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# Methyl Isobutyl Ketone

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

#### 1.1 Product identifier

Trade name : Methyl Isobutyl Ketone

Product code : S1215

Registration number EU : 01-2119473980-30-0002

Synonyms: 4-methyl-2-pentanone, Hexanone, Hexone, MIBK

CAS-No. : 108-10-1

EC-No. : 203-550-1

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

Use of the Sub: Use only in industrial processes.

stance/Mixture Please refer to section 16 and/or the annexes for the regis-

tered uses under REACH.

Uses advised against : This product must not be used in applications other than the

above without first seeking the advice of the supplier.

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

Manufacturer/Supplier : Shell Chemicals Europe B.V.

PO Box 2334

3000 CH Rotterdam

Netherlands

Telephone : +31 (0)10 441 5137 / +31 (0)10 441 5191 Telefax : +31 (0)20 716 8316 / +31 (0)20 713 9230

Contact for Safety Data : sccmsds@shell.com

Sheet

#### 1.4 Emergency telephone number

+44 (0) 1235 239 670 (This telephone number is available 24 hours per day, 7 days per

week)

Poison Centre: (+41) 145

#### **SECTION 2: Hazards identification**

#### 2.1 Classification of the substance or mixture

#### Classification (REGULATION (EC) No 1272/2008)

Flammable liquids, Category 2 H225: Highly flammable liquid and vapour.

Eye irritation, Category 2 H319: Causes serious eye irritation.

Acute toxicity, Category 4, Inhalation H332: Harmful if inhaled.

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Specific target organ toxicity - single exposure, Category 3, Central nervous

system

H336: May cause drowsiness or dizziness.

Carcinogenicity, Category 2 H351: Suspected of causing cancer.

#### 2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms :





Signal word : Danger

Hazard statements : PHYSICAL HAZARDS:

H225 Highly flammable liquid and vapour.

**HEALTH HAZARDS:** 

H319 Causes serious eye irritation.

H332 Harmful if inhaled.

H336 May cause drowsiness or dizziness.H351 Suspected of causing cancer.

**ENVIRONMENTAL HAZARDS:** 

Not classified as environmental hazard according to

CLP criteria.

Supplemental Hazard

Statements

EUH066

Repeated exposure may cause skin dryness or

cracking.

Precautionary statements : Prevention:

P210 Keep away from heat, hot surfaces, sparks, open

flames and other ignition sources. No smoking.

P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P280 Wear protective gloves/ protective clothing/ eye protec-

tion/face protection.

Response:

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

er.

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

Storage:

P403 + P235 Store in a well-ventilated place. Keep cool.

Disposal:

P501 Dispose of contents/ container to an approved waste

disposal plant.

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#### 2.3 Other hazards

Ecological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Toxicological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Vapours are heavier than air. Vapours may travel across the ground and reach remote ignition sources causing a flashback fire danger.

Even with proper grounding and bonding, this material can still accumulate an electrostatic charge.

If sufficient charge is allowed to accumulate, electrostatic discharge and ignition of flammable airvapour mixtures can occur.

Exposure may enhance the toxicity of other materials.

See Chapter 11 for details.

Vapours may be irritating to the eye.

#### **SECTION 3: Composition/information on ingredients**

## 3.1 Substances

#### Components

Chemical name	CAS-No.	Concentration (% w/w)
	EC-No.	
Methyl isobutyl ketone	108-10-1	<= 100
	203-550-1	

#### **SECTION 4: First aid measures**

#### 4.1 Description of first aid measures

General advice : DO NOT DELAY.

Keep victim calm. Obtain medical treatment immediately.

Protection of first-aiders : When administering first aid, ensure that you are wearing the

appropriate personal protective equipment according to the

incident, injury and surroundings.

If inhaled : Call emergency number for your location / facility.

Remove to fresh air. Do not attempt to rescue the victim unless proper respiratory protection is worn. If the victim has difficulty breathing or tightness of the chest, is dizzy, vomiting, or unresponsive, give 100% oxygen with rescue breathing or Cardio-Pulmonary Resuscitation as required and transport to

the nearest medical facility.

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In case of skin contact : Remove contaminated clothing. Flush exposed area with wa-

ter and follow by washing with soap if available.

If persistent irritation occurs, obtain medical attention.

In case of eye contact : Immediately flush eye(s) with plenty of water.

Remove contact lenses, if present and easy to do. Continue

rinsing.

Transport to the nearest medical facility for additional treat-

ment.

If swallowed : If swallowed, do not induce vomiting: transport to nearest

medical facility for additional treatment. If vomiting occurs spontaneously, keep head below hips to prevent aspiration.

Rinse mouth.

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

Symptoms : Respiratory irritation signs and symptoms may include a tem-

porary burning sensation of the nose and throat, coughing,

and/or difficulty breathing.

Skin irritation signs and symptoms may include a burning sen-

sation, redness, or swelling.

Eye irritation signs and symptoms may include a burning sen-

sation, redness, swelling, and/or blurred vision.

Ingestion may result in nausea, vomiting and/or diarrhoea. Defatting dermatitis signs and symptoms may include a burn-

ing sensation and/or a dried/cracked appearance.

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

Treatment : IMMEDIATE TREATMENT IS EXTREMELY IMPORTANT!

Call a doctor or poison control center for guidance.

Treat symptomatically.

# **SECTION 5: Firefighting measures**

#### 5.1 Extinguishing media

Suitable extinguishing media : Alcohol-resistant foam, water spray or fog. Dry chemical pow-

der, carbon dioxide, sand or earth may be used for small fires

only.

Unsuitable extinguishing

media

None

#### 5.2 Special hazards arising from the substance or mixture

Specific hazards during fire-

fighting

: The vapour is heavier than air, spreads along the ground and

distant ignition is possible.

Carbon monoxide may be evolved if incomplete combustion

occurs.

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#### 5.3 Advice for firefighters

Special protective equipment :

for firefighters

Proper protective equipment including chemical resistant gloves are to be worn; chemical resistant suit is indicated if large contact with spilled product is expected. Self-Contained Breathing Apparatus must be worn when approaching a fire in a confined space. Select fire fighter's clothing approved to

relevant Standards (e.g. Europe: EN469).

Specific extinguishing meth-

ods

Standard procedure for chemical fires.

Further information : Clear fire area of all non-emergency personnel.

Keep adjacent containers cool by spraying with water.

#### **SECTION 6: Accidental release measures**

#### 6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions : Observe the relevant local and international regulations

Notify authorities if any exposure to the general public or the

environment occurs or is likely to occur.

Local authorities should be advised if significant spillages

cannot be contained.

The vapour is heavier than air, spreads along the ground and

distant ignition is possible.

Vapour may form an explosive mixture with air.

6.1.1 For non emergency personnel: Avoid contact with skin, eyes and clothing.

Isolate hazard area and deny entry to unnecessary or unpro-

tected personnel.

Stay upwind and keep out of low areas. 6.1.2 For emergency responders:

Avoid contact with skin, eyes and clothing.

Isolate hazard area and deny entry to unnecessary or unpro-

tected personnel.

Stay upwind and keep out of low areas.

#### 6.2 Environmental precautions

**Environmental precautions** 

Shut off leaks, if possible without personal risks. Remove all possible sources of ignition in the surrounding area. Use appropriate containment to avoid environmental contamination. Prevent from spreading or entering drains, ditches or rivers by using sand, earth, or other appropriate barriers. Attempt to disperse the vapour or to direct its flow to a safe location for example by using fog sprays. Take precautionary measures against static discharge. Ensure electrical continuity by bond-

ing and grounding (earthing) all equipment. Ventilate contaminated area thoroughly. Monitor area with combustible gas indicator.

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# 6.3 Methods and material for containment and cleaning up

Methods for cleaning up : For large liquid spills (> 1 drum), transfer by mechanical

means such as vacuum truck to a salvage tank for recovery or safe disposal. Do not flush away residues with water. Retain as contaminated waste. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely For small liquid spills (< 1 drum), transfer by mechanical means to a labeled, sealable container for product recovery or safe disposal. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove

contaminated soil and dispose of safely.

#### 6.4 Reference to other sections

For guidance on selection of personal protective equipment see Section 8 of this Safety Data Sheet., For guidance on disposal of spilled material see Section 13 of this Safety Data Sheet.

## **SECTION 7: Handling and storage**

#### 7.1 Precautions for safe handling

Technical measures : Avoid breathing of or direct contact with material. Only use in

well ventilated areas. Wash thoroughly after handling. For guidance on selection of personal protective equipment see

Section 8 of this Safety Data Sheet.

Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this

material.

Ensure that all local regulations regarding handling and stor-

age facilities are followed.

Advice on safe handling : Avoid contact with skin, eyes and clothing.

Use local exhaust ventilation if there is risk of inhalation of

vapours, mists or aerosols.

Bulk storage tanks should be diked (bunded).

Extinguish any naked flames. Do not smoke. Remove ignition

sources. Avoid sparks.

Electrostatic discharge may cause fire. Ensure electrical continuity by bonding and grounding (earthing) all equipment to

reduce the risk.

The vapours in the head space of the storage vessel may lie in the flammable/explosive range and hence may be flamma-

ble.

Properly dispose of any contaminated rags or cleaning mate-

rials in order to prevent fires.

Do NOT use compressed air for filling, discharging, or han-

dling operations.

Product Transfer : Refer to guidance under Handling section.

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## 7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers

 The vapour is heavier than air. Beware of accumulation in pits and confined spaces. Refer to section 15 for any additional specific legislation covering the packaging and storage of this

product.

Packaging material : Suitable material: For containers, or container linings use mild

steel, stainless steel.

Unsuitable material: Natural, butyl, neoprene or nitrile rubbers.

Container Advice : Containers, even those that have been emptied, can contain

explosive vapours. Do not cut, drill, grind, weld or perform

similar operations on or near containers.

## 7.3 Specific end use(s)

Specific use(s) : Please refer to section 16 and/or the annexes for the regis-

tered uses under REACH.

Ensure that all local regulations regarding handling and stor-

age facilities are followed.

See additional references that provide safe handling practices: American Petroleum Institute 2003 (Protection Against Ignitions Arising out of Static, Lightning and Stray Currents) or National Fire Protection Agency 77 (Recommended Practices

on Static Electricity).

IEC/TS 60079-32-1: Electrostatic hazards, guidance

### **SECTION 8: Exposure controls/personal protection**

#### 8.1 Control parameters

#### **Occupational Exposure Limits**

Components	CAS-No.	Value type (Form of exposure)	Control parameters	Basis
Methyl isobutyl	108-10-1	TWA	20 ppm	CH SUVA
ketone			82 mg/m3	
	easily absored stancial highe tute for Occup tional Institute and occupatio	d through the skin, car risk compared to obational Safety and Facor Research and Samuel diseases, Harmu-value is respected	resorption possible; Substan an give by additional skin res nly inhalation by the airways. lealth, German Research Fo afety for the prevention of wo to the unborn child is not to be	option a sub- , National Insti- undation, Na- rk accidents be expected
Methyl isobutyl		STEL	40 ppm	CH SUVA
ketone			164 mg/m3	
	Further information: Toxic by skin resorption possible; Substances, which are easily absored through the skin, can give by additional skin resoption a substancial higher risk compared to only inhalation by the airways., National Institute for Occupational Safety and Health, German Research Foundation, National Institute of Research and Safety for the prevention of work accidents			

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and occupational diseases, Harm to the unborn child is not to be expected when the OEL-value is respected

#### **Biological occupational exposure limits**

Substance name	CAS-No.	Control parameters	Sampling time	Basis
Methyl isobutyl ketone	108-10-1	4-methylpentan-2- one: 0,7 mg/l (Urine)	Immediately after exposure or after working hours	CH BAT

## Derived No Effect Level (DNEL) according to Regulation (EC) No. 1907/2006:

Substance name	End Use	Exposure routes	Potential health effects	Value
Methyl Isobutyl Ketone, 108-10-1	Workers	Inhalation	Acute systemic effects	208 mg/m3
Methyl Isobutyl Ketone, 108-10-1	Workers	Inhalation	Acute local effects	208 mg/m3
Methyl Isobutyl Ketone, 108-10-1	Workers	Inhalation	Long-term systemic effects	83 mg/m3
Methyl Isobutyl Ketone, 108-10-1	Workers	Inhalation	Long-term local ef- fects	83 mg/m3
Methyl Isobutyl Ketone, 108-10-1	Workers	Dermal	Long-term systemic effects	11,8 mg/kg bw/day
Methyl Isobutyl Ketone, 108-10-1	Consumers	Inhalation	Acute systemic effects	155,2 mg/m3
Methyl Isobutyl Ketone, 108-10-1	Consumers	Inhalation	Acute local effects	155,2 mg/m3
Methyl Isobutyl Ketone, 108-10-1	Consumers	Inhalation	Long-term systemic effects	14,7 mg/m3
Methyl Isobutyl Ketone, 108-10-1	Consumers	Inhalation	Long-term local ef- fects	14,7 mg/m3
Methyl Isobutyl Ketone, 108-10-1	Consumers	Dermal	Long-term systemic effects	4,2 mg/kg bw/day
Methyl Isobutyl Ke- tone, 108-10-1	Consumers	Oral	Long-term systemic effects	4,2 mg/kg bw/day

### Predicted No Effect Concentration (PNEC) according to Regulation (EC) No. 1907/2006:

Substance name		Environmental Compartment	Value
Remarks:	Exposure	assessments have not been presented for the	environment
	therefore	PNEC values not required.	

#### 8.2 Exposure controls

## **Engineering measures**

Read in conjunction with the Exposure Scenario for your specific use contained in the Annex. Use sealed systems as far as possible.

Adequate explosion-proof ventilation to control airborne concentrations below the exposure guidelines/limits.

Local exhaust ventilation is recommended.

Firewater monitors and deluge systems are recommended.

Eye washes and showers for emergency use.

Where material is heated, sprayed or mist formed, there is greater potential for airborne concentrations to be generated.

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The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. Appropriate measures include:

#### **General Information**

Always observe good personal hygiene measures, such as washing hands after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.

Define procedures for safe handling and maintenance of controls.

Educate and train workers in the hazards and control measures relevant to normal activities associated with this product.

Ensure appropriate selection, testing and maintenance of equipment used to control exposure, e.g. personal protective equipment, local exhaust ventilation.

Drain down system prior to equipment break-in or maintenance.

Retain drain downs in sealed storage pending disposal or subsequent recycle.

#### Personal protective equipment

Read in conjunction with the Exposure Scenario for your specific use contained in the Annex. The provided information is made in consideration of the PPE directive (Council Directive 89/686/EEC) and the CEN European Committee for Standardisation (CEN) standards.

Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers.

Eye protection : Wear goggles for use against liquids and gas.

Wear full face shield if splashes are likely to occur.

Approved to EU Standard EN166.

Hand protection

Remarks : Where hand contact with the product may occur the use of

gloves approved to relevant standards (e.g. Europe: EN374, US: F739) made from the following materials may provide suitable chemical protection. Longer term protection: Butyl rubber. Nitrile rubber. Incidental contact/Splash protection: PVC or neoprene rubber gloves. For continuous contact we recommend gloves with breakthrough time of more than 240 minutes with preference for > 480 minutes where suitable gloves can be identified. For short-term/splash protection we recommend the same but recognize that suitable gloves offering this level of protection may not be available and in this case a lower breakthrough time maybe acceptable so long as appropriate maintenance and replacement regimes are followed. Glove thickness is not a good predictor of glove resistance to a chemical as it is dependent on the exact composition of the glove material. Glove thickness should be typically greater than 0.35 mm depending on the glove make and model. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced. Personal hygiene is a key element of effective hand

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care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturizer is recommended.

Skin and body protection : Wear antistatic and flame-retardant clothing, if a local risk

assessment deems it so.

Skin protection is not required under normal conditions of

use.

For prolonged or repeated exposures use impervious clothing

over parts of the body subject to exposure.

If repeated and/or prolonged skin exposure to the substance is likely, then wear suitable gloves tested to relevant Standard, and provide employee skin care programmes.

Protective clothing approved to EU Standard EN14605.

Respiratory protection : If engineering controls do not maintain airborne concentra-

tions to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the specific conditions of use and meeting relevant legislation. Check with respiratory protective equipment suppliers. Where air-filtering respirators are unsuitable (e.g. airborne concentrations are high, risk of oxygen deficiency, confined space) use appropriate positive pressure breathing appa-

ratus.

Where air-filtering respirators are suitable, select an appro-

priate combination of mask and filter.

If air-filtering respirators are suitable for conditions of use: Select a filter suitable for organic gases and vapours [Type A

boiling point > 65°C (149°F)] meeting EN14387.

Thermal hazards : Not applicable

# **SECTION 9: Physical and chemical properties**

# 9.1 Information on basic physical and chemical properties

Physical state : Liquid.

Colour : clear

Odour : characteristic

Odour Threshold : < 100 ppm

Melting point/freezing point : -85 °C

Boiling point/boiling range : 114 - 117 °C

Flammability

Flammability (solid, gas) : Not applicable

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Lower explosion limit and upper explosion limit / flammability limit

Upper explosion limit / : Upper flammability limit

Upper flammability limit 8 %(V)

Lower explosion limit / : Lower flammability limit

Lower flammability limit 1,3 %(V)

Flash point : 14 °C

Method: Abel

Auto-ignition temperature : 448 °C

Decomposition temperature

Decomposition tempera-

Not applicable

pH : Not applicable

Viscosity

ture

Viscosity, dynamic : Data not available

Viscosity, kinematic : Not applicable

Solubility(ies)

Water solubility : 20 g/l (20 °C)

Partition coefficient: n-

octanol/water

: log Pow: 1,31

Vapour pressure : 1,900 Pa (20 °C)

Relative density : 0,799 - 0,802 (20 °C)

Method: ASTM D4052

Density : 799 - 802 kg/m3 (20 °C)

Method: ASTM D4052

Relative vapour density : 3,5 (20 °C)

Particle characteristics

Particle size : Data not available

9.2 Other information

Explosive properties : Not applicable

Oxidizing properties : Data not available

Evaporation rate : 1,6

Method: ASTM D 3539, nBuAc=1

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Conductivity: > 10,000 pS/m

A number of factors, for example liquid temperature, presence of contaminants, and anti-static additives can greatly influence the conductivity of a liquid, This material is not expected to be

a static accumulator.

Surface tension : Data not available

Molecular weight : Data not available

## **SECTION 10: Stability and reactivity**

#### 10.1 Reactivity

The product does not pose any further reactivity hazards in addition to those listed in the following sub-paragraph.

#### 10.2 Chemical stability

No hazardous reaction is expected when handled and stored according to provisions

# 10.3 Possibility of hazardous reactions

Hazardous reactions : Reacts with strong oxidising agents.

#### 10.4 Conditions to avoid

Conditions to avoid : Avoid heat, sparks, open flames and other ignition sources.

Prevent vapour accumulation.

In certain circumstances product can ignite due to static elec-

tricity.

### 10.5 Incompatible materials

Materials to avoid : Strong oxidising agents.

#### 10.6 Hazardous decomposition products

Thermal decomposition is highly dependent on conditions. A complex mixture of airborne solids, liquids and gases including carbon monoxide, carbon dioxide, sulphur oxides and unidentified organic compounds will be evolved when this material undergoes combustion or thermal or oxidative degradation.

### **SECTION 11: Toxicological information**

#### 11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008

Information on likely routes of:

exposure

Inhalation is the primary route of exposure although absorption may occur through skin contact or following accidental

ingestion.

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## **Acute toxicity**

## **Components:**

#### Methyl isobutyl ketone:

Acute oral toxicity : LD50 (Rat): > 2.000 mg/kg

Method: Test(s) equivalent or similar to OECD Test Guideline

401

Remarks: LD50 >2000 - <=5000 mg/kg

May be harmful if swallowed.

Acute inhalation toxicity : LC50 (Rat): > 10 - 20 mg/l

Exposure time: 4 h
Test atmosphere: vapour

Method: Test(s) equivalent or similar to OECD Test Guideline

403

Remarks: LC50 > 10,0 - <= 20,0 mg/l

Harmful if inhaled.

Acute dermal toxicity : LD50 (Rat, male and female): > 2.000 mg/kg

Method: OECD Test Guideline 402

Remarks: Based on available data, the classification criteria

are not met.

#### Skin corrosion/irritation

#### **Components:**

#### Methyl isobutyl ketone:

Species : Rabbit

Method : OECD Test Guideline 404

Remarks : Based on available data, the classification criteria are not met.

Prolonged/repeated contact may cause defatting of the skin

which can lead to dermatitis.

# Serious eye damage/eye irritation

#### **Components:**

#### Methyl isobutyl ketone:

Species : Rabbit

Method : OECD Test Guideline 405
Remarks : Causes serious eye irritation.

#### Respiratory or skin sensitisation

# **Components:**

# Methyl isobutyl ketone:

Species : Guinea pig

Method : OECD Test Guideline 406

Remarks : Based on available data, the classification criteria are not met.

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## Germ cell mutagenicity

#### **Components:**

#### Methyl isobutyl ketone:

Genotoxicity in vitro : Method: Test(s) equivalent or similar to OECD Guideline 471

Remarks: Based on available data, the classification criteria

are not met.

Method: Test(s) equivalent or similar to OECD Test Guideline

476

Remarks: Based on available data, the classification criteria

are not met.

Method: Test(s) equivalent or similar to OECD Test Guideline

473

Remarks: Based on available data, the classification criteria

are not met.

Genotoxicity in vivo : Species: Mouse

Method: Test(s) equivalent or similar to OECD Test Guideline

474

Remarks: Based on available data, the classification criteria

are not met.

Germ cell mutagenicity- As-

sessment

This product does not meet the criteria for classification in

categories 1A/1B.

#### Carcinogenicity

## **Components:**

# Methyl isobutyl ketone:

Species : Rat, male and female

Application Route : Inhalation

Method : OECD Test Guideline 451 Remarks : Suspected of causing cancer.

Carcinogenicity - Assess-

ment

This product does not meet the criteria for classification in

categories 1A/1B.

Material	GHS/CLP Carcinogenicity Classification
Methyl isobutyl ketone	Carcinogenicity Category 2

Material	Other Carcinogenicity Classification
Methyl isobutyl ketone	IARC: Group 2B: Possibly carcinogenic to humans

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## Reproductive toxicity

#### **Components:**

## Methyl isobutyl ketone:

Effects on fertility : Species: Rat

Sex: male and female Application Route: Oral

Method: Equivalent or similar to OECD Test Guideline 416 Remarks: Based on available data, the classification criteria

are not met.

Reproductive toxicity - As-

sessment

This product does not meet the criteria for classification in

categories 1A/1B.

#### STOT - single exposure

## **Components:**

#### Methyl isobutyl ketone:

Exposure routes : Inhalation
Target Organs : Narcotic effects

Remarks : May cause drowsiness or dizziness.

## STOT - repeated exposure

#### **Components:**

#### Methyl isobutyl ketone:

Remarks : Based on available data, the classification criteria are not met.

Kidney: caused kidney effects in male rats which are not con-

sidered relevant to humans

#### Repeated dose toxicity

## **Components:**

# Methyl isobutyl ketone:

Species : Rat, male and female

Application Route : Oral

Method : Test(s) equivalent or similar to OECD Test Guideline 408

Target Organs : No specific target organs noted

Species : Rat, male and female

Application Route : Inhalation Test atmosphere : vapour

Method : Test(s) equivalent or similar to OECD Test Guideline 451

Target Organs : No specific target organs noted

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## **Aspiration toxicity**

#### **Components:**

## Methyl isobutyl ketone:

Based on available data, the classification criteria are not met.

#### 11.2 Information on other hazards

#### **Endocrine disrupting properties**

#### **Product:**

Assessment : The substance/mixture does not contain components consid-

ered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at

levels of 0.1% or higher.

#### **Further information**

**Product:** 

Remarks : Unless indicated otherwise, the data presented is representa-

tive of the product as a whole, rather than for individual com-

ponent(s).

## **Components:**

Methyl isobutyl ketone:

Remarks : Classifications by other authorities under varying regulatory

frameworks may exist.

#### **SECTION 12: Ecological information**

#### 12.1 Toxicity

# Components:

#### Methyl isobutyl ketone:

Toxicity to fish : LC50 (Danio rerio (zebra fish)): > 179 mg/l

Exposure time: 96 h

Method: OECD Test Guideline 203 Remarks: Practically non toxic:

LL/EL/IL50 > 100 mg/l

Toxicity to daphnia and other :

aquatic invertebrates

EC50 (Daphnia magna (Water flea)): > 200 mg/l

Exposure time: 48 h

Method: OECD Test Guideline 202 Remarks: Practically non toxic:

LL/EL/IL50 > 100 mg/l

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Toxicity to algae/aquatic plants : EC50 (Lemna gibba (gibbous duckweed)): > 146 mg/l

Exposure time: 168 h

Method: OECD Test Guideline 221 Remarks: Practically non toxic: LL/EL/IL50 > 100 mg/l

Toxicity to microorganisms : TTC (Pseudomonas putida): 275 mg/l

Exposure time: 72 h Method: Literature data. Remarks: Practically non toxic: LL/EL/IL50 > 100 mg/l

Toxicity to fish (Chronic tox-

icity)

Remarks: Data not available

Toxicity to daphnia and other : aquatic invertebrates (Chron-

ic toxicity)

NOEC: 30 mg/l Exposure time: 21 d

Species: Daphnia magna (Water flea)

Method: Test(s) equivalent or similar to OECD Guideline 211

Remarks: NOEC/NOEL > 10 - <=100 mg/l

#### 12.2 Persistence and degradability

#### **Components:**

Methyl isobutyl ketone:

Biodegradability : Biodegradation: 83 %

Exposure time: 28 d

Method: OECD Test Guideline 301F Remarks: Readily biodegradable.

Oxidises rapidly by photo-chemical reactions in air.

## 12.3 Bioaccumulative potential

#### **Components:**

Methyl isobutyl ketone:

Bioaccumulation : Remarks: Does not have the potential to bioaccumulate significant-

ly.

#### 12.4 Mobility in soil

#### **Components:**

Methyl isobutyl ketone:

Mobility : Remarks: Dissolves in water., If the product enters soil, one or

more constituents will or may be mobile and may contaminate

groundwater.

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#### 12.5 Results of PBT and vPvB assessment

#### **Components:**

#### Methyl isobutyl ketone:

Assessment : The substance does not fulfill all screening criteria for persis-

tence, bioaccumulation and toxicity and hence is not consid-

ered to be PBT or vPvB..

### 12.6 Endocrine disrupting properties

#### **Product:**

Assessment : The substance/mixture does not contain components considered to

have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

#### 12.7 Other adverse effects

#### **Product:**

Additional ecological infor-

mation

: Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual component(s).

#### **Components:**

## Methyl isobutyl ketone:

Additional ecological infor-

mation

: Does not have ozone depletion potential.

## **SECTION 13: Disposal considerations**

#### 13.1 Waste treatment methods

Product : Recover or recycle if possible.

It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal meth-

ods in compliance with applicable regulations.

Do not dispose into the environment, in drains or in water

courses.

Waste product should not be allowed to contaminate soil or ground water, or be disposed of into the environment. Waste, spills or used product is dangerous waste.

Disposal should be in accordance with applicable regional,

national, and local laws and regulations.

Local regulations may be more stringent than regional or na-

tional requirements and must be complied with.

MARPOL - see International Convention for the Prevention of

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Pollution from Ships (MARPOL 73/78) which provides tech-

nical aspects at controlling pollutions from ships.

Contaminated packaging : Drain container thoroughly.

After draining, vent in a safe place away from sparks and fire.

Residues may cause an explosion hazard. Do not, puncture, cut, or weld uncleaned drums. Send to drum recoverer or metal reclaimer.

Dispose in accordance with prevailing regulations, preferably to a recognized collector or contractor. The competence of the collector or contractor should be established beforehand.

# **SECTION 14: Transport information**

14.1 UN number or ID number

ADN : 1245
ADR : 1245
RID : 1245
IMDG : 1245
IATA : 1245

14.2 UN proper shipping name

ADN : METHYL ISOBUTYL KETONE
ADR : METHYL ISOBUTYL KETONE
RID : METHYL ISOBUTYL KETONE
IMDG : METHYL ISOBUTYL KETONE

IATA : METHYL ISOBUTYL KETONE

14.3 Transport hazard class(es)

ADN : 3
ADR : 3
RID : 3
IMDG : 3
IATA : 3

14.4 Packing group

ADN

Packing group : II
Classification Code : F1
Labels : 3

CDNI Inland Water Waste

Agreement

: NST 8963 Solvent

**ADR** 

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Packing group : II
Classification Code : F1
Hazard Identification Number : 33
Labels : 3

**RID** 

Packing group : II
Classification Code : F1
Hazard Identification Number : 33
Labels : 3

**IMDG** 

Packing group : II Labels : 3

**IATA** 

Packing group : II Labels : 3

#### 14.5 Environmental hazards

**ADN** 

Environmentally hazardous : no

ADR

Environmentally hazardous : no

RID

Environmentally hazardous : no

**IMDG** 

Marine pollutant : no

14.6 Special precautions for user

Remarks : Special Precautions: Refer to Section 7, Handling & Storage,

for special precautions which a user needs to be aware of or

needs to comply with in connection with transport.

14.7 Maritime transport in bulk according to IMO instruments

Pollution category : Z Ship type : 3

Product name : Methyl Isobutyl Ketone

**Additional Information**: This product may be transported under nitrogen blanketing.

Nitrogen is an odourless and invisible gas. Exposure to nitrogen may cause asphyxiation or death. Personnel must observe strict safety precautions when involved with a confined

space entry.

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

Code

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# **SECTION 15: Regulatory information**

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

REACH - List of substances subject to authorisation : Product is not subject to Authorisa-

(Annex XIV) tion under REACH.

REACH - Candidate List of Substances of Very High : This product does not contain sub-

Concern for Authorisation (Article 59). stances of very high concern (Regu-

lation (EC) No 1907/2006 (REACH),

Article 57).

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of

major-accident hazards involving dangerous substances. P5c FLAMMABLE LIQUIDS

Waters Protection Ordinance (WPO 814.201)

Water pollution class : Swiss Class B, (www.tankportal.ch)

### Other regulations:

The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

Product is subject to Stoerfallverordnung (StFV).

Take note of Law on the protection of mothers at work, in education and in studies (Maternity Protection Act – Mutterschutzverordnung).

Compliance with the requirements of the Youth Employment Protection Ordinance (ArGV 5, SR 822.115) must be ensured.

Maternity Protection Act (Mutterschutzverordnung) - Not Applicable.

Compliance with the requirements of the Youth Employment Protection Ordinance (ArGV 5, SR 822.115) & Ordinance on Dangerous Labour for Young People (SR 822.115.2) must be ensured.

#### The components of this product are reported in the following inventories:

AIIC : Listed

DSL : Listed

IECSC : Listed

ENCS : Listed

KECI : Listed

PICCS : Listed

TSCA : Listed

TCSI : Listed

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NZIoC : Listed

#### 15.2 Chemical safety assessment

A Chemical Safety Assessment has been carried out for this substance.

#### **SECTION 16: Other information**

#### Full text of other abbreviations

CH BAT : Switzerland. List of BAT-values

CH SUVA : Switzerland. Limit values at the work place

CH SUVA / TWA : Time Weighted Average CH SUVA / STEL : Short Term Exposure Limit

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - Agreement concerning the International Carriage of Dangerous Goods by Road; AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA -European Chemicals Agency; EC-Number - European Community number; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; SVHC - Substance of Very High Concern; TCSI - Taiwan Chemical Substance Inventory; TECI -Thailand Existing Chemicals Inventory; TRGS - Technical Rule for Hazardous Substances; TSCA - Toxic Substances Control Act (United States); UN - United Nations; vPvB - Very Persistent and Very Bioaccumulative

#### **Further information**

Training advice : Provide adequate information, instruction and training for op-

erators.

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Other information : For Industry guidance and tools on REACH please visit the

CEFIC website at http://cefic.org/Industry-support.

The substance does not fulfill all screening criteria for persistence, bioaccumulation and toxicity and hence is not consid-

ered to be PBT or vPvB.

A vertical bar (|) in the left margin indicates an amendment

from the previous version.

Sources of key data used to compile the Safety Data

Sheet

The quoted data are from, but not limited to, one or more sources of information (e.g. toxicological data from Shell Health Services, material suppliers' data, CONCAWE, EU IUCLID date base, EC 1272 regulation, etc).

Classification of the mixture: Classification procedure:

Flam. Liq. 2 H225 On basis of test data.

Eye Irrit. 2 H319 Expert judgement and weight of evi-

dence determination.

Acute Tox. 4 H332 Expert judgement and weight of evi-

dence determination.

STOT SE 3 H336 Expert judgement and weight of evi-

dence determination.

Carc. 2 H351 Expert judgement and weight of evi-

dence determination.

Identified Uses according to the Use Descriptor System

**Uses - Worker** 

Title : Manufacture of substance

- Industrial

**Uses - Worker** 

Title : Use as an intermediate

- Industrial

**Uses - Worker** 

Title : Distribution of substance

- Industrial

**Uses - Worker** 

Title : Formulation & (re)packing of substances and mixtures

- Industrial

**Uses - Worker** 

Title : Uses in Coatings

Industrial

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Uses - Worker

Title : Uses in Coatings

- Professional

**Uses - Worker** 

Title : Use in Cleaning Agents

- Industrial

**Uses - Worker** 

Title : Use in Cleaning Agents

- Professional

Uses - Worker

Title : Lubricants

- Industrial

**Uses - Worker** 

Title : Use in Agrochemicals uses

- Professional

**Uses - Worker** 

Title : Use in laboratories

- Industrial

**Uses - Worker** 

Title : Use in laboratories

- Professional

Identified Uses according to the Use Descriptor System

**Uses - Consumer** 

Title : Uses in Coatings

- Consumer

**Uses - Consumer** 

Title : Use in Cleaning Agents

- Consumer

**Uses - Consumer** 

Title : Use in lubricants

- Consumer

**Uses - Consumer** 

Title : Other Consumer Uses

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- Consumer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

CH / EN

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## **Exposure Scenario - Worker**

30000000394	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Manufacture of substance- Industrial
Use Descriptor	Sector of Use: SU 3, SU8, SU9 Process Categories: PROC 1, PROC 2, PROC 3, PROC 4, PROC 8a, PROC 8b, PROC 15 Environmental Release Categories: ERC1, ERC4
Scope of process	Manufacture of the substance or use as a process chemical or extraction agent. Includes recycling/ recovery, material transfers, storage, maintenance and loading (including marine vessel/barge, road/rail car and bulk container), sampling and associated laboratory activities.

SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES	
Additional Information	No exposure assessment presented for the environment.	
Section 2.1	Control of Worker Exposure	
Product Characteristics		
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP	
Concentration of the Substance in Mixture/Article	Covers use of substance/product up to 100% (unless stated differently).,	
Frequency and Duration of	Use	
Covers daily exposures up to	8 hours (unless stated differently).	
Other Operational Condition	ons affecting Exposure	
	lard of occupational hygiene is implemented. an 20°C above ambient temperature (unless stated differently).	

Contributing Scenarios	Risk Management Measures
General measures (eye irritants).	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.
General exposures (closed systems)no samplingPROC1	No other specific measures identified.
General exposures (closed systems)with sample collectionPROC2PROC3	No other specific measures identified.
General exposures (open systems)IndoorPROC4	Provide extraction ventilation at points where emissions occur.
General exposures (open systems)OutdoorPROC4	Ensure operation is undertaken outdoors. Wear suitable gloves tested to EN374.

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Process samplingPROC8b	Ensure samples are obtained under containment or extract ventilation.
Bulk transfersDedicated facilityPROC8b	Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour). , or: Ensure material transfers are under containment or extract ventilation. Clear transfer lines prior to de-coupling. Wear suitable gloves tested to EN374.
Equipment cleaning and maintenancePROC8a	Drain down system prior to equipment opening or maintenance.  Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.  Retain drain downs in sealed storage pending disposal or for subsequent recycle.  Clear spills immediately.
Laboratory activi- tiesPROC15	No other specific measures identified.
Storage.PROC1PROC2	Store substance within a closed system.
Section 2.2	Control of Environmental Exposure
No exposure assessment pre	esented for the environment.

SECTION 3	EXPOSURE ESTIMATION	
Section 3.1 - Health		
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise		

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

#### **Section 3.2 - Environment**

No exposure assessment presented for the environment.

SECTION 4	GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO
Section 4.1 - Health	

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users

should ensure that risks are managed to at least equivalent levels.

## **Section 4.2 - Environment**

No exposure assessment presented for the environment.

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## **Exposure Scenario - Worker**

General exposures (open

systems)OutdoorPROC4

30000000395	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Use as an intermediate- Industrial
Use Descriptor	Sector of Use: SU 3, SU8, SU9 Process Categories: PROC 1, PROC 2, PROC 3, PROC 4, PROC 8a, PROC 8b, PROC 15 Environmental Release Categories: ERC6a
Scope of process	Use of substance as an intermediate (not related to Strictly Controlled Conditions). Includes recycling/ recovery, material transfers, storage, sampling, associated laboratory activities, maintenance and loading (including marine vessel/barge, road/rail car and bulk container).

SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES
Additional Information	No exposure assessment presented for the environment.
Section 2.1	Control of Worker Exposure
Product Characteristics	
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Concentration of the Substance in Mixture/Article	Covers use of substance/product up to 100% (unless stated differently).,
Frequency and Duration of	Use
Covers daily exposures up to	8 hours (unless stated differently).
Other Operational Condition	
Assumes use at not more that	lard of occupational hygiene is implemented. an 20°C above ambient temperature (unless stated differently).
Contributing Scenarios	Risk Management Measures
General measures (eye irritants).	Use suitable eye protection.  Avoid direct eye contact with product, also via contamination on hands.
General exposures (closed systems)no sam- plingPROC1	No other specific measures identified.
General exposures (closed systems) with sample collection PROC2PROC3	No other specific measures identified.
General exposures (open systems)IndoorPROC4	Provide extraction ventilation at points where emissions oc-

Ensure operation is undertaken outdoors.

Wear suitable gloves tested to EN374.

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Process samplingPROC8b	Ensure samples are obtained under containment or extract ventilation.
Bulk transfersDedicated facilityPROC8b	Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour). , or: Ensure material transfers are under containment or extract ventilation. Clear transfer lines prior to de-coupling. Wear suitable gloves tested to EN374.
Equipment cleaning and maintenancePROC8a	Drain down system prior to equipment opening or maintenance.  Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.  Retain drain downs in sealed storage pending disposal or for subsequent recycle.  Clear spills immediately.
Laboratory activi- tiesPROC15	No other specific measures identified.
Storage.PROC1PROC2	Store substance within a closed system.
Section 2.2	Control of Environmental Exposure
No exposure assessment pre	esented for the environment.

SECTION 3	EXPOSURE ESTIMATION
Section 3.1 - Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise	

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

#### **Section 3.2 - Environment**

No exposure assessment presented for the environment.

SECTION 4	GUIDANCE TO CHECK COMPLIANCE WITH THE
	EXPOSURE SCENARIO
Section 4.1 - Health	

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users

should ensure that risks are managed to at least equivalent levels.

## Section 4.2 - Environment

No exposure assessment presented for the environment.

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## **Exposure Scenario - Worker**

3000000396	
300000000390	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Distribution of substance- Industrial
Use Descriptor	Sector of Use: SU 3, SU8, SU9 Process Categories: PROC 1, PROC 2, PROC 3, PROC 4, PROC 8a, PROC 8b, PROC 9, PROC 15 Environmental Release Categories: ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7
Scope of process	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.

SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES
Additional Information	No exposure assessment presented for the environment.
Section 2.1	Control of Worker Exposure
Product Characteristics	
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Concentration of the Substance in Mixture/Article	Covers use of substance/product up to 100% (unless stated differently).,
Frequency and Duration of Use	
Covers daily exposures up to 8 hours (unless stated differently).	
Other Operational Conditions affecting Exposure	
Assumes a good basic standard of occupational hygiene is implemented. Assumes use at not more than 20°C above ambient temperature (unless stated differently).	

Contributing Scenarios	Risk Management Measures
General measures (eye irritants).	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.
General exposures (closed systems)PROC1	No other specific measures identified.
General exposures (closed systems)General measures (skin irritants).PROC2	No other specific measures identified.
General exposures.Use in contained batch process-esPROC3	Ensure material transfers are under containment or extract ventilation.
General exposures (open systems)PROC4	Provide extraction ventilation at points where emissions occur.
Process samplingPROC3	Ensure samples are obtained under containment or extract

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No exposure assessment presented for the environment.		
Section 2.2	Control of Environmental Exposure	
Storage.PROC1PROC2	Store substance within a closed system.	
Equipment cleaning and maintenancePROC8a	Drain down and flush system prior to equipment opening or maintenance.  Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.  Retain drain downs in sealed storage pending disposal or for subsequent recycle.	
Drum and small package fillingPROC9	Fill containers/cans at dedicated filling points supplied with local extract ventilation. Clear spills immediately.	
Bulk transfersDedicated facilityPROC8b	Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour). , or: Ensure material transfers are under containment or extract ventilation. Clear transfer lines prior to de-coupling. Wear suitable gloves tested to EN374.	
Laboratory activitiesPROC15	No other specific measures identified.	
	ventilation. Avoid carrying out activities involving exp 4 hours Avoid dip sampling.	osure for more than

SECTION 3	EXPOSURE ESTIMATION
Section 3.1 - Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise	

indicated.

# **Section 3.2 - Environment** No exposure assessment presented for the environment.

SECTION 4	GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO
Section 4.1 - Health	
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management	

Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users

should ensure that risks are managed to at least equivalent levels.

# Section 4.2 - Environment

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No exposure assessment presented for the environment.

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## **Exposure Scenario - Worker**

30000000397	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Formulation & (re)packing of substances and mixtures- Industrial
Use Descriptor	Sector of Use: SU 10 Process Categories: PROC 1, PROC 2, PROC 3, PROC 4, PROC 5, PROC 8a, PROC 8b, PROC 9, PROC 14, PROC 15 Environmental Release Categories: ERC2
Scope of process	Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, tabletting, compression, pelletisation, extrusion, large and small scale packing, sampling, maintenance and associated laboratory activities.

SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES	
Additional Information	No exposure assessment presented for the environment.	
Section 2.1	Control of Worker Exposure	
Product Characteristics		
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP	
Concentration of the Substance in Mixture/Article	Covers use of substance/product up to 100% (unless stated differently).,	
Frequency and Duration of Use		
Covers daily exposures up to 8 hours (unless stated differently).		
Other Operational Conditions affecting Exposure		
Assumes a good basic standard of occupational hygiene is implemented.		

Assumes use at not more than 20°C above ambient temperature (unless stated differently).

Contributing Scenarios	Risk Management Measures
General measures (eye irritants).	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.
General exposures (closed systems)PROC1	No other specific measures identified.
General exposures.(closed systems)General measures (skin irritants).PROC2	No other specific measures identified.
General exposures.Use in contained batch process-esPROC3	Ensure material transfers are under containment or extract ventilation.
General exposures (open systems)PROC4	Provide extraction ventilation at points where emissions occur.

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Section 2.2  No exposure assessment pre	Control of Environmental Exposure
Storage.PROC1PROC2	Store substance within a closed system.
Equipment cleaning and maintenancePROC8a	Drain down and flush system prior to equipment opening or maintenance.  Wear suitable gloves tested to EN374.
Drum and small package fillingPROC9	Fill containers/cans at dedicated filling points supplied with local extract ventilation.
Production or preparation or articles by tabletting, compression, extrusion or pelletisationPROC14	Handle substance within a predominantly closed system provided with extract ventilation.
Drum/batch transfersDedicated facilityPROC8b	Provide extraction ventilation at points where emissions occur.
Transfer from/pouring from containersManualPROC8a	Use drum pumps or carefully pour from container. Wear suitable gloves tested to EN374.
Mixing operations (open systems)PROC5	Provide extraction ventilation at points where emissions occur. Wear suitable gloves tested to EN374.
Bulk transfersDedicated facilityPROC8b	Ensure material transfers are under containment or extract ventilation.
Laboratory activi- tiesPROC15	No other specific measures identified.
Process samplingPROC3	Ensure samples are obtained under containment or extract ventilation.
Batch processes at elevated temperaturesPROC3	Formulate in enclosed or ventilated mixing vessels.  Provide extraction ventilation at points where emissions occur.

SECTION 3	EXPOSURE ESTIMATION
Section 3.1 - Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise	
indicated.	

Section 3.2 -Environment
No exposure assessment presented for the environment.

SECTION 4	GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO
Section 4.1 - Health	

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Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.

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

#### **Section 4.2 - Environment**

No exposure assessment presented for the environment.

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## **Exposure Scenario - Worker**

30000000398	
Title	Uses in Coatings- Industrial
Use Descriptor	Sector of Use: SU 3 Process Categories: PROC 1, PROC 2, PROC 3, PROC 4, PROC 5, PROC 7, PROC 8a, PROC 8b, PROC 9, PROC 10, PROC 13, PROC 14, PROC 15 Environmental Release Categories: ERC4
Scope of process	Covers the use in coatings (paints, inks, adhesives, etc) including exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application by spray, roller, spreader, dip, flow, fluidised bed on production lines and film formation) and equipment cleaning, maintenance and associated laboratory activities.

SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES
Additional Information	No exposure assessment presented for the environment.
Section 2.1	Control of Worker Exposure
Product Characteristics	
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Concentration of the Substance in Mixture/Article	Covers use of substance/product up to 100% (unless stated differently).,
Frequency and Duration of	Use
	8 hours (unless stated differently).
Other Operational Condition	ns affecting Exposure
	ard of occupational hygiene is implemented. an 20°C above ambient temperature (unless stated differently).
Contributing Scenarios	Risk Management Measures
General measures (eye irritants).	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.
General exposures (closed systems)PROC1	No other specific measures identified.
General exposures (closed systems) with sample collectionUse in contained systemsPROC2	No other specific measures identified.
Film formation - force dry- ing, stoving and other tech- nologies.Use in contained systemsPROC2	Ensure material transfers are under containment or extract ventilation.

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No exposure assessment pre	sented for the environment.	
Section 2.2	Control of Environmental Exposure	
Storage.PROC1	Store substance within a closed system.	
Production or preparation or articles by tabletting, compression, extrusion or pelletisation PROC14	Provide extraction ventilation at points where emissions occur.	
Material trans- fersDrum/batch transfer- sTransfer from/pouring from containersPROC9		
Laboratory activitiesPROC15	No other specific measures identified.	
Dipping, immersion and pouringPROC13	Provide extraction ventilation at points where emissions occur.  Avoid manual contact with wet work pieces.  Wear suitable gloves tested to EN374.	
Roller, spreader, flow applicationPROC10	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings. Wear suitable gloves tested to EN374.	
Material transfer- sPROC8aPROC8b	Ensure material transfers are under containment or extract ventilation. Clear transfer lines prior to de-coupling. Wear suitable gloves tested to EN374.	
ManualSprayingPROC7	Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour).  Wear a respirator conforming to EN140 with Type A filter or better.  Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls.	
Spraying (automat- ic/robotic)PROC7	Carry out in a vented booth provided with laminar airflow. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	
Preparation of material for applicationMixing operations (open systems)PROC5	Provide extraction ventilation at points where emissions occur. Wear suitable gloves tested to EN374.	
Film formation - air dry- ingPROC4	Provide extraction ventilation at points where emissions occur.	
Mixing operations (closed systems)PROC3	Ensure material transfers are under containment or extract ventilation.	

SECTION 3	EXPOSURE ESTIMATION
Section 3.1 - Health	

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The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

#### **Section 3.2 - Environment**

No exposure assessment presented for the environment.

SECTION 4	GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO
Section 4.1 - Health	

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.

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

#### Section 4.2 - Environment

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#### **Exposure Scenario - Worker**

Exposure occinato - Worker	
30000000399	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Uses in Coatings- Professional
Use Descriptor	Sector of Use: SU 22
	Process Categories: PROC 1, PROC 2, PROC 3, PROC 4,
	PROC 5, PROC 8a, PROC 8b, PROC 10, PROC 11, PROC
	13, PROC 15, PROC 19
	Environmental Release Categories: ERC8a, ERC8d
Scope of process	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.

SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES	
Additional Information	No exposure assessment presented for the environment.	
Section 2.1	Control of Worker Exposure	
Product Characteristics		
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP	
Concentration of the Substance in Mixture/Article	Covers use of substance/product up to 100% (unless stated differently).,	
Frequency and Duration of	Use	
Covers daily exposures up to 8 hours (unless stated differently).		
Other Operational Conditions affecting Exposure		
Assumes a good basic standard of occupational hygiene is implemented. Assumes use at not more than 20°C above ambient temperature (unless stated differently).		

Contributing Scenarios Risk Management Measures

Continuuting Scenarios	LISI	Nivariagement weasures	
General measures (eye irritar	nts).	Use suitable eye protection. Avoid direct eye contact with product, also via contaminati on hands.	ion
General exposures (closed sy tems)PROC1	ys-	No other specific measures identified.	
Filling/ preparation of equipm from drums or containers.Use contained systemsPROC2		Ensure material transfers are under containment or extrac ventilation.	t
General exposures (closed sy tems)Use in contained sys- temsPROC2	ys-	Ensure material transfers are under containment or extrac ventilation.	et -
Preparation of material for ap cationUse in contained batch	•	Provide a good standard of general ventilation (not less th 3 to 5 air changes per hour).	an

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processesPROC3		
	Drovide a good standard of general or controlled ventileties	
Film formation - air dryingln- doorPROC4	Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour).	
Film formation - air dry- ingOutdoorPROC4	Ensure operation is undertaken outdoors. Avoid carrying out activities involving exposure for more than 1 hour.	
Preparation of material for applicationIndoorPROC5	Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour).  Wear a respirator conforming to EN140 with Type A filter or better.  Wear suitable gloves tested to EN374.	
Preparation of material for applicationOutdoorPROC5	Ensure operation is undertaken outdoors. Wear a respirator conforming to EN140 with Type A filter or better. Wear suitable gloves tested to EN374.	
Material transfersDrum/batch transfersNon-dedicated facili- tyPROC8a	Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour).  Avoid carrying out activities involving exposure for more than 1 hour.  Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	
Material transfersDrum/batch transfersDedicated facilityPROC8b	Provide extract ventilation to material transfer points and other openings.	
Roller, spreader, flow application- IndoorPROC10	Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour).  Avoid carrying out activities involving exposure for more than 1 hour.  Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.	
Roller, spreader, flow applicationOutdoorPROC10	Ensure operation is undertaken outdoors. Wear a respirator conforming to EN140 with Type A filter or better. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.	
ManualSprayingIndoorPROC11	Limit the substance content in the product to 25 %. Carry out in a vented booth or extracted enclosure. Avoid carrying out operation for more than 15 minutes. , or: Wear a respirator conforming to EN140 with Type A filter or better. Wear suitable gloves tested to EN374.	
ManualSprayingOutdoorPROC11	Limit the substance content in the product to 5 %. Ensure operation is undertaken outdoors.	

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	Wear a respirator conforming to EN140 with Type A filter or better. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Dipping, immersion and pouringIndoorPROC13	Provide extraction ventilation at points where emissions occur.  Avoid carrying out activities involving exposure for more than 4 hours  Wear suitable gloves tested to EN374.  Avoid manual contact with wet work pieces.
Dipping, immersion and pouringOutdoorPROC13	Ensure operation is undertaken outdoors. Wear a respirator conforming to EN140 with Type A filter or better. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Avoid manual contact with wet work pieces.
Laboratory activitiesPROC15	Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour).
Hand application - fingerpaints, pastels, adhesivesIndoorPROC19	Ensure doors and windows are opened. Avoid carrying out activities involving exposure for more than 1 hour. Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls.
Hand application - fingerpaints, pastels, adhesivesOut-doorPROC19	Ensure operation is undertaken outdoors. Avoid carrying out activities involving exposure for more than 1 hour. Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls.
Storage.PROC1	Store substance within a closed system.

Section 2.2	Control of Environmental Exposure	
No exposure assessment pre	No exposure assessment presented for the environment.	

SECTION 3	EXPOSURE ESTIMATION	
Section 3.1 - Health		
The ECETOC TRA tool has be indicated.	peen used to estimate workplace exposures unless otherwise	

Section 3.2 -Environment	
No exposure assessment presented for the environment.	

SECTION 4	GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO
Section 4.1 - Health	

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Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.

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

#### Section 4.2 -Environment

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#### **Exposure Scenario - Worker**

30000000400	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Use in Cleaning Agents- Industrial
Use Descriptor	Sector of Use: SU 3 Process Categories: PROC 1, PROC 2, PROC 3, PROC 4, PROC 7, PROC 8a, PROC 8b, PROC 10, PROC 13 Environmental Release Categories: ERC4
Scope of process	Covers the use as a component of cleaning products including transfer 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.

SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES	
Additional Information	No exposure assessment presented for the environment.	
Section 2.1	Control of Worker Exposure	
Product Characteristics		
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP	
Concentration of the Substance in Mixture/Article	Covers use of substance/product up to 100% (unless stated differently).,	
Frequency and Duration of Use		
Covers daily exposures up to 8 hours (unless stated differently).		
Other Operational Conditions affecting Exposure		
Assumes a good basic standard of occupational hygiene is implemented. Assumes use at not more than 20°C above ambient temperature (unless stated differently).		

**Contributing Scenarios Risk Management Measures** General measures (eye Use suitable eye protection. Avoid direct eye contact with product, also via contamination irritants). on hands. Ensure material transfers are under containment or extract Bulk transfersNondedicated facilityPROC8a ventilation. Wear suitable gloves tested to EN374. Automated process with No other specific measures identified. (semi) closed systems.Use in contained systemsPROC2 Automated process with Avoid carrying out activities involving exposure for more than (semi) closed sys-1 hour. tems.Drum/batch transfer-, or:

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Section 2.2  No exposure assessment pre	Control of Environmental Exposure	
Storage.PROC1	Store substance within a closed system.	
ManualSurfacesCleaningno sprayingPROC10	Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour). Wear suitable gloves tested to EN374.	
Cleaning with high pressure washersPROC7	Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour).  Wear a respirator conforming to EN140 with Type A filter or better.  Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls.	
Cleaning with low-pressure washersPROC10	Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour).  Avoid carrying out activities involving exposure for more than 1 hour.  , or:  Wear a respirator conforming to EN140 with Type A filter or better.  Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	
Degreasing small objects in cleaning stationPROC13	Provide extraction ventilation at points where emissions occur.  Wear suitable gloves tested to EN374.	
Use in contained batch processesPROC4	Provide extraction ventilation at points where emissions occur.  Avoid carrying out activities involving exposure for more than 4 hours , or: Wear a respirator conforming to EN140 with Type A filter or better.	
temsPROC2 Filling/ preparation of equipment from drums or containers.Dedicated facilityPROC8b	Ensure material transfers are under containment or extract ventilation.	
Application of cleaning products in closed sys-	No other specific measures identified.	
sUse in contained batch processesPROC3	Wear a respirator conforming to EN140 with Type A filter or better.	

SECTION 3	EXPOSURE ESTIMATION	
Section 3.1 - Health		
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise		
indicated.		

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#### Section 3.2 - Environment

No exposure assessment presented for the environment.

SECTION 4 GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO

#### Section 4.1 - Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.

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

#### Section 4.2 - Environment

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#### **Exposure Scenario - Worker**

30000000401	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Use in Cleaning Agents- Professional
Use Descriptor	Sector of Use: SU 22 Process Categories: PROC 1, PROC 2, PROC 3, PROC 4, PROC 8a, PROC 8b, PROC 10, PROC 11, PROC 13, PROC 19 Environmental Release Categories: ERC8a, ERC8d
Scope of process	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).

SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES	
Additional Information	No exposure assessment presented for the environment.	
Section 2.1	Control of Worker Exposure	
Product Characteristics		
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP	
Concentration of the Substance in Mixture/Article	Covers use of substance/product up to 100% (unless stated differently).,	
Frequency and Duration of Use		
Covers daily exposures up to 8 hours (unless stated differently).		
Other Operational Conditions affecting Exposure		
Assumes a good basic standard of occupational hygiene is implemented.		
Assumes use at not more than 20°C above ambient temperature (unless stated differently).		

Assumes use at not more than 20°C above ambient temperature (unless stated differently)

Contributing Scenarios	Risk Management Measures

General measures (eye irritar	nts).	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.	n-
Filling/ preparation of equipment from drums or containers.Dedicated facilityPROC8b		Avoid carrying out activities involving exposure for more than 4 hours Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour). Wear suitable gloves tested to EN374.	r
Automated process with (sen systems.Use in contained sys		Avoid carrying out activities involving exposure for more than 4 hours , or: Provide a good standard of general ventilation (no less than 3 to 5 air changes per hour).	

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Automated process with (semi) closed systems.Drum/batch transfersPROC3	Avoid carrying out activities involving exposure for more than 4 hours , or: Wear a respirator conforming to EN140 with Type A filter or better.
Semi Automated process. (e.g.: Semi automatic application of floor care and maintenance products)PROC4	Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour). Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.
Filling/ preparation of equipment from drums or containers.Non-dedicated facilityPROC8a	Ensure operation is undertaken outdoors. Avoid carrying out activities involving exposure for more than 15 minutes. , or: Wear a respirator conforming to EN140 with Type A filter or better. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
ManualSurfacesCleaningDipping, immersion and pouringPROC13	Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour).  Avoid carrying out activities involving exposure for more than 1 hour.  , or:  Wear a respirator conforming to EN140 with Type A filter or better.  Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Cleaning with low-pressure washers- Rolling, Brushingno sprayingPROC10	Limit the substance content in the product to 5 %. Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour). Wear suitable gloves tested to EN374.
Cleaning with high pressure washers- SprayingIndoorPROC11	Limit the substance content in the product to 1 %. Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour). Avoid carrying out activities involving exposure for more than 4 hours , or:  Wear a respirator conforming to EN140 with Type A filter or better.  Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls.
Cleaning with high pressure washers- SprayingOutdoorPROC11	Ensure operation is undertaken outdoors. Limit the substance content in the product to 1 %. Avoid carrying out activities involving exposure for more than 1 hour.

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	T
	, or: Wear a respirator conforming to EN140 with Type A filter or better. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
ManualSurfacesCleaningSprayingPROC10	Ensure doors and windows are opened. Avoid carrying out activities involving exposure for more than 4 hours , or: Wear a respirator conforming to EN140 with Type A filter or better. Limit the substance content in the product to 25 %. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Ad hoc manual application via trigger sprays, dipping, etc.Rolling, BrushingPROC10	Limit the substance content in the product to 25 %. Provide extraction ventilation at points where emissions occur.  Wear suitable gloves tested to EN374.  , or:  Wear a respirator conforming to EN140 with Type A filter or better.  Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Cleaning of medical devicesPROC4	Provide extraction ventilation at points where emissions occur.  Avoid carrying out activities involving exposure for more than 4 hours , or:  Wear a respirator conforming to EN140 with Type A filter or better.
Storage.PROC1	Store substance within a closed system.
	<u> </u>

Section 2.2	Control of Environmental Exposure
No exposure assessment presented for the environment.	

SECTION 3	EXPOSURE ESTIMATION	
Section 3.1 - Health		
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.		

Section 3.2 -Environment
No exposure assessment presented for the environment.

SECTION 4	GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO
Section 4.1 - Health	

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

#### **Section 4.2 - Environment**

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#### **Exposure Scenario - Worker**

30000000402	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Lubricants- Industrial
Use Descriptor	Sector of Use: SU 3 Process Categories: PROC 1, PROC 2, PROC 3, PROC 4, PROC 7, PROC 8a, PROC 8b, PROC 9, PROC 10, PROC 13, PROC 17, PROC 18 Environmental Release Categories: ERC7, ERC4
Scope of process	Covers the use of formulated lubricants in closed and open systems including transfer operations, operation of machinery/engines and similar articles, reworking on reject articles, equipment maintenance and disposal of wastes.

SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES	
Additional Information	No exposure assessment presented for the environment.	
Section 2.1	Control of Worker Exposure	
Product Characteristics		
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP	
Concentration of the Substance in Mixture/Article	Covers use of substance/product up to 100% (unless stated differently).,	
Frequency and Duration of Use		
Covers daily exposures up to	o 8 hours (unless stated differently).	
Other Operational Condition	ons affecting Exposure	
Assumes a good basic standard of occupational hygiene is implemented.		

Assumes use at not more than 20°C above ambient temperature (unless stated differently).

Contributing Scenarios	Risk Management Measures
General measures (eye irritants).	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.
General exposures (closed systems)PROC1	No other specific measures identified.
General exposures (closed systems) with sample collection PROC2PROC3	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
General exposures (open systems)PROC4	Ensure material transfers are under containment or extract ventilation. Wear suitable gloves tested to EN374.
Bulk transfersDedicated facilityPROC8b	Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour).  Wear suitable gloves tested to EN374.

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Filling/ preparation of equipment from drums or containers.Non-dedicated facilityPROC8a	Use drum pumps or carefully pour from container. Wear suitable gloves tested to EN374.
Initial factory fill of equip- mentPROC9	Ensure material transfers are under containment or extract ventilation.
Operation and lubrication of high energy open equipmentPROC17PROC18	Provide extraction ventilation at points where emissions occur.  Restrict area of openings to equipment.  Wear suitable gloves tested to EN374.
ManualRolling, Brush- ingPROC10	Provide a good standard of controlled ventilation (10 to 15 air changes per hour).  Wear suitable gloves tested to EN374.  Wear a respirator conforming to EN140 with Type A filter or better.
Treatment by dipping and pouringPROC13	Restrict area of openings to equipment. Allow time for product to drain from workpiece. Provide a good standard of controlled ventilation (10 to 15 air changes per hour). Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
SprayingPROC7	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings. Wear suitable gloves (tested to EN374), coverall and eye protection.
Maintenance (of larger plant items) and machine set upDedicated facilityPROC8b	Provide a good standard of controlled ventilation (10 to 15 air changes per hour).  Ensure material transfers are under containment or extract ventilation.  Provide extract ventilation to emission points when contact with warm (>50oC) product is likely.  Wear suitable gloves tested to EN374.
Maintenance of small itemsNon-dedicated facilityPROC8a	Provide a good standard of controlled ventilation (10 to 15 air changes per hour).  Wear suitable gloves tested to EN374.  Avoid manual contact with wet work pieces.  Retain drain downs in sealed storage pending disposal or for subsequent recycle.
Remanufacture of reject articlesPROC9	Provide a good standard of controlled ventilation (10 to 15 air changes per hour). Wear suitable gloves tested to EN374.
Storage.PROC1PROC2	Store substance within a closed system.

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Section 2.2	Control of Environmental Exposure	
No exposure assessment presented for the environment.		

SECTION 3	EXPOSURE ESTIMATION	
Section 3.1 - Health		
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise		
indicated.		

#### **Section 3.2 - Environment**

No exposure assessment presented for the environment.

SECTION 4	GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO
Section 4.1 - Health	
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management	
Measures/Operational Conditions outlined in Section 2 are implemented.	

Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

# Section 4.2 - Environment No exposure assessment presented for the environment.

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#### **Exposure Scenario - Worker**

30000000403	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Use in Agrochemicals uses- Professional
Use Descriptor	Sector of Use: SU 22 Process Categories: PROC 1, PROC 2, PROC 4, PROC 8a, PROC 8b, PROC 11, PROC 13 Environmental Release Categories: ERC8a, ERC8d
Scope of process	Use as an agrochemical excipient for application by manual or machine spraying, smokes and fogging; including equipment clean-downs and disposal.

SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES	
Additional Information	No exposure assessment presented for the environment.	
Section 2.1	Control of Worker Exposure	
Product Characteristics		
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP	
Concentration of the Substance in Mixture/Article	Covers use of substance/product up to 100% (unless stated differently).,	
Frequency and Duration of	Use	
Covers daily exposures up to	8 hours (unless stated differently).	
Other Operational Condition	ns affecting Exposure	
Assumes a good basic standard of occupational hygiene is implemented. Assumes use at not more than 20°C above ambient temperature (unless stated differently).		
Contributing Scenarios	Risk Management Measures	
General measures (eye irritants).	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.	
Transfer from/pouring from containersDedicated facilityPROC8b	Avoid carrying out activities involving exposure for more than 1 hour. Wear suitable gloves tested to EN374.	
Mixing in contain- ers.PROC4	Avoid carrying out activities involving exposure for more than 1 hour. Ensure operation is undertaken outdoors.	
Spraying/ fogging by manual applicationPROC11	Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour).  Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls.  Wear a respirator conforming to EN140 with Type A filter or	

better.

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	Avoid carrying out operation for more than 4 hours.
Spraying/ fogging by machine applicationPROC11	Provide extraction ventilation at points where emissions occur.  Apply within a vented cab supplied with filtered air under positive pressure and with a protection factor of >20.  Wear a respirator conforming to EN140 with Type A filter or better.  Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls.
Ad hoc manual application via trigger sprays, dipping, etc.PROC13	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.  Avoid carrying out activities involving exposure for more than 1 hour.  Limit the substance content in the product to 25 %.
Equipment cleaning and maintenancePROC8a	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.  Avoid carrying out activities involving exposure for more than 1 hour.  Limit the substance content in the product to 25 %.  Retain drain downs in sealed storage pending disposal or for subsequent recycle.
Storage.PROC1PROC2	Store substance within a closed system. Ensure operation is undertaken outdoors.
Section 2.2	Control of Environmental Exposure

SECTION 3	EXPOSURE ESTIMATION
Section 3.1 - Health	
The ECETOC TRA tool has be indicated.	peen used to estimate workplace exposures unless otherwise

# Section 3.2 -Environment No exposure assessment presented for the environment.

SECTION 4	GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO
Section 4.1 - Health	
Measures/Operational Condi	expected to exceed the DN(M)EL when the Risk Management tions outlined in Section 2 are implemented. ent Measures/Operational Conditions are adopted, then users managed to at least equivalent levels.

### Section 4.2 -Environment

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#### **Exposure Scenario - Worker**

30000000420		
SECTION 1	EXPOSURE SCENARIO TITLE	
Title	Use in laboratories- Industrial	
Use Descriptor	Sector of Use: SU 3 Process Categories: PROC 10, PROC 15 Environmental Release Categories: ERC2, ERC4	
Scope of process	Use of the substance within laboratory settings, including material transfers and equipment cleaning.	

SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES	
Additional Information	No exposure assessment presented for the environment.	
Section 2.1	Control of Worker Exposure	
Product Characteristics		
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP	
Concentration of the Substance in Mixture/Article	Covers use of substance/product up to 100% (unless stated differently).,	
Frequency and Duration of		
	8 hours (unless stated differently).	
Other Operational Conditio	ns affecting Exposure	
Assumes activities are at am	ard of occupational hygiene is implemented. bient temperature (unless stated differently).	
Contributing Scenarios	Risk Management Measures	
General measures (eye irritants).	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.	
Laboratory activitiesPROC15	Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure.	
CleaningPROC10	Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. Retain drain downs in sealed storage pending disposal or for subsequent recycle. Wear suitable gloves tested to EN374.	
Section 2.2	Control of Environmental Exposure	
No exposure assessment pre	esented for the environment.	

SECTION 3 EXPOSURE ESTIMATION		
Section 3.1 - Health		
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise		
indicated.	·	

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#### Section 3.2 - Environment

No exposure assessment presented for the environment.

SECTION 4 GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO

#### Section 4.1 - Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.

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

#### Section 4.2 - Environment

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#### **Exposure Scenario - Worker**

30000000421		
SECTION 1	EXPOSURE SCENARIO TITLE	
Title	Use in laboratories- Professional	
Use Descriptor	Sector of Use: SU 22 Process Categories: PROC 10, PROC 15 Environmental Release Categories: ERC8a	
Scope of process	Use of small quantities within laboratory settings, including material transfers and equipment cleaning.	

A 1 11/1 1 1 A //	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES	
Additional Information	No exposure assessment presented for the environment.	
Section 2.1	Control of Worker Exposure	
Product Characteristics		
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP	
Concentration of the Sub-	Covers use of substance/product up to 100% (unless stated	
stance in Mixture/Article	differently).,	
Frequency and Duration o	f Use	
Covers daily exposures up to	o 8 hours (unless stated differently).	
<b>Other Operational Condition</b>	ons affecting Exposure	
	dard of occupational hygiene is implemented.  hbient temperature (unless stated differently).	
Contributing Scenarios	Risk Management Measures	
General measures (eye irritants).	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.	
Laboratory activitiesPROC15	Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure.	
CleaningPROC10	Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure.  Retain drain downs in sealed storage pending disposal or for subsequent recycle.  Wear suitable gloves tested to EN374.	
Section 2.2	Control of Environmental Exposure	
No exposure assessment pr	esented for the environment.	

SECTION 3	EXPOSURE ESTIMATION	
Section 3.1 - Health		
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise		
indicated.		

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#### Section 3.2 - Environment

No exposure assessment presented for the environment.

SECTION 4 GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO

#### Section 4.1 - Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.

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

#### Section 4.2 - Environment

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#### **Exposure Scenario - Consumer**

30000001035	MINU
30000001033	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Uses in Coatings - Consumer
Use Descriptor	Sector of Use: SU 21 Product Categories: PC1, PC4, PC8 (excipient only), PC9a, PC9b, PC9c, PC15, PC18, PC23, PC24, PC31, PC34 Environmental Release Categories: ERC8a, ERC8d
Scope of process	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.

SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES	
Additional Information	No exposure assessment presented for the environment.	
Section 2.1	Control of Consumer Exposure	
Product Characteristics	•	
Physical form of product	Liquid, vapour pressure > 10 kPa	at STP
Concentration of the Substance in Mixture/Article	Unless stated otherwise.	
	Covers concentration up to (%): 1	00 %
Amounts Used		
Unless stated otherwise.		
for each use event, covers amount up to (g):		13.800
covers skin contact area (cm2):		857,5
Frequency and Duration o	f Use	
Unless stated otherwise.		
covers use up to (times/day	of use):	1
Exposure (hours/event):		6
Other Operational Condition	ons affecting Exposure	
Unless stated otherwise		

Unless stated otherwise.

Covers use at ambient temperatures.

Covers use in room size of 20m3

Covers use under typical household ventilation.

Product Categories	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES	
Adhesives, sealants Glues, hobby use.	Covers concentrations up to 30 %	
•	covers use up to 365 day/year	
	covers use up to 1 times/day of use	
	covers skin contact area up to (cm2): 35,73 cm2	
	For each use event, covers amount up to 5 g	
	Covers use in room size of 20 m3	

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	Covers exposure up to 4 hours/event	
Adhesives, sealants Glues	Covers concentrations up to 30 %	
DIY-use (carpet glue, tile	Covers concentrations up to 30 %	
glue, wood parquet glue).		
gide, wood parquet gide).	covers use up to 1 day/year	
	covers use up to 1 day/year covers use up to 1 times/day of use	
	covers skin contact area up to (cm2): 110,00 cm2	
	For each use event, covers amount up to 6.390 g	
	Covers use in room size of 20 m3	
	Covers exposure up to 6,00 hours/event	
All as a salaria Ol	Avoid using when windows closed.	
Adhesives, sealants Glue from spray.	Covers concentrations up to 30 %	
	covers use up to 6 day/year	
	covers use up to 1 times/day of use	
	covers skin contact area up to (cm2): 35,73 cm2	
	For each use event, covers amount up to 85,05 g	
	Covers use in room size of 20 m3	
	Covers exposure up to 4,00 hours/event	
Adhesives, sealants Sealants.	Covers concentrations up to 5,5 %	
	covers use up to 365 day/year	
	covers use up to 1 times/day of use	
	covers skin contact area up to (cm2): 35,73 cm2	
	For each use event, covers amount up to 75 g	
	Covers use in room size of 20 m3	
	Covers exposure up to 1,00 hours/event	
	Avoid using when windows closed.	
Anti-Freeze and de-icing	Covers concentrations up to 1 %	
products Washing car window.		
	covers use up to 365 day/year	
	covers use up to 1 times/day of use	
	covers skin contact area up to (cm2): 857,50 cm2	
	For each use event, covers amount up to 0,5 g	
	Covers use in a one car garage (34 m3) under typical ventila-	
	tion.	
	tion.  Covers use in room size of 34 m3	
	Covers use in room size of 34 m3	
Anti-Freeze and de-icing products Pouring into radiator.		
products Pouring into radia-	Covers use in room size of 34 m3 Covers exposure up to 0,02 hours/event	
products Pouring into radia-	Covers use in room size of 34 m3  Covers exposure up to 0,02 hours/event  Covers concentrations up to 1,2 %	
products Pouring into radia-	Covers use in room size of 34 m3  Covers exposure up to 0,02 hours/event  Covers concentrations up to 1,2 %  covers use up to 365 day/year	
products Pouring into radia-	Covers use in room size of 34 m3  Covers exposure up to 0,02 hours/event  Covers concentrations up to 1,2 %  covers use up to 365 day/year  covers use up to 1 times/day of use  covers skin contact area up to (cm2): 428,00 cm2	
products Pouring into radia-	Covers use in room size of 34 m3  Covers exposure up to 0,02 hours/event  Covers concentrations up to 1,2 %  covers use up to 365 day/year  covers use up to 1 times/day of use  covers skin contact area up to (cm2): 428,00 cm2  For each use event, covers amount up to 2.000 g	
products Pouring into radia-	Covers use in room size of 34 m3  Covers exposure up to 0,02 hours/event  Covers concentrations up to 1,2 %  covers use up to 365 day/year  covers use up to 1 times/day of use  covers skin contact area up to (cm2): 428,00 cm2  For each use event, covers amount up to 2.000 g  Covers use in a one car garage (34 m3) under typical ventila-	
products Pouring into radia-	Covers use in room size of 34 m3  Covers exposure up to 0,02 hours/event  Covers concentrations up to 1,2 %  covers use up to 365 day/year  covers use up to 1 times/day of use  covers skin contact area up to (cm2): 428,00 cm2  For each use event, covers amount up to 2.000 g  Covers use in a one car garage (34 m3) under typical ventilation.	
products Pouring into radia-	Covers use in room size of 34 m3  Covers exposure up to 0,02 hours/event  Covers concentrations up to 1,2 %  covers use up to 365 day/year  covers use up to 1 times/day of use  covers skin contact area up to (cm2): 428,00 cm2  For each use event, covers amount up to 2.000 g  Covers use in a one car garage (34 m3) under typical ventila-	

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producto Look do icor	T
products Lock de-icer.	covers was up to 205 day/was
	covers use up to 365 day/year
	covers use up to 1 times/day of use
	covers skin contact area up to (cm2): 214,40 cm2
	For each use event, covers amount up to 4 g
	Covers use in a one car garage (34 m3) under typical ventilation.
	Covers use in room size of 34 m3
	Covers exposure up to 0,25 hours/event
Biocidal products (e.g. Dis- infectants, pest control) (excipient only). Laundry and dish washing products.	Covers concentrations up to 5 %
	covers use up to 365 day/year
	covers use up to 1 times/day of use
	covers skin contact area up to (cm2): 857,50 cm2
	For each use event, covers amount up to 15 g
	Covers use in room size of 20 m3
	Covers exposure up to 0,50 hours/event
Biocidal products (e.g. Dis- infectants, pest control) (excipient only). Cleaners, liquids (all purpose clean- ers, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners).	Covers concentrations up to 5 %
3.5 (4.75.5).	covers use up to 128 day/year
	covers use up to 1 times/day of use
	covers skin contact area up to (cm2): 857,50 cm2
	For each use event, covers amount up to 27 g
	Covers use in room size of 20 m3
	Covers exposure up to 0,33 hours/event
Biocidal products (e.g. Dis- infectants, pest control) (excipient only). Cleaners, trigger sprays (all purpose cleaners,sanitary products, glass cleaners).	Covers concentrations up to 15 %
	covers use up to 128 day/year
	covers use up to 1 times/day of use
	covers skin contact area up to (cm2): 428,00 cm2
	For each use event, covers amount up to 35 g
	Covers use in room size of 20 m3
	Covers exposure up to 0,17 hours/event
Coatings and paints, thin- ners, paint removers Wa- terborne latex wall paint.	Covers concentrations up to 1,5 %
	covers use up to 4 day/year
	covers use up to 1 times/day of use

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	For each use event severe emount up to 2.760 g
	For each use event, covers amount up to 2.760 g
	Covers use in room size of 20 m3
Ocalica and Lagista this	Covers exposure up to 2,20 hours/event
Coatings and paints, thin- ners, paint removers Sol- vent rich, high solid, water	Covers concentrations up to 27,5 %
borne paint.	
	covers use up to 6 day/year
	covers use up to 1 times/day of use
	covers skin contact area up to (cm2): 428,75 cm2
	For each use event, covers amount up to 744 g
	Covers use in room size of 20 m3
	Covers exposure up to 2,20 hours/event
Coatings and paints, thin- ners, paint removers Aero- sol spray can.	Covers concentrations up to 50 %
	covers use up to 2 day/year
	covers use up to 1 times/day of use
	covers skin contact area up to (cm2): 857,50 cm2
	For each use event, covers amount up to 215 g
	Covers use in a one car garage (34 m3) under typical ventila-
	tion.
	Covers use in room size of 34 m3
	Covers exposure up to 0,33 hours/event
Coatings and paints, thin-	Covers concentrations up to 50 %
ners, paint removers Re-	'
movers (paint-, glue-, wall	
paper-, sealant-remover).	
	covers use up to 3 day/year
	covers use up to 1 times/day of use
	covers skin contact area up to (cm2): 857,50 cm2
	for each use event, covers amount up to (g): 491 g
	Covers use in room size of 20 m3
	Covers exposure up to 2,00 hours/event
Fillers, putties, plasters, modelling clay Fillers and putty.	Covers concentrations up to 2 %
	covers use up to 12 day/year
	covers use up to 1 times/day of use
	covers skin contact area up to (cm2): 35,73 cm2
	For each use event, covers amount up to 85 g
	Covers use in room size of 20 m3
	Covers exposure up to 4,00 hours/event
Fillers, Putties Plasters and	Covers concentrations up to 1,2 %
floor equalizers.	covers use up to 12 day/year
	covers use up to 12 day/year
	covers skin contact area up to (cm2): 857,50 cm2
	For each use event, covers amount up to 13.800 g
	The cach as event, covers amount up to 15.000 g
	Covers use in room size of 20 m <sup>3</sup>
	Covers use in room size of 20 m3 Covers exposure up to 2,00 hours/event

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	Avoid using when windows closed.
Fillers, putties, plasters, modelling clay Modelling	Covers concentrations up to 1 %
clay.	
olay.	covers use up to 365 day/year
	covers use up to 1 times/day of use
	covers skin contact area up to (cm2): 254,40 cm2
	For each use event, assumes swallowed amount of 1 g
	Covers use in room size of 20 m3
Figure a sinte Figure a sinte	Covers exposure up to 2,20 hours/event
Finger paints Finger paints	Covers concentrations up to 0,25 %
	covers use up to 365 day/year
	covers use up to 1 times/day of use
	covers skin contact area up to (cm2): 254,40 cm2
	For each use event, assumes swallowed amount of 1,35 g
	Covers use in room size of 20 m3
	Covers exposure up to 2,20 hours/event
Non-metal-surface treat- ment products Waterborne latex wall paint.	Covers concentrations up to 1,5 %
•	covers use up to 4 day/year
	covers use up to 1 times/day of use
	covers skin contact area up to (cm2): 428,75 cm2
	For each use event, covers amount up to 2.760 g
	Covers use in room size of 20 m3
	Covers exposure up to 2,20 hours/event
Non-metal-surface treat- ment products Solvent rich, high solid, water borne paint.	Covers concentrations up to 27,5 %
	covers use up to 6 day/year
	covers use up to 1 times/day of use
	covers skin contact area up to (cm2): 428,75 cm2
	For each use event, covers amount up to 744 g
	Covers use in room size of 20 m3
	Covers exposure up to 2,20 hours/event
Non-metal-surface treat- ment products Aerosol spray can.	Covers concentrations up to 50 %
opray our.	covers use up to 2 day/year
	covers use up to 1 times/day of use
	covers skin contact area up to (cm2): 857,50 cm2
	For each use event, covers amount up to 215 g
	Covers use in a one car garage (34 m3) under typical ventila-
	tion.
	Covers use in room size of 34 m3
Non motal auricas traat	Covers exposure up to 0,33 hours/event
Non-metal-surface treat- ment products Removers (paint-, glue-, wall paper-,	Covers concentrations up to 50 %
sealant-remover).	

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	covers use up to 3 day/year
	covers use up to 1 times/day of use
	covers skin contact area up to (cm2): 857,50 cm2
	For each use event, covers amount up to 491 g
	Covers use in room size of 20 m3
	Covers exposure up to 2,00 hours/event
Ink and toners Inks and toners.	Covers concentrations up to 10 %
	covers use up to 365 day/year
	covers use up to 1 times/day of use
	covers skin contact area up to (cm2): 71,40 cm2
	For each use event, covers amount up to 40 g
	Covers use in room size of 20 m3
	Covers exposure up to 2,20 hours/event
Leather tanning, dye, finishing, impregnation and care products Polishes, wax / cream (floor, furniture, shoes).	Covers concentrations up to 50 %
	covers use up to 29 day/year
	covers use up to 1 times/day of use
	covers skin contact area up to (cm2): 430,00 cm2
	For each use event, covers amount up to 56 g
	Covers use in room size of 20 m3
	Covers exposure up to 1,23 hours/event
Leather tanning, dye, finishing, impregnation and care products Polishes, spray (furniture, shoes).	Covers concentrations up to 50 %
	covers use up to 8 day/year
	covers use up to 1 times/day of use
	covers skin contact area up to (cm2): 430,00 cm2
	For each use event, covers amount up to 56 g
	Covers use in room size of 20 m3
	Covers exposure up to 0,33 hours/event
Lubricants, greases, re- lease products Liquids.	Covers concentrations up to 100 %
	covers use up to 4 day/year
	covers use up to 1 times/day of use covers skin contact area up to (cm2): 468,00 cm2
	covers use up to 1 times/day of use covers skin contact area up to (cm2): 468,00 cm2
	covers use up to 1 times/day of use covers skin contact area up to (cm2): 468,00 cm2  For each use event, covers amount up to 2.200 g
	covers use up to 1 times/day of use covers skin contact area up to (cm2): 468,00 cm2
	covers use up to 1 times/day of use covers skin contact area up to (cm2): 468,00 cm2 For each use event, covers amount up to 2.200 g Covers use in a one car garage (34 m3) under typical ventilation.
	covers use up to 1 times/day of use covers skin contact area up to (cm2): 468,00 cm2 For each use event, covers amount up to 2.200 g Covers use in a one car garage (34 m3) under typical ventilation. Covers use in room size of 34 m3
Lubricants, greases, re-	covers use up to 1 times/day of use covers skin contact area up to (cm2): 468,00 cm2 For each use event, covers amount up to 2.200 g Covers use in a one car garage (34 m3) under typical ventilation.
Lubricants, greases, re- lease products Pastes.	covers use up to 1 times/day of use covers skin contact area up to (cm2): 468,00 cm2 For each use event, covers amount up to 2.200 g Covers use in a one car garage (34 m3) under typical ventilation. Covers use in room size of 34 m3 Covers exposure up to 0,17 hours/event Covers concentrations up to 20 %
	covers use up to 1 times/day of use covers skin contact area up to (cm2): 468,00 cm2 For each use event, covers amount up to 2.200 g Covers use in a one car garage (34 m3) under typical ventilation. Covers use in room size of 34 m3 Covers exposure up to 0,17 hours/event Covers concentrations up to 20 %  covers use up to 10 day/year
	covers use up to 1 times/day of use covers skin contact area up to (cm2): 468,00 cm2 For each use event, covers amount up to 2.200 g Covers use in a one car garage (34 m3) under typical ventilation. Covers use in room size of 34 m3 Covers exposure up to 0,17 hours/event Covers concentrations up to 20 %

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	Covers use in room size of 20 m3	
Lubricants, greases, re-	Covers concentrations up to 50 %	
lease products Sprays.		
	covers use up to 6 day/year	
	covers use up to 1 times/day of use	
	covers skin contact area up to (cm2): 428,75 cm2	
	For each use event, covers amount up to 73 g	
	Covers use in room size of 20 m3	
	Covers exposure up to 0,17 hours/event	
Polishes and wax blends	Covers concentrations up to 10 %	
Polishes, wax / cream		
(floor, furniture, shoes).		
	covers use up to 29 day/year	
	covers use up to 1 times/day of use	
	covers skin contact area up to (cm2): 430,00 cm2	
	For each use event, covers amount up to 142 g	
	Covers use in room size of 20 m3	
	Covers exposure up to 1,23 hours/event	
Polishes and wax blends	Covers concentrations up to 50 %	
Polishes, spray (furniture,		
shoes).		
	covers use up to 8 day/year	
	covers use up to 1 times/day of use	
	covers skin contact area up to (cm2): 430,00 cm2	
	For each use event, covers amount up to 35 g	
	Covers use in room size of 20 m3	
	Covers exposure up to 0,33 hours/event	
Textile dyes, finishing and	Covers concentrations up to 2,5 %	
impregnating products;	·	
including bleaches and		
other processing aids		
	covers use up to 365 day/year	
	covers use up to 1 times/day of use	
	covers skin contact area up to (cm2): 857,50 cm2	
	For each use event, covers amount up to 115 g	

Section 2.2	Control of Environmental Exposure	
No exposure assessment presented for the environment.		

SECTION 3	EXPOSURE ESTIMATION	
Section 3.1 - Health		
The ECETOC TRA tool has been used to estimate consumer exposures unless otherwise indicated.		

### Section 3.2 - Environment

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SECTION 4 GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO

#### Section 4.1 - Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.

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

#### **Section 4.2 - Environment**

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#### **Exposure Scenario - Consumer**

30000001036	The state of the s
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Use in Cleaning Agents - Consumer
Use Descriptor	Sector of Use: SU 21 Product Categories: PC3, PC4, PC8 (excipient only), PC9a, PC24, PC35, PC38 Environmental Release Categories: ERC8a, ERC8d
Scope of process	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.

SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES	
Additional Information	No exposure assessment presented for the environment.	
Section 2.1	Control of Consumer Exposur	re
<b>Product Characteristics</b>		
Physical form of product	Liquid, vapour pressure > 10 kP	a at STP
Concentration of the Substance in Mixture/Article	Unless stated otherwise.	
	Covers concentration up to (%):	100 %
Amounts Used		
Unless stated otherwise.		
for each use event, covers amount up to (g):		13.800
covers skin contact area (cm2):		857,5
Frequency and Duration o	f Use	
Unless stated otherwise.		
covers use up to (times/day of use):		4
Exposure (hours/event):		8
Other Operational Condition	ons affecting Exposure	
Unless stated otherwise.		
Covers use at ambient temp		

Covers use in room size of 20m3

Covers use under typical household ventilation.

Product Categories	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES
Air care products Air care, instant action (aerosol sprays).	Covers concentrations up to 50 %
	covers use up to 365 day/year
	covers use up to 4 times/day of use
	for each use event, covers amount up to (g): 0,1 g
	Covers use in room size of 20 m3

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	Covers exposure up to 0,25 hours/event
Air care products Air care,	Covers concentrations up to 10 %
continuous action (solid and	Covere consentations up to 10 /0
liquid).	
nquia).	covers use up to 365 day/year
	covers use up to 1 times/day of use
	covers skin contact area up to (cm2): 35,70 cm2
	For each use event, covers amount up to 0,48 g
	Covers use in room size of 20 m3
	Covers exposure up to 8,00 hours/event
Anti-Freeze and de-icing	Covers concentrations up to 1 %
products Washing car window.	Covers concentrations up to 1 70
	covers use up to 365 day/year
	covers use up to 1 times/day of use
	covers skin contact area up to (cm2): 857,50 cm2
	For each use event, covers amount up to 0,5 g
	Covers use in a one car garage (34 m3) under typical ventila-
	tion.
	Covers use in room size of 34 m3
	Covers exposure up to 0,02 hours/event
Anti-Freeze and de-icing	Covers concentrations up to 1,2 %
products Pouring into radiator.	
	covers use up to 365 day/year
	covers use up to 1 times/day of use
	covers skin contact area up to (cm2): 428,00 cm2
	For each use event, covers amount up to 2.000 g
	Covers use in a one car garage (34 m3) under typical ventila-
	tion.
	Covers use in room size of 34 m3
	Covers exposure up to 0,17 hours/event
Anti-Freeze and de-icing products Lock de-icer.	Covers concentrations up to 2,5 %
	covers use up to 365 day/year
	covers use up to 1 times/day of use
	covers skin contact area up to (cm2): 214,40 cm2
	For each use event, covers amount up to 4 g
	Covers use in a one car garage (34 m3) under typical ventilation.
	Covers use in room size of 34 m3
	Covers exposure up to 0,25 hours/event
Biocidal products (e.g. Dis-	Covers concentrations up to 5 %
infectants, pest control) (excipient only). Laundry and dish washing products.	
and distributions	covers use up to 365 day/year
	covers use up to 1 times/day of use
	covers skin contact area up to (cm2): 857,50 cm2
	For each use event, covers amount up to 15 g
	Covers use in room size of 20 m3
	Lovers use in rount size of ZO IIIS

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	Covers exposure up to 0,50 hours/event
Biocidal products (e.g. Dis-	Covers concentrations up to 5 %
infectants, pest control)	Covere contentiations up to 6 76
(excipient only). Cleaners,	
liquids (all purpose clean-	
ers, sanitary products, floor	
cleaners, glass cleaners,	
carpet cleaners, metal	
cleaners).	
,	covers use up to 128 day/year
	covers use up to 1 times/day of use
	covers skin contact area up to (cm2): 857,50 cm2
	For each use event, covers amount up to 27 g
	Covers use in room size of 20 m3
	Covers exposure up to 0,33 hours/event
Biocidal products (e.g. Dis-	Covers concentrations up to 15 %
infectants, pest control)	
(excipient only). Cleaners,	
trigger sprays (all purpose	
cleaners, sanitary products,	
glass cleaners).	acuara usa us ta 100 day/yaar
	covers use up to 128 day/year
	covers use up to 1 times/day of use covers skin contact area up to (cm2): 428,00 cm2
	For each use event, covers amount up to 35 g
	Covers use in room size of 20 m3
	Covers exposure up to 0,17 hours/event
Coatings and paints, thin-	Covers concentrations up to 50 %
ners, paint removers Aero-	Severe services and the severe
sol spray can.	
	covers use up to 2 day/year
	covers use up to 1 times/day of use
	covers skin contact area up to (cm2): 857,50 cm2
	For each use event, covers amount up to 215 g
	Covers use in a one car garage (34 m3) under typical ventila-
	tion.
	Covers use in room size of 34 m3
	Covers exposure up to 0,33 hours/event
Coatings and paints, thin-	Covers concentrations up to 50 %
ners, paint removers Re-	
movers (paint-, glue-, wall	
paper-, sealant-remover).	powers use up to 2 day/year
	covers use up to 3 day/year
	covers use up to 1 times/day of use
	covers skin contact area up to (cm2): 857,50 cm2
	For each use event, covers amount up to 491 g  Covers use in room size of 20 m3
	Covers exposure up to 2,00 hours/event
Lubricants, greases, re-	Covers exposure up to 2,00 hours/event  Covers concentrations up to 100 %
lease products Liquids.	Covers concentrations up to 100 /0
icaso producto Liquido.	covers use up to 4 day/year
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	Language of Activities (
	covers use up to 1 times/day of use
	covers skin contact area up to (cm2): 468,00 cm2
	For each use event, covers amount up to 2.200 g
	Covers use in a one car garage (34 m3) under typical ventila-
	tion.
	Covers use in room size of 34 m3
	Covers exposure up to 0,17 hours/event
Lubricants, greases, release products Pastes.	Covers concentrations up to 20 %
	covers use up to 10 day/year
	covers use up to 1 times/day of use
	covers skin contact area up to (cm2): 468,00 cm2
	For each use event, covers amount up to 34 g
	Covers use in room size of 20 m3
	Covers exposure up to 8,00 hours/event
Lubricants, greases, re-	Covers concentrations up to 50 %
lease products Sprays.	, i
	covers use up to 6 day/year
	covers use up to 1 times/day of use
	covers skin contact area up to (cm2): 428,75 cm2
	For each use event, covers amount up to 73 g
	Covers use in room size of 20 m3
	Covers exposure up to 0,17 hours/event
Washing and cleaning	Covers concentrations up to 5 %
products (including solvent based products) Laundry and dish washing products.	
	covers use up to 365 day/year
	covers use up to 1 times/day of use
	covers skin contact area up to (cm2): 857,50 cm2
	For each use event, covers amount up to 15 g
	Covers use in room size of 20 m3
	Covers exposure up to 0,50 hours/event
Washing and cleaning products (including solvent based products) Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners).	Covers concentrations up to 5 %
	covers use up to 128 day/year
	covers use up to 1 times/day of use
	covers skin contact area up to (cm2): 857,50 cm2
	For each use event, covers amount up to 27 g
	Covers use in room size of 20 m3
	Covers exposure up to 0,33 hours/event
Washing and cleaning	Covers concentrations up to 15 %
products (including solvent based products) Cleaners, trigger sprays (all purpose	

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cleaners,sanitary products, glass cleaners).	
	covers use up to 128 day/year
	covers use up to 1 times/day of use
	covers skin contact area up to (cm2): 428,00 cm2
	For each use event, covers amount up to 35 g
	Covers use in room size of 20 m3
	Covers exposure up to 0,17 hours/event
Welding and soldering products (with flux coatings or flux cores.), flux products	Covers concentrations up to 20 %
	covers use up to 365 day/year
	covers use up to 1 times/day of use
	For each use event, covers amount up to 12 g
	Covers use in room size of 20 m3
	Covers exposure up to 1,00 hours/event

Section 2.2	Control of Environmental Exposure	
No exposure assessment presented for the environment.		

SECTION 3	EXPOSURE ESTIMATION
Section 3.1 - Health	
The ECETOC TRA tool has b	been used to estimate consumer exposures unless otherwise

indicated.

### Section 3.2 - Environment

No exposure assessment presented for the environment.

SECTION 4	GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO
Section 4.1 - Health	

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.

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

Section 4.2 -Environment	
No exposure assessment presented for the environment	

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#### **Exposure Scenario - Consumer**

30000010047	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Use in lubricants - Consumer
Use Descriptor	Sector of Use: SU 21 Product Categories: PC1, PC24, PC31 Environmental Release Categories: ERC8a, ERC8d, ERC9a, ERC9b
Scope of process	Covers the consumer use of formulated lubricants in closed and open systems including transfer operations, application, operation of engines and similar articles, equipment maintenance and disposal of waste oil.

SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES	
Additional Information	No exposure assessment presented for the environment.	
Section 2.1	Control of Consumer Exposure	
Product Characteristics		
Physical form of product	Liquid, vapour pressure > 10 kPa at S	TP
Concentration of the Substance in Mixture/Article	Unless stated otherwise.	
	Covers concentration up to (%): 100 %	, 0
Amounts Used		
Unless stated otherwise.		
for each use event, covers amount up to (g):		13.800
covers skin contact area (cm2):		857,5
Frequency and Duration o	f Use	
Unless stated otherwise.		
covers use up to (times/day of use):		1
Exposure (hours/event):		6
Other Operational Condition	ons affecting Exposure	
Unless stated atherwise		

Unless stated otherwise.

Covers use at ambient temperatures.

Covers use in room size of 20m3

Covers use under typical household ventilation.

Product Categories	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES
Adhesives, sealants Glues, hobby use.	Covers concentrations up to 30 %
	covers use up to 365 day/year
	Covers use up to 1 times/day of use
	covers skin contact area up to (cm2): 35,73 cm2
	For each use event, covers amount up to 5 g
	Covers use in room size of 20 m3

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	Covers exposure up to 4 hours/event
Adhesives, sealants Glues	Covers concentrations up to 30 %
DIY-use (carpet glue, tile	Covers concentrations up to 30 70
glue, wood parquet glue).	
gido, wood parquot gido).	covers use up to 1 day/year
	Covers use up to 1 times/day of use
	covers skin contact area up to (cm2): 110 cm2
	For each use event, covers amount up to 6.390 g
	Covers use in room size of 20 m3
	Covers exposure up to 6 hours/event
	Avoid using when windows closed.
Adhesives, sealants Glue	Covers concentrations up to 30 %
from spray.	Covers concentrations up to 30 %
nom spray.	covers use up to 6 day/year
	Covers use up to 1 times/day of use
	covers skin contact area up to (cm2): 35,73 cm2
	For each use event, covers amount up to 85,05 g
	Covers use in room size of 20 m3
A-ll- a-i- a- a-a-la-ata Ca-al	Covers exposure up to 4 hours/event
Adhesives, sealants Sealants.	Covers concentrations up to 5,5 %
	covers use up to 365 day/year
	Covers use up to 1 times/day of use
	covers skin contact area up to (cm2): 35,73 cm2
	For each use event, covers amount up to 75 g
	Covers use in room size of 20 m3
	Covers exposure up to 1 hours/event
	Avoid using when windows closed.
Lubricants, greases, release products Liquids.	Covers concentrations up to 100 %
· ·	covers use up to 4 day/year
	Covers use up to 1 times/day of use
	covers skin contact area up to (cm2): 468 cm2
	For each use event, covers amount up to 2.200 g
	Covers use in a one car garage (34 m3) under typical ventila-
	tion.
	Covers use in room size of 34 m3
	Covers exposure up to 0,17 hours/event
Lubricants, greases, re- lease products Pastes.	Covers concentrations up to 20 %
	covers use up to 10 day/year
	Covers use up to 1 times/day of use
	covers skin contact area up to (cm2): 468 cm2
	For each use event, covers amount up to 34 g
	Covers use in room size of 20 m3
Lubricants, greases, re-	Covers concentrations up to 50 %
lease products Sprays.	, i
	covers use up to 6 day/year
	Covers use up to 1 times/day of use
	covers skin contact area up to (cm2): 428,75 cm2
	For each use event, covers amount up to 75 g

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	Covers use in room size of 20 m3	
	Covers exposure up to 0,17 hours/event	
Polishes and wax blends	Covers concentrations up to 10 %	
Polishes, wax / cream		
(floor, furniture, shoes).		
	covers use up to 29 day/year	
	Covers use up to 1 times/day of use	
	covers skin contact area up to (cm2): 430 cm2	
	For each use event, covers amount up to 142 g	
	Covers use in room size of 20 m3	
	Covers exposure up to 1,23 hours/event	
Polishes and wax blends	Covers concentrations up to 50 %	
Polishes, spray (furniture,		
shoes).		
	covers use up to 8 day/year	
	Covers use up to 1 times/day of use	
	covers skin contact area up to (cm2): 430 cm2	
	For each use event, covers amount up to 35 g	
	Covers use in room size of 20 m3	
	Covers exposure up to 0,33 hours/event	

Section 2.2	Control of Environmental Exposure	
No exposure assessment presented for the environment.		

SECTION 3 EXPOSURE ESTIMATION	
Section 3.1 - Health	
The ECETOC TRA tool has been used to estimate consumer exposures unless otherwise	

indicated.

### **Section 3.2 - Environment**

No exposure assessment presented for the environment.

SECTION 4	GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO
Section 4.1 - Health	
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management	
Measures/Operationa	I Conditions outlined in Section 2 are implemented.

Measures/Operational Conditions outlined in Section 2 are implemented.

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

Section 4.2 -Environment	
No exposure assessment presented for the environment.	

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#### **Exposure Scenario - Consumer**

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SECTION 1	EXPOSURE SCENARIO TITLE
Title	Other Consumer Uses - Consumer
Use Descriptor	Sector of Use: SU 21 Product Categories: PC28, PC39 Environmental Release Categories: ERC8a, ERC8d
Scope of process	Consumer uses e.g. as a carrier in cosmetics/personal care products, perfumes and fragrances. Note: For cosmetic and personal care products, risk assessment only required for the environment under REACH as human health is covered by alternative legislation.

SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES
Additional Information	No exposure assessment presented for human health.
	No exposure assessment presented for the environment.
Section 2.1	Control of Consumer Exposure
<b>Product Characteristics</b>	
Product Categories	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES

Section 2.2	Control of Environmental Exposure	
No exposure assessment presented for the environment.		

SECTION 3	EXPOSURE ESTIMATION
Section 3.1 - Health	
No exposure assessment presented for human health.	

### Section 3.2 - Environment

SECTION 4	GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO
Section 4.1 - Health	
No exposure assessment presented for human health.	

Section 4.2 -Environment	
No exposure assessment presented for the environment.	

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