Expected exposure does not exceed the DNEL / DMEL values when the risk management measures / operating conditions are observed.

Risk management measures are based on the qualitative risk description.

If further risk management measures / operating conditions are adopted, users should ensure that risks are limited to at least an equivalent level.

Detailed information on the exposure estimation can be found at <http://www.ecetoc.org/tra>.

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Annex: Exposure scenario 20

- Short title of the exposure scenario

Use as a fuel

Professional

- Sector of Use

SU22 Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

- Process category

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

PROC16 Use of fuels

- Environmental release category

ERC9a Widespread use of functional fluid (indoor)

ERC9b Widespread use of functional fluid (outdoor)

- Notes Specific Environmental Release Category: ESVOC 9.12b.v1

- Description of the activities / processes covered in the Exposure Scenario

Covers the use as a fuel (or fuel additive and additive components) and includes activities associated with its transfer, use, equipment maintenance and handling of waste.

- Conditions of use

- Duration and frequency

- Worker

Regular use with exposure up to 8 hrs. per workday.

(unless stated differently)

- Environment

As no environmental hazard was identified no environmental exposure assessment and risk characterization has been carried out.

- Physical parameters

- Physical state

Fluid

Vapour pressure: 62.2 hPa (20 °C)

- Concentration of the substance in the mixture Includes concentrations up to: 100%

- Other operational conditions

The use assumes ≤ 20 ° C above ambient temperature, if not indicated otherwise.

- Other operational conditions affecting worker exposure

Assumes a good basic standard of occupational hygiene is implemented

- Risk management measures

General measures (flammable liquid):

Risks of the physicochemical properties of substances, such as flammability or explosiveness, can be controlled by implementing risk management measures. It is recommended to follow the new ATEX Directive 2014/34 / EU. Based on the implementation of a selection of risk management measures for handling and storage for the identified uses, the risk can be viewed as controlled at an acceptable level. Use in closed systems. Avoid ignition sources - Do not smoke. Use in well-ventilated areas to avoid the formation of an explosive atmosphere. Devices and protective systems approved for inflammable substances. Limit the flow rate in the pipes during pumping to avoid electrostatic charging. Clean the tank and the plant to be filled. Use a spark-free tool. Observe relevant EU / national guidelines. Observe additional notes in the SDS.

For following contributing scenarios store substance within a closed system:

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Bulk transfers (closed systems): PROC8b

Use as a fuel: PROC1, PROC2, PROC3, PROC16

For the following contributing scenarios clean transfer lines before decoupling:

Bulk transfers: PROC8b

For the following scenarios drain downs in sealed storage pending disposal or for subsequent recycle:

Equipment cleaning and maintenance: PROC8a

Container cleaning: PROC8a

For following contributing scenarios Store substance within a closed system:

Storage: PROC1

For following contributing scenarios no other specific measures are identified:

Use as a fuel, general exposures (closed systems): PROC1, PROC2, PROC3, PROC16

For the following scenarios avoid spillages when removing the pump:

Refuelling: PROC8b

Drum/batch transfers: PROC8b

For the following contributing scenarios apply access method for containers, including compressed air supply:

Container cleaning: PROC8a

- Worker protection

- Personal protective measures

For more information on "Personal protective equipment" see section 8 of the MSDS

- Disposal measures

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

If possible, send to be recycled, otherwise burn or deposit in a certified facility.

- Exposure estimation *The exposure estimation was carried out in accordance with ECETOC TRA.*

- Worker (dermal)

	Exposure estimation	RCR
PROC1:	0,34 mg/kg/d	0,00
	1,37 mg/kg/d	0,00
PROC2:	1,37 mg/kg/d	0,00
PROC3:	0,34 mg/kg/d	0,00
PROC8a:	13.71 mg/kg/d	0,02
PROC8b:	6,86 mg/kg/d	0,01
PROC16:	0,34 mg/kg/d	0,00

- Worker (inhalation)

	Exposure estimation	RCR
PROC1:	0,01 ppm	0,00
	20 ppm	0,10
PROC2:	20 ppm	0,10
PROC3:	25 ppm	0,12
PROC8a:	100 ppm	0,49
PROC8b:	50 ppm	0,25
PROC16:	10 ppm	0,05

- Environment

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

- Guidance for downstream users

Health:

The available data on hazards do not confirm the need for a DNEL value to other health effects.

Expected exposure does not exceed the DNEL / DMEL values when the risk management measures / operating conditions are observed.

Risk management measures are based on the qualitative risk description.

If further risk management measures / operating conditions are adopted, users should ensure that risks are limited to at least an equivalent level.

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Detailed information on the exposure estimation can be found at <http://www.ecetoc.org/tra>.

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Trade name: Isopropanol 99%

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Annex: Exposure scenario 21

- Short title of the exposure scenario

functional Fluids
Professional

- Sector of Use

SU22 Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

- Process category

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.
PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
PROC20 Use of functional fluids in small devices

- Environmental release category

ERC9a Widespread use of functional fluid (indoor)
ERC9b Widespread use of functional fluid (outdoor)

- Description of the activities / processes covered in the Exposure Scenario

Use as functional fluids e.g. cable oils, transfer oils, insulators, refrigerants, hydraulic fluids in closed professional equipment including incidental exposures during maintenance and related material transfers.

- Conditions of use

- Duration and frequency

- Worker

Regular use with exposure up to 8 hrs. per workday.
(unless stated differently)

- Environment

As no environmental hazard was identified no environmental exposure assessment and risk characterization has been carried out.

- Physical parameters

- Physical state

Fluid
Vapour pressure: 62.2 hPa (20 °C)

- Concentration of the substance in the mixture Includes concentrations up to: 100%

- Other operational conditions

The use assumes ≤ 20 °C above ambient temperature, if not indicated otherwise.

- Other operational conditions affecting worker exposure

Assumes a good basic standard of occupational hygiene is implemented

- Risk management measures

General measures (flammable liquid):

Risks of the physicochemical properties of substances, such as flammability or explosiveness, can be controlled by implementing risk management measures. It is recommended to follow the new ATEX Directive 2014/34 / EU. Based on the implementation of a selection of risk management measures for handling and storage for the identified uses, the risk can be viewed as controlled at an acceptable level. Use in closed systems. Avoid ignition sources - Do not smoke. Use in well-ventilated areas to avoid the formation of an explosive atmosphere. Devices and protective systems approved for inflammable substances. Limit the flow rate in the pipes during pumping to avoid electrostatic charging. Clean the tank and the plant to be filled. Use a spark-free tool. Observe relevant EU / national guidelines. Observe additional notes in the SDS.

For following contributing scenarios no other specific measures are identified:

Drum/batch transfers: PROC8a

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Trade name: Isopropanol 99%

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Filling / preparation of equipment from drums or containers: PROC9
 General exposures (closed systems): PROC1, PROC2, PROC3
 General exposures (open systems): PROC20
 General exposures (open systems) Operation is carried out at elevated temperature (> 20°C above ambient temperature): PROC20
 For the following scenarios drain downs in sealed storage pending disposal or for subsequent recycle:
 Recycling of rejects: PROC9
 Equipment maintenance: PROC8a
 For following contributing scenarios Store substance within a closed system:
 Storage: PROC1, PROC2
 For the following scenarios avoid spillages when removing the pump:
 Material transfers Drum / batch (filling and pouring from containers): PROC9
- Worker protection
- Personal protective measures
 For more information on "Personal protective equipment" see section 8 of the MSDS
- Disposal measures
 Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
 If possible, send to be recycled, otherwise burn or deposit in a certified facility.

- Exposure estimation The exposure estimation was carried out in accordance with ECETOC TRA.
- Worker (dermal)

	Exposure estimation	RCR
	Exposure level	RCR
PROC1:	1,37 mg/kg/d	0,00
PROC2:	1,37 mg/kg/d	0,00
PROC3:	1,37 mg/kg/d	0,00
PROC8a:	13.71 mg/kg/d	0,02
PROC9:	6,86 mg/kg/d	0,01
PROC20:	1,71 mg/kg/d	0,00

- Worker (inhalation)

	Exposure estimation	RCR
	Exposure level	RCR
PROC1:	20 ppm	0,10
	25 ppm	0,12
PROC2:	20 ppm	0,10
	25 ppm	0,12
PROC3:	25 ppm	0,12
PROC8a:	100 ppm	0,49
PROC9:	100 ppm	0,49
PROC20:	20 ppm	0,10
	50 ppm	0,25

- Environment

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

- Guidance for downstream users

Health:

The available data on hazards do not confirm the need for a DNEL value to other health effects. Expected exposure does not exceed the DNEL / DMEL values when the risk management measures / operating conditions are observed.

Risk management measures are based on the qualitative risk description.

If further risk management measures / operating conditions are adopted, users should ensure that risks are limited to at least an equivalent level.

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Detailed information on the exposure estimation can be found at <http://www.ecetoc.org/tra>.

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Trade name: Isopropanol 99%

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Annex: Exposure scenario 22

- Short title of the exposure scenario

Use in antifreeze agents

Professional

auch Verwendung als Enteisungsmittel

- Sector of Use

SU22 Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

- Process category

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

PROC10 Roller application or brushing

PROC11 Non industrial spraying

- Environmental release category

ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)

- Description of the activities / processes covered in the Exposure Scenario

Ice prevention and de-icing of vehicles, aircraft and other equipment by spraying.

- Conditions of use

- Duration and frequency

- Worker

Regular use with exposure up to 8 hrs. per workday.

(unless stated differently)

- Environment

As no environmental hazard was identified no environmental exposure assessment and risk characterization has been carried out.

- Physical parameters

- Physical state

Fluid

Vapour pressure: 62.2 hPa (20 °C)

- Concentration of the substance in the mixture Includes concentrations up to: 100%

- Other operational conditions

The use assumes ≤ 20 °C above ambient temperature, if not indicated otherwise.

- Other operational conditions affecting worker exposure

Assumes a good basic standard of occupational hygiene is implemented

- Risk management measures

General measures (flammable liquid):

Risks of the physicochemical properties of substances, such as flammability or explosiveness, can be controlled by implementing risk management measures. It is recommended to follow the new ATEX Directive 2014/34 / EU. Based on the implementation of a selection of risk management measures for handling and storage for the identified uses, the risk can be viewed as controlled at an acceptable level.

Use in closed systems. Avoid ignition sources - Do not smoke. Use in well-ventilated areas to avoid the formation of an explosive atmosphere. Devices and protective systems approved for inflammable substances. Limit the flow rate in the pipes during pumping to avoid electrostatic charging. Clean the tank and the plant to be filled. Use a spark-free tool. Observe relevant EU / national guidelines. Observe additional notes in the SDS.

For following contributing scenarios no other specific measures are identified:

Equipment cleaning and maintenance: PROC10

For the following contributing scenarios clean transfer lines before decoupling:

Bulk transfers: PROC8b

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Trade name: Isopropanol 99%

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Material transfers: PROC8b

For following contributing scenarios ensure operation is undertaken outdoors and to avoid activities involving exposure for more than 1 hour:

Manual Spraying: PROC11

On upwind / keep distance from source.

Operation also takes place at elevated temperature (> 20 °C above ambient temperature).

- Worker protection

- Personal protective measures

For more information on "Personal protective equipment" see section 8 of the MSDS

- Disposal measures

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

If possible, send to be recycled, otherwise burn or deposit in a certified facility.

- Exposure estimation The exposure estimation was carried out in accordance with ECETOC TRA.

- Worker (dermal)

	Exposure estimation	RCR
PROC8b:	6,86 mg/kg/d	0,0
PROC10:	27,43 mg/kg/d	0,0
PROC11:	107,14 mg/kg/d	0,1

- Worker (inhalation)

	Exposure estimation	RCR
PROC8b:	50 ppm	0,2
PROC10:	25 ppm	0,1
PROC11:	70 ppm	0,3
	100 ppm	0,5

- Environment

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

- Guidance for downstream users

Health:

The available data on hazards do not confirm the need for a DNEL value to other health effects.

Expected exposure does not exceed the DNEL / DMEL values when the risk management measures / operating conditions are observed.

Risk management measures are based on the qualitative risk description.

If further risk management measures / operating conditions are adopted, users should ensure that risks are limited to at least an equivalent level.

Detailed information on the exposure estimation can be found at <http://www.ecetoc.org/tra>.

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Trade name: Isopropanol 99%

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Annex: Exposure scenario 23

- Short title of the exposure scenario

Polymer processing
Professional

- Sector of Use

SU22 Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

- Process category

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

PROC6 Calendaring operations

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

PROC14 Tableting, compression, extrusion, pelletisation, granulation

PROC21 Low energy manipulation and handling of substances bound in/on materials or articles

- Environmental release category

ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)

ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)

- Description of the activities / processes covered in the Exposure Scenario

Processing of formulated polymers including material transfers, moulding and forming activities, material re-works and associated maintenance.

- Conditions of use

- Duration and frequency

- Worker

Regular use with exposure up to 8 hrs. per workday.
(unless stated differently)

- Environment

As no environmental hazard was identified no environmental exposure assessment and risk characterization has been carried out.

- Physical parameters

- Physical state

Fluid

Vapour pressure: 62.2 hPa (20 °C)

- Concentration of the substance in the mixture Includes concentrations up to: 100%

- Other operational conditions

The use assumes ≤ 20 °C above ambient temperature, if not indicated otherwise.

- Other operational conditions affecting worker exposure

Assumes a good basic standard of occupational hygiene is implemented

- Risk management measures

General measures (flammable liquid):

Risks of the physicochemical properties of substances, such as flammability or explosiveness, can be controlled by implementing risk management measures. It is recommended to follow the new ATEX Directive 2014/34 / EU. Based on the implementation of a selection of risk management measures for handling and storage for the identified uses, the risk can be viewed as controlled at an acceptable level. Use in closed systems. Avoid ignition sources - Do not smoke. Use in well-ventilated areas to avoid the formation of an explosive atmosphere. Devices and protective systems approved for inflammable substances. Limit the flow rate in the pipes during pumping to avoid electrostatic charging. Clean the tank and the plant to be filled. Use a spark-free tool. Observe relevant EU / national guidelines. Observe additional notes in the SDS.

For following contributing scenarios store substance within a closed system:

Bulk transfers (closed systems): PROC1, PROC2

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For following contributing scenarios no other specific measures are identified:

Injection molding of products: PROC6, PROC14

Reworking of articles: PROC21

Equipment maintenance: PROC8a

For following contributing scenarios Store substance within a closed system:

Storage: PROC1, PROC2

For the following contributing scenarios using large or medium-sized operating systems:

Material transfers: PROC8b

- Worker protection

- Personal protective measures

For more information on "Personal protective equipment" see section 8 of the MSDS

- Disposal measures

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

If possible, send to be recycled, otherwise burn or deposit in a certified facility.

- Exposure estimation The exposure estimation was carried out in accordance with ECETOC TRA.

- Worker (dermal)

	Exposure estimation	RCR
PROC1:	1,37 mg/kg/d	0,00
PROC2:	1,37 mg/kg/d	0,00
PROC6:	27,43 mg/kg/d	0,03
PROC8a:	13.71 mg/kg/d	0,02
PROC8b:	6,86 mg/kg/d	0,01
PROC14:	3.43 mg/kg/d	0,00
PROC21:	2,83 mg/kg/d	0,00

- Worker (inhalation)

	Exposure estimation	RCR
PROC1:	20 ppm	0,10
PROC2:	20 ppm	0,10
PROC6:	100 ppm	0,49
PROC8a:	100 ppm	0,49
PROC8b:	50 ppm	0,25
PROC14:	100 ppm	0,49
PROC21:	0 ppm	0,00

- Environment

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

- Guidance for downstream users

Health:

The available data on hazards do not confirm the need for a DNEL value to other health effects.

Expected exposure does not exceed the DNEL / DMEL values when the risk management measures / operating conditions are observed.

Risk management measures are based on the qualitative risk description.

If further risk management measures / operating conditions are adopted, users should ensure that risks are limited to at least an equivalent level.

Detailed information on the exposure estimation can be found at <http://www.ecetoc.org/tra>.

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Trade name: Isopropanol 99%

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Annex: Exposure scenario 24

- Short title of the exposure scenario

Use for water treatment

Professional

- Sector of Use

SU22 Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

- Process category

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

PROC4 Chemical production where opportunity for exposure arises

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

PROC13 Treatment of articles by dipping and pouring

- Environmental release category ERC8f Widespread use leading to inclusion into/onto article (outdoor)

- Description of the activities / processes covered in the Exposure Scenario

Covers the use of the substance for the treatment of water in open and closed systems.

- Conditions of use

- Duration and frequency

- Worker

Regular use with exposure up to 8 hrs. per workday.

(unless stated differently)

- Environment

As no environmental hazard was identified no environmental exposure assessment and risk characterization has been carried out.

- Physical parameters

- Physical state

Fluid

Vapour pressure: 62.2 hPa (20 °C)

- Concentration of the substance in the mixture Includes concentrations up to: 100%

- Other operational conditions

The use assumes ≤ 20 °C above ambient temperature, if not indicated otherwise.

- Other operational conditions affecting worker exposure

Assumes a good basic standard of occupational hygiene is implemented

- Risk management measures

General measures (flammable liquid):

Risks of the physicochemical properties of substances, such as flammability or explosiveness, can be controlled by implementing risk management measures. It is recommended to follow the new ATEX Directive 2014/34 / EU. Based on the implementation of a selection of risk management measures for handling and storage for the identified uses, the risk can be viewed as controlled at an acceptable level. Use in closed systems. Avoid ignition sources - Do not smoke. Use in well-ventilated areas to avoid the formation of an explosive atmosphere. Devices and protective systems approved for inflammable substances. Limit the flow rate in the pipes during pumping to avoid electrostatic charging. Clean the tank and the plant to be filled. Use a spark-free tool. Observe relevant EU / national guidelines. Observe additional notes in the SDS.

For following contributing scenarios no other specific measures are identified:

General exposures (closed systems): PROC3

For following contributing scenarios Store substance within a closed system:

Storage: PROC1

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Trade name: Isopropanol 99%

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For following contributing scenarios use drum pumps or carefully pour out container:

Pouring from small containers: PROC13

For the following scenarios drain downs in sealed storage pending disposal or for subsequent recycle:

Equipment maintenance: PROC8a

For the following contributing scenarios limit access area to the facilities:

General exposures (open systems): PROC4

For the following scenarios avoid spillages when removing the pump:

Use drum pumps: PROC8b

Drum/batch transfers: PROC8b

Pouring from small containers: PROC13

- Worker protection

- Personal protective measures

For more information on "Personal protective equipment" see section 8 of the MSDS

- Disposal measures

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

If possible, send to be recycled, otherwise burn or deposit in a certified facility.

- Exposure estimation The exposure estimation was carried out in accordance with ECETOC TRA.

- Worker (dermal)

	Exposure estimation	RCR
PROC1:	0,34 mg/kg/d	0,00
PROC3:	0,34 mg/kg/d	0,00
PROC4:	0,69 mg/kg/d	0,00
PROC8a:	13,71 mg/kg/d	0,02
PROC8b:	6,86 mg/kg/d	0,01
PROC13:	0,69 mg/kg/d	0,00

- Worker (inhalation)

	Exposure estimation	RCR
PROC1:	0,01 ppm	0,00
PROC3:	25 ppm	0,12
PROC4:	50 ppm	0,25
PROC8a:	100 ppm	0,49
PROC8b:	50 ppm	0,25
PROC13:	100 ppm	0,49

- Environment

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

- Guidance for downstream users

Health:

The available data on hazards do not confirm the need for a DNEL value to other health effects.

Expected exposure does not exceed the DNEL / DMEL values when the risk management measures / operating conditions are observed.

Risk management measures are based on the qualitative risk description.

If further risk management measures / operating conditions are adopted, users should ensure that risks are limited to at least an equivalent level.

Detailed information on the exposure estimation can be found at <http://www.ecetoc.org/tra>.

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Trade name: Isopropanol 99%

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Annex: Exposure scenario 25

- Short title of the exposure scenario

Use in cleaning agents
consumer

- Sector of Use SU21 Consumer uses: Private households / general public / consumers

- Product category

PC3 Air care products
PC4 Anti-Freeze and de-icing products
PC8 Biocidal products
PC9a Coatings and paints, thinners, paint removers
PC9b Fillers, putties, plasters, modelling clay
PC9c Finger paints
PC24 Lubricants, greases, release products
PC35 Washing and cleaning products (including solvent based products)
PC38 Welding and soldering products, flux products

- Environmental release category

ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)
ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)

- Description of the activities / processes covered in the Exposure Scenario

Covers general exposures to consumers arising from the use of household products sold as washing and cleaning products, aerosols, coatings, de-icers, lubricants and air care products.

- Conditions of use

- Duration and frequency Not applicable

- Environment

As no environmental hazard was identified no environmental exposure assessment and risk characterization has been carried out.

- Physical parameters

- Physical state

Fluid
Vapour pressure: 5 - 100 hPa (20 °C)

- Other operational conditions Covers use at ambient temperatures.

- Other operational conditions affecting consumer exposure

Covers use in household typical ventilation. (0.6 air exchange per hour)
Unless otherwise specified.

- Risk management measures

General measures (flammable liquid):

Risks of the physicochemical properties of substances, such as flammability or explosiveness, can be controlled by implementing risk management measures. It is recommended to follow the new ATEX Directive 2014/34 / EU. Based on the implementation of a selection of risk management measures for handling and storage for the identified uses, the risk can be viewed as controlled at an acceptable level. Use in closed systems. Avoid ignition sources - Do not smoke. Use in well-ventilated areas to avoid the formation of an explosive atmosphere. Devices and protective systems approved for inflammable substances. Limit the flow rate in the pipes during pumping to avoid electrostatic charging. Clean the tank and the plant to be filled. Use a spark-free tool. Observe relevant EU / national guidelines. Observe additional notes in the SDS.

Air treatment products Air treatment with immediate effect (Aerosol Sprays): PC03

Includes concentrations $\leq 50\%$, covers up to 4 times per day 365 d/y, use amounts per application ≤ 0.1 g, Includes application for room size of 20 m³, Exposure ≤ 0.25 h, Contains a skin contact area ≤ 857.5 cm²

Air treatment products Air treatment with a persistent effect (solid and liquid): PC03

Includes concentrations $\leq 10\%$, Covers the use up to 1 time per day 365 d/y, If a skin contact area ≤ 35.7 cm², Quantities used per application ≤ 0.48 g, If the application covers a room size of 20 m³, Covers

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Trade name: Isopropanol 99%

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exposure \leq 8 h

Antifreeze and de-icing agents Car window washing: PC04

Includes concentrations \leq 1%, including use up to 1 time per day 365 d/y, used quantities per application \leq 0.5 g, covers the application in a single garage (34 m³) with typical ventilation. 1.5 air changes per hour, covers the application at a room size of 34 m³, Including exposure \leq 0.02 h, Includes a skin contact area \leq 857.5 cm²

Antifreeze and de-icing agents Pouring in radiators: PC04

Includes concentrations \leq 50%, Covers the use up to 1 time per day 365 d/y, Includes a skin contact area \leq 428 cm², Amounts used per application \leq 2000 g, Covers the application in a single garage (34 m³) with typical ventilation. 1.5 air exchange per hour, Covers exposure \leq 0.17 h, Covers use at a room size of 34 m³

Antifreeze and de-icing agents Closed-bottomed: PC04

Includes concentrations \leq 50%, Covers the use up to 1 time per day 365 d/y, Covers a skin contact area up to 214.4 cm², Quantities used per application \leq 4 g, Covers the application in a single garage (34 m³) with typical ventilation. 1.5 air exchange per hour, Covers use at a room size of 34 m³, Covers exposure \leq 0.25 h

Biocidal products (eg disinfectants, pesticides) Laundry and dishwashing products: PC08

Includes concentrations \leq 50%, Including use up to 1 time per day 365 d/y, Comprises a skin contact area of up to 857.5 cm², used quantities per application \leq 15 g, the application covers a room size of 20 m³, Including exposure \leq 0.5 h

Biocide products (eg disinfectants, pesticides) Liquid cleaners (general purpose cleaners, sanitary cleaners, floor cleaners, glass cleaners, carpet cleaners, metal cleaners): PC08

Includes concentrations \leq 50%, Including use up to 1 time per day 128 d / y, Comprises a skin contact area of up to 857.5 cm², used quantities per application \leq 27 g, covers exposure up to 0.33 h, covers the application with a room size of 20 m³

Biocidal products (eg disinfectants, pesticides) Cleaning sprays (general purpose cleaners, sanitary cleaners, glass cleaners): PC08

Includes concentrations \leq 50%, Including use up to 1 time per day 128 d/y, Comprises a skin contact area of up to 428 cm², the quantities used per application \leq 35 g, the application covers a room size of 20 m³, covers exposure up to 0.17 h,

Coatings and paints, thinner, remover solvent-rich, high-solid, aqueous paint: PC09A

Includes concentrations \leq 27.5%, Including the use up to 1 time per day 6 d/y, Covers a skin contact area up to 428.75 cm², Quantities used per application \leq 744 g, Covers exposure up to 2.2 h, covers the application with a room size of 20 m³

Coatings and paints, Thinner, Remover Aerosol spray can: PC09A

Includes concentrations \leq 50%, Covers the use up to 1 time per day 2 d / y, Quantities used per application \leq 215 g, Covers the application in a single garage (34 m³) with typical ventilation. 1.5 air exchange per hour, If the application covers a room size of 34 m³, Covers exposure up to 0.33 h,

Coatings and paints, thinners, remover Removals (paint, adhesive, wallpaper, sealant remover): PC09A

Includes concentrations \leq 50%, Covers the use up to 1 time per day, 3 d / y, Covers a skin contact area up to 857.5 cm², Quantities used per application \leq 491 g, Covers exposure up to 2 h, Comprises the application for a room size of 20 m³

Fillers, Fillers, Mortars, Modeling Fillers and Putty: PC09B

Includes concentrations \leq 2%, Covers the use up to 1 time per day, 12 d/y, Covers a skin contact area up

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to 35.73 cm², Quantities used per application ≤ 85 g, If the application covers a room size of 20 m³,
Covers exposure up to 4 h

Fillers, fillers, mortars, modeling mortars and flooring compounds: PC09B

Includes concentrations ≤ 2%, Covers a skin contact area up to 857.5 cm², Quantities used per application ≤ 13800 g, If the application covers a room size of 20 m³, Covers exposure up to 2 h, Covers use up to 12 d/y 1 time per day

Fillers, fillers, mortars, modeling clay Modeling mass: PC09B

Includes concentrations ≤ 1%, Covers the use up to 1 time per day 365 d/y, The assumption is that each user has a swallowed quantity of 1 g, Covers a skin contact area up to 254.4 cm², If the application covers a room size of 20 m³, Covers exposure up to 4 h, Quantities used per application ≤ 13800 g

Finger colors: PC09C

Includes concentrations ≤ 15%, Covers the use up to 1 time per day 365 d/y, The assumption is an ingested amount of 1.35 g per application, a skin contact area ≤ 254.4 cm², Covers exposure up to 4h, Comprises the application for a room size of 20 m³

Lubricants, grease and release agent liquids PC24

Includes concentrations ≤ 100%, Including the use up to 1 time per day 4 d/y, Covers a skin contact area of up to 468 cm², amounts used per application ≤ 2200 g, Covers the application in a single garage (34 m³) with typical ventilation. 1.5 air exchange per hour, Covers exposure up to 0.17 h, covers the application with a room size of 34 m³

Lubricants, lubricating greases and release agents Pastes: PC24

Includes concentrations ≤ 20%, Including the use up to 1 time per day 10 d/y, Covers a skin contact area up to 468 cm², If the application covers a room size of 20 m³, Quantities used per application ≤ 34 g, Covers exposure up to 4 h

Lubricants, greases and release agents Sprays: PC24

Includes concentrations ≤ 50%, Including the use up to 1 time per day 6 d/y, Covers a skin contact area up to 428.75 cm², Amounts used per application ≤ 73 g, Covers exposure up to 0.17 h, Comprises the application for a room size of 20 m³

Washing and cleaning products (including solvent based) liquid cleaners (all-purpose cleaners, sanitary cleaners, floor cleaners, glass cleaners, carpet cleaners, metal cleaners): PC35

Includes concentrations ≤ 5%, Covers the use up to 1 time per day 128 d/y, Covers a skin contact area of up to 857.5 cm², amounts used per application ≤ 27 g, If the application covers a room size of 20 m³, Covers exposure up to 0.33 h

Washing and cleaning products (including solvent-based products) Cleaning sprays (general purpose cleaners, sanitary cleaners, glass cleaners): PC35

Includes concentrations ≤ 15%, Covers the use up to 1 time per day 128 d/y, Covers a skin contact area up to 428 cm², Quantities used per application ≤ 35 g, If the application covers a room size of 20 m³, Covers exposure up to 0.17 h

Welding and brazing products (with flux covers and fluxes), flux: PC38

Includes concentrations ≤ 20%, Covers the use up to 1 time per day 365 d/y, Quantities used per application ≤ 12 g, Covers exposure up to 1 h, If the application covers a room size of 20 m³, Covers a skin contact area up to 857.5 cm²

Air treatment products Air treatment with immediate effect (Aerosol Sprays): PC03

Includes concentrations up to 50%, If the usage includes <365 d/y 4 times a day, Quantities used per application ≤ 5 g, If the application covers a room size of 20 m³, Covers exposure up to 0.25 h,

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Covers a skin contact area up to 428 cm²

Air treatment products Air treatment with a persistent effect (solid and liquid): PC03

Includes concentrations ≤ 50%, Covers the use up to 1 time per day 365 d/y, Covers a skin contact area up to 35.7 cm², Quantities used per application ≤ 0.48 g, If the application covers a room size of 20 m³, Covers exposure up to 8 h

- Worker protection

- Personal protective measures

For more information on "Personal protective equipment" see section 8 of the MSDS

- Disposal measures

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

If possible, send to be recycled, otherwise burn or deposit in a certified facility.

This substance is consumed during use and no waste of substance is generated.

- Exposure estimation *The exposure estimation was carried out in accordance with ECETOC TRA.*

- Environment

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

- Guidance for downstream users

Health:

The available data on hazards do not confirm the need for a DNEL value to other health effects.

Expected exposure does not exceed the DNEL / DMEL values when the risk management measures / operating conditions are observed.

Risk management measures are based on the qualitative risk description.

If further risk management measures / operating conditions are adopted, users should ensure that risks are limited to at least an equivalent level.

Detailed information on the exposure estimation can be found at <http://www.ecetoc.org/tra>.

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Annex: Exposure scenario 26

- Short title of the exposure scenario

Uses in Coatings
consumer

- Sector of Use SU21 Consumer uses: Private households / general public / consumers

- Product category

PC1 Adhesives, sealants
PC4 Anti-Freeze and de-icing products
PC8 Biocidal products
PC9a Coatings and paints, thinners, paint removers
PC9b Fillers, putties, plasters, modelling clay
PC9c Finger paints
PC15 Non-metal-surface treatment products
PC18 Ink and toners
PC23 Leather treatment products
PC24 Lubricants, greases, release products
PC31 Polishes and wax blends
PC34 Textile dyes, and impregnating products

- Environmental release category

ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)
ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)

- Notes Specific Environmental Release Category: ESVOC 8.3c.v1

- Description of the activities / processes covered in the Exposure Scenario

Covers the use in coatings (paints, inks, adhesives, etc) including exposures during use (including product transfer and preparation, application by brush, spray by hand or similar methods) and equipment cleaning.

- Conditions of use

- Duration and frequency

- Worker

- Consumers

1 application(s) / day
(unless stated differently)

- Environment

As no environmental hazard was identified no environmental exposure assessment and risk characterization has been carried out.

- Physical parameters

- Physical state

Fluid
Vapour pressure: 5 - 100 hPa (20 °C)

- Other operational conditions Covers use at ambient temperatures.

- Other operational conditions affecting consumer exposure

Room size: 20 m³
Covers use under typical household ventilation. 0.6 Air changes per hour
(unless stated differently)

- Risk management measures

General measures (flammable liquid):

Risks of the physicochemical properties of substances, such as flammability or explosiveness, can be controlled by implementing risk management measures. It is recommended to follow the new ATEX Directive 2014/34 / EU. Based on the implementation of a selection of risk management measures for handling and storage for the identified uses, the risk can be viewed as controlled at an acceptable level. Use in closed systems. Avoid ignition sources - Do not smoke. Use in well-ventilated areas to avoid the formation of an explosive atmosphere. Devices and protective systems approved for inflammable substances. Limit the flow rate in the pipes during pumping to avoid electrostatic charging. Clean the tank and the plant to be filled. Use a spark-free tool. Observe relevant EU / national guidelines. Observe

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additional notes in the SDS.

Adhesives, sealants Glues, hobby use: PC01

Covers concentrations up to 30%, Covers use up to 365 days/y, Covers skin contact area up to 35.73 cm², For each use event, covers use amounts up to 9 g, Covers exposure up to 4 hour(s)

Adhesives, sealants Glues, DIY-use (carpet glue, tile glue, wood parquet glue): PC01

Covers concentrations up to 30%, Covers use up to 1 days/y, Covers skin contact area up to 110 cm², For each use event, covers use amounts up to 6390 g, Covers exposure up to 6 hour(s)

Adhesives, sealants Glue from spray: PC01

Covers concentrations up to 30%, Covers use up to 6 days/y, Covers skin contact area up to 35.73 cm², For each use event, covers use amounts up to 85.05 g, Covers exposure up to 4 hour(s)

Adhesives, sealants Sealants: PC01

Covers concentrations up to 30%, Covers use up to 365 days/y, Covers skin contact area up to 35.73 cm², For each use event, covers use amounts up to 75 g, Covers exposure up to 1 hour(s)

Anti-freeze and de-icing products Washing car window: PC04

*Covers concentrations up to 50%, Covers use up to 365 days/y, For each use event, covers use amounts up to 0.5 g, Covers use in a one car garage (34 m³) under typical ventilation. 1.5 Air changes per hour
Covers exposure up to 0.02 hour(s), Covers use in room size of 34 m³, Covers skin contact area up to 857.5 cm²*

Anti-freeze and de-icing products Pouring into radiator: PC04

Covers concentrations up to 50%, Covers use up to 365 days/y, Covers skin contact area up to 428 cm², For each use event, covers use amounts up to 2000 g, Covers use in a one car garage (34 m³) under typical ventilation. 1.5 Air changes per hour, Covers exposure up to 0.17 hour(s), Covers use in room size of 34 m³

Anti-freeze and de-icing products Lock de-icer: PC04

Covers concentrations up to 50%, Covers use up to 365 days/y, Covers skin contact area up to 214.4 cm², For each use event, covers use amounts up to 4 g, Covers use in a one car garage (34 m³) under typical ventilation. 1.5 Air changes per hour, Covers use in room size of 34 m³, Covers exposure up to 0.25 hour(s)

Biocidal products (e.g. disinfectants, pest control) Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners): PC08

Covers concentrations up to 5%, Covers use up to 128 days/y, Covers skin contact area up to 857.5 cm², For each use event, covers use amounts up to 27 g, Covers exposure up to 0.33 hour(s)

Biocidal products (e.g. disinfectants, pest control) Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners): PC08

Covers concentrations up to 15%, Covers use up to 128 days/y, Covers skin contact area up to 428 cm², For each use event, covers use amounts up to 35 g, Covers exposure up to 0.17 hour(s)

Coatings and paints, thinners, paint removers Solvent rich, high solid, water borne paint: PC09A

Covers concentrations up to 27.5%, Covers use up to 6 days/y, Covers skin contact area up to 428.75 cm², For each use event, covers use amounts up to 744 g, Covers exposure up to 2.2 hour(s)

Coatings and paints, thinners, paint removers Aerosol spray can: PC09A

*Covers concentrations up to 50%, Covers use up to 2 days/y, For each use event, covers use amounts up to 215 g, Covers use in a one car garage (34 m³) under typical ventilation. 1.5 Air changes per hour
Covers exposure up to 0.33 hour(s), Covers use in room size of 34 m³, Covers skin contact area up to 857.5 cm²*

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Coatings and paints, thinners, paint removers Removers (paint-, glue-, wall paper-, sealant-remover): PC09A

Covers concentrations up to 50%, Covers use up to 3 days/y, Covers skin contact area up to 857.5 cm², For each use event, covers use amounts up to 491 g, Covers exposure up to 2 hour(s)

Fillers, putties, plasters, modelling clay fillers and Putty: PC09B

Covers concentrations up to 2%, Covers use up to 12 days/y, Covers skin contact area up to 35.73 cm², For each use event, covers use amounts up to 85 g, Covers exposure up to 4 hour(s)

Fillers, putties, plasters, modelling clay Plasters and floor equalizers: PC09B

Covers concentrations up to 2%, Covers use up to 12 days/y, Covers skin contact area up to 857.5 cm², For each use event, covers use amounts up to 13800 g, Covers exposure up to 2 hour(s)

Fillers, putties, plasters, modelling clay Modelling clay: PC09B

Covers concentrations up to 10%, Covers use up to 365 days/y, Covers skin contact area up to 254.4 cm², For each use event, assumes swallowed amount of 1 g, For each use event, covers use amounts up to 13800 g, Covers exposure up to 6 hour(s)

Finger paints: PC09C

Covers concentrations up to 15%, Covers use up to 365 days/y, For each use event, assumes swallowed amount of 1.35 g, Covers skin contact area up to 254.4 cm², Covers exposure up to 6 hour(s) For each use event, covers use amounts up to 13800g

Non-metal-surface treatment products Solvent rich, high solid, water borne paint: PC15

Covers concentrations up to 27.5%, Covers use up to 6 days/y, Covers skin contact area up to 428.75 cm², For each use event, covers use amounts up to 744 g, Covers exposure up to 2.2 hour(s)

Non-metal-surface treatment products Aerosol spray can: PC15

Covers concentrations up to 50%, Covers use up to 2 days/y, For each use event, covers use amounts up to 215 g, Covers use in a one car garage (34 m³) under typical ventilation. 1.5 Air changes per hour Covers exposure up to 0.33 hour(s), Covers use in room size of 34 m³, Covers skin contact area up to 857.5 cm²

Non-metal-surface treatment products Removers (paint-, glue-, wall paper-, sealant-remover): PC15

Covers concentrations up to 50%, Covers use up to 3 days/y, Covers skin contact area up to 857.5 cm² For each use event, covers use amounts up to 491 g, Covers exposure up to 2 hour(s)

Ink and toners: PC18

Covers concentrations up to 10%, Covers use up to 365 days/y, Covers skin contact area up to 71.4 cm², For each use event, covers use amounts up to 40 g, Covers exposure up to 2.2 hour(s)

Leather tanning, dye, finishing, impregnation and care products Polishes, wax / cream (floor, furniture, shoes): PC23

Covers concentrations up to 50%, Covers use up to 29 days/y, Covers skin contact area up to 430 cm² For each use event, covers use amounts up to 56 g, Covers exposure up to 1.23 hour(s)

Leather tanning, dye, finishing, impregnation and care products Polishes, spray (furniture, shoes): PC23

Covers concentrations up to 50%, Covers use up to 8 days/y, Covers skin contact area up to 430 cm², For each use event, covers use amounts up to 56 g, Covers exposure up to 0.33 hour(s)

Lubricants, Greases and Release products Liquids: PC24

Covers concentrations up to 100%, Covers use up to 4 days/y, Covers skin contact area up to 468 cm², For each use event, covers use amounts up to 2200 g, Covers use in a one car garage (34 m) under typical ventilation. 1.5 Air changes per hour, Covers exposure up to 0.17 hour(s), Covers use in room size

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of 34 m³

Lubricants, Greases and Release products Pastes: PC24

Covers concentrations up to 20%, Covers use up to 10 days/y, Covers skin contact area up to 468 cm², For each use event, covers use amounts up to 34 g

Lubricants, Greases and Release products Sprays: PC24

Covers concentrations up to 50%, Covers use up to 6 days/y, Covers skin contact area up to 428.75 cm², For each use event, covers use amounts up to 73 g, Covers exposure up to 0.17 hour(s)

Polishes and wax blends Polishes, wax / cream (floor, furniture, shoes): PC31

Covers concentrations up to 50%, Covers use up to 9 days/y, Covers skin contact area up to 430 cm², For each use event, covers use amounts up to 142 g, Covers exposure up to 1.23 hour(s)

Polishes and wax blends Polishes, spray (furniture, shoes): PC31

Covers concentrations up to 50%, Covers use up to 8 days/y, Covers skin contact area up to 430 cm², For each use event, covers use amounts up to 35 g, Covers exposure up to 0.33 hour(s)

Textile dyes, finishing and impregnating products; including bleaches and other processing aids: PC34

Covers concentrations up to 10%, Covers use up to 365 days/y, Covers skin contact area up to 857.5 cm², For each use event, covers use amounts up to 115 g, Covers exposure up to 1 hour(s), Covers exposure up to 1 hour(s)

- Worker protection

- Personal protective measures

For more information on "Personal protective equipment" see section 8 of the MSDS

- Disposal measures

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

If possible, send to be recycled, otherwise burn or deposit in a certified facility.

This substance is consumed during use and no waste of substance is generated.

- Exposure estimation *The exposure estimation was carried out in accordance with ECETOC TRA.*

- Environment

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

- Guidance for downstream users

Health:

The available data on hazards do not confirm the need for a DNEL value to other health effects.

Expected exposure does not exceed the DNEL / DMEL values when the risk management measures / operating conditions are observed.

Risk management measures are based on the qualitative risk description.

If further risk management measures / operating conditions are adopted, users should ensure that risks are limited to at least an equivalent level.

Detailed information on the exposure estimation can be found at <http://www.ecetoc.org/tra>.

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Annex: Exposure scenario 27

- Short title of the exposure scenario

Use in antifreeze agents
consumer

- **Sector of Use** SU21 Consumer uses: Private households / general public / consumers

- **Product category** PC4 Anti-Freeze and de-icing products

- **Environmental release category**

ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)

- **Description of the activities / processes covered in the Exposure Scenario**

Ice prevention and de-icing of vehicles, aircraft and other equipment by spraying.

- **Conditions of use**

- **Duration and frequency**

- **Worker**

- **Consumers**

1 application(s) / day
(unless stated differently)

- **Environment**

As no environmental hazard was identified no environmental exposure assessment and risk characterization has been carried out.

- **Physical parameters**

- **Physical state**

Fluid

Vapour pressure: 5 - 100 hPa (20 °C)

- **Other operational conditions** Covers use at ambient temperatures.

- **Other operational conditions affecting consumer exposure** Room size: 34 m³

- **Risk management measures**

General measures (flammable liquid):

Risks of the physicochemical properties of substances, such as flammability or explosiveness, can be controlled by implementing risk management measures. It is recommended to follow the new ATEX Directive 2014/34 / EU. Based on the implementation of a selection of risk management measures for handling and storage for the identified uses, the risk can be viewed as controlled at an acceptable level. Use in closed systems. Avoid ignition sources - Do not smoke. Use in well-ventilated areas to avoid the formation of an explosive atmosphere. Devices and protective systems approved for inflammable substances. Limit the flow rate in the pipes during pumping to avoid electrostatic charging. Clean the tank and the plant to be filled. Use a spark-free tool. Observe relevant EU / national guidelines. Observe additional notes in the SDS.

Anti-freeze and de-icing products Washing car window: PC04

Covers concentrations up to 1%, Covers use up to 365 days/y, For each use event, covers use amounts up to 0.5 g, Covers use in a one car garage (34 m³) under typical ventilation. 1.5 Air changes per hour
Covers exposure up to 0.02 hour(s), Covers skin contact area up to 428 cm²

Anti-freeze and de-icing products Pouring into radiator: PC04

Covers concentrations up to 10%, Covers use up to 365 days/y, Covers skin contact area up to 428 cm², For each use event, covers use amounts up to 2000 g, Covers use in a one car garage (34 m³) under typical ventilation. 1.5 Air changes per hour, Covers exposure up to 0.17 hour(s)

Anti-freeze and de-icing products Lock de-icer: PC04

Covers concentrations up to 40%, Covers use up to 365 days/y, Covers skin contact area up to 214.4 cm², For each use event, covers use amounts up to 4 g, Covers use in a one car garage (34 m³) under typical ventilation. 1.5 Air changes per hour, Covers exposure up to 0.25 hour(s)

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- **Worker protection**

- **Personal protective measures**

For more information on "Personal protective equipment" see section 8 of the MSDS

- **Disposal measures**

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

If possible, send to be recycled, otherwise burn or deposit in a certified facility.

This substance is consumed during use and no waste of substance is generated.

- **Exposure estimation** *The exposure estimation was carried out in accordance with ECETOC TRA.*

- **Environment**

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

- **Guidance for downstream users**

Health:

The available data on hazards do not confirm the need for a DNEL value to other health effects.

Expected exposure does not exceed the DNEL / DMEL values when the risk management measures / operating conditions are observed.

Risk management measures are based on the qualitative risk description.

If further risk management measures / operating conditions are adopted, users should ensure that risks are limited to at least an equivalent level.

Detailed information on the exposure estimation can be found at <http://www.ecetoc.org/tra>.

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Annex: Exposure scenario 28

- Short title of the exposure scenario

Use as a fuel
consumer

- Sector of Use SU21 Consumer uses: Private households / general public / consumers

- Product category PC13 Fuels

- Environmental release category

ERC9a Widespread use of functional fluid (indoor)

ERC9b Widespread use of functional fluid (outdoor)

- Description of the activities / processes covered in the Exposure Scenario

Umfasst die Verbraucheranwendungen in flüssigen Brennstoffen.

- Conditions of use

- Duration and frequency

- Worker

- Consumers

1 application(s) / day
(unless stated differently)

- Environment

As no environmental hazard was identified no environmental exposure assessment and risk characterization has been carried out.

- Physical parameters

- Physical state

Fluid

Vapour pressure: 5 - 100 hPa (20 °C)

- Concentration of the substance in the mixture Includes concentrations up to: 100%

- Other operational conditions Covers use at ambient temperatures.

- Risk management measures

General measures (flammable liquid):

Risks of the physicochemical properties of substances, such as flammability or explosiveness, can be controlled by implementing risk management measures. It is recommended to follow the new ATEX Directive 2014/34 / EU. Based on the implementation of a selection of risk management measures for handling and storage for the identified uses, the risk can be viewed as controlled at an acceptable level. Use in closed systems. Avoid ignition sources - Do not smoke. Use in well-ventilated areas to avoid the formation of an explosive atmosphere. Devices and protective systems approved for inflammable substances. Limit the flow rate in the pipes during pumping to avoid electrostatic charging. Clean the tank and the plant to be filled. Use a spark-free tool. Observe relevant EU / national guidelines. Observe additional notes in the SDS.

Automotive Refuelling: PC13

Covers use up to 1 times per day, Covers use up to 52 days/yr, Covers skin contact area up to 210 cm², For each use event, covers use amounts up to 37500g, Covers outdoor use. 0.6 Air changes per hour, Covers use in room size of 100 m³, Covers exposure up to 0.05 hour(s)

Scooter Refuelling: PC13

Covers use up to 1 times per day, Covers use up to 52 days/yr, Covers skin contact area up to 210 cm², For each use event, covers use amounts up to 3750g, Covers outdoor use. 0.6 Air changes per hour, Covers use in room size of 100 m³, Covers exposure up to 0.03 hour(s)

Garden Equipment - Use: PC13

Covers use up to 1 times per day, Covers use up to 26 days/yr, For each use event, covers use amounts up to 750g, Covers outdoor use. 0.6 Air changes per hour, Covers exposure up to 2 hour(s), Covers use in room size of 100 m³

Garden Equipment - Refueling: PC13

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Covers use up to 1 times per day, Covers use up to 26 days/yr, Covers skin contact area up to 420 cm², For each use event, covers use amounts up to 750g, Covers use in a one car garage (34 m³) under typical ventilation. 1.5 Air changes per hour, Covers use in room size of 34 m³, Covers exposure up to 0.03 hour(s)

Home space heater fuel: PC13

Covers use up to 1 times per day, Covers use up to 52 days/yr, Covers skin contact area up to 210 cm², For each use event, covers use amounts up to 3000g, Covers use in room size of 20 m³, Covers exposure up to 0.03 hour(s), Covers use in a one car garage (34 m³) under typical ventilation.

- Worker protection

- Personal protective measures

For more information on "Personal protective equipment" see section 8 of the MSDS

- Disposal measures

Must not be disposed of together with household garbage. Do not allow product to reach sewage system. If possible, send to be recycled, otherwise burn or deposit in a certified facility.

- Exposure estimation The exposure estimation was carried out in accordance with ECETOC TRA.

- Environment

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

- Guidance for downstream users

Health:

The available data on hazards do not confirm the need for a DNEL value to other health effects.

Expected exposure does not exceed the DNEL / DMEL values when the risk management measures / operating conditions are observed.

Risk management measures are based on the qualitative risk description.

If further risk management measures / operating conditions are adopted, users should ensure that risks are limited to at least an equivalent level.

Detailed information on the exposure estimation can be found at <http://www.ecetoc.org/tra>.