SAFETY DATA SHEET



Based upon Regulation (EC) No 1907/2006, as amended by Regulation (EU) No 2015/830

MEGACLEAN

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

1.1. Product identifier

Product name : MEGACLEAN

Registration number REACH : 01-2119457290-43-0000
Product type REACH : Substance/mono-constituent

 CAS number
 : 78-93-3

 EC index number
 : 606-002-00-3

 EC number
 : 201-159-0

 Molecular mass
 : 72.11 g/mol

 Formula
 : C4H8O

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

1.2.1 Relevant identified uses

Exposure scenario title	Exposure scenario group	Sector of use	Use descriptors (PROC or PC)	Use descriptors (ERC)
ES01 Manufacture of substance	Industrial	SU 3	PROC 1, PROC 15, PROC 2, PROC 3, PROC 4, PROC 8a, PROC 8b	ERC 1
	Industrial	SU 3	PROC 1, PROC 15, PROC 2, PROC 3, PROC 4, PROC 8a, PROC 8b	ERC 4
	Industrial	SU 8	PROC 1, PROC 15, PROC 2, PROC 3, PROC 4, PROC 8a, PROC 8b	ERC 1
	Industrial	SU 8	PROC 1, PROC 15, PROC 2, PROC 3, PROC 4, PROC 8a, PROC 8b	ERC 4
	Industrial	SU 9	PROC 1, PROC 15, PROC 2, PROC 3, PROC 4, PROC 8a, PROC 8b	ERC 1
	Industrial	SU 9	PROC 1, PROC 15, PROC 2, PROC 3, PROC 4, PROC 8a, PROC 8b	ERC 4
ES02 Use as an intermediate	Industrial	SU 3	PROC 1, PROC 15, PROC 2, PROC 3, PROC 4, PROC 8a, PROC 8b	ERC 6a
	Industrial	SU 8	PROC 1, PROC 15, PROC 2, PROC 3, PROC 4, PROC 8a, PROC 8b	ERC 6a
	Industrial	SU 9	PROC 1, PROC 15, PROC 2, PROC 3, PROC 4, PROC 8a, PROC 8b	ERC 6a
ES03 Distribution of substance	Industrial	SU 3	PROC 1, PROC 15, PROC 2, PROC 3, PROC 4, PROC 8a, PROC 8b, PROC 9	ERC 1
	Industrial	SU 3	PROC 1, PROC 15, PROC 2, PROC 3, PROC 4, PROC 8a, PROC 8b, PROC 9	ERC 2
	Industrial	SU 3	PROC 1, PROC 15, PROC 2, PROC 3, PROC 4, PROC 8a, PROC 8b, PROC 9	ERC 3
	Industrial	SU 3	PROC 1, PROC 15, PROC 2, PROC 3, PROC 4, PROC 8a, PROC 8b, PROC 9	ERC 4
	Industrial	SU 3	PROC 1, PROC 15, PROC 2, PROC 3, PROC 4, PROC 8a, PROC 8b, PROC 9	ERC 5
	Industrial	SU 3	PROC 1, PROC 15, PROC 2, PROC 3, PROC 4, PROC 8a, PROC 8b, PROC 9	ERC 6a
	Industrial	SU 3	PROC 1, PROC 15, PROC 2, PROC 3, PROC 4, PROC 8a, PROC 8b, PROC 9	ERC 7
	Industrial	SU 8	PROC 1, PROC 15, PROC 2, PROC 3, PROC 4, PROC 8a, PROC 8b, PROC 9	ERC 1
	Industrial	SU 8	PROC 1, PROC 15, PROC 2, PROC 3, PROC 4, PROC 8a, PROC 8b, PROC 9	ERC 2
	Industrial	SU 8	PROC 1, PROC 15, PROC 2, PROC 3, PROC 4, PROC 8a, PROC 8b, PROC 9	ERC 3
	Industrial	SU 8	PROC 1, PROC 15, PROC 2, PROC 3, PROC 4, PROC 8a, PROC 8b, PROC 9	ERC 4
	Industrial	SU 8	PROC 1, PROC 15, PROC 2, PROC 3, PROC 4, PROC 8a, PROC 8b, PROC 9	ERC 5

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ESO3 Distribution of substance	Industrial	SU 8	PROC 1, PROC 15, PROC 2, PROC 3, PROC 4, PROC 8a, PROC 8b, PROC 9	ERC 6a
	Industrial	SU 8	PROC 1, PROC 15, PROC 2, PROC 3, PROC	ERC 7
	Industrial	SU 9	4, PROC 8a, PROC 8b, PROC 9 PROC 1, PROC 15, PROC 2, PROC 3, PROC 4, PROC 8b, PROC 8b, PROC 9b, PROC	ERC 1
	Industrial	SU 9	4, PROC 8a, PROC 8b, PROC 9 PROC 1, PROC 15, PROC 2, PROC 3, PROC 4, PROC 8a, PROC 8b, PROC 9	ERC 2
	Industrial	SU 9	PROC 1, PROC 15, PROC 2, PROC 3, PROC 4, PROC 8a, PROC 8b, PROC 9	ERC 3
	Industrial	SU 9	PROC 1, PROC 15, PROC 2, PROC 3, PROC 4, PROC 8a, PROC 8b, PROC 9	ERC 4
	Industrial	SU 9	PROC 1, PROC 15, PROC 2, PROC 3, PROC 4, PROC 8a, PROC 8b, PROC 9	ERC 5
	Industrial	SU 9	PROC 1, PROC 15, PROC 2, PROC 3, PROC 4, PROC 8a, PROC 8b, PROC 9	ERC 6a
	Industrial	SU 9	PROC 1, PROC 15, PROC 2, PROC 3, PROC 4, PROC 8a, PROC 8b, PROC 9	ERC 7
ES04 Formulation & (re)packing of substances and mixtures	Industrial	SU 10	PROC 1, PROC 14, PROC 15, PROC 2, PROC 3, PROC 4, PROC 5, PROC 8a, PROC 8b, PROC 9	ERC 2
	Industrial	SU 3	PROC 1, PROC 14, PROC 15, PROC 2, PROC 3, PROC 4, PROC 5, PROC 8a, PROC 8b, PROC 9	ERC 2
ES05 Use in coatings	Industrial	SU 3	PROC 1, PROC 10, PROC 13, PROC 15, PROC 2, PROC 3, PROC 4, PROC 5, PROC 7, PROC 8a, PROC 8b	ERC 4
ES06 Use in coatings	Professional	SU 22	PROC 1, PROC 10, PROC 11, PROC 13, PROC 15, PROC 19, PROC 2, PROC 3, PROC 4, PROC 5, PROC 8a, PROC 8b	ERC 8a
	Professional	SU 22	PROC 1, PROC 10, PROC 11, PROC 13, PROC 15, PROC 19, PROC 2, PROC 3, PROC 4, PROC 5, PROC 8a, PROC 8b	ERC 8d
ES07 Use in Cleaning Agents	Industrial	SU 3	PROC 1, PROC 10, PROC 13, PROC 2, PROC 3, PROC 4, PROC 7, PROC 8a, PROC 8b	ERC 4
ES08 Use in Cleaning Agents	Professional	SU 22	PROC 1, PROC 10, PROC 11, PROC 13, PROC 2, PROC 3, PROC 4, PROC 8a, PROC 8b	ERC 8a
	Professional	SU 22	PROC 1, PROC 10, PROC 11, PROC 13, PROC 2, PROC 3, PROC 4, PROC 8a, PROC 8b	ERC 8b
ES09 Lubricants	Industrial	SU 3	PROC 1, PROC 10, PROC 13, PROC 17, PROC 18, PROC 2, PROC 3, PROC 4, PROC 7, PROC 8a, PROC 8b, PROC 9	ERC 4
	Industrial	SU 3	PROC 1, PROC 10, PROC 13, PROC 17, PROC 18, PROC 2, PROC 3, PROC 4, PROC 7, PROC 8a, PROC 8b, PROC 9	ERC 7
ES10 Metal working fluids/rolling oils	Industrial	SU 3	PROC 1, PROC 10, PROC 13, PROC 17, PROC 2, PROC 3, PROC 4, PROC 5, PROC 7, PROC 8a, PROC 8b, PROC 9	ERC 4
ES11 Use in agrochemicals	Professional	SU 22	PROC 1, PROC 11, PROC 13, PROC 2, PROC 4, PROC 8a, PROC 8b	ERC 8a
	Professional	SU 22	PROC 1, PROC 11, PROC 13, PROC 2, PROC 4, PROC 8a, PROC 8b	ERC 8d
ES12 Use as a fuel	Industrial	SU 3	PROC 1, PROC 16, PROC 2, PROC 3, PROC 8a, PROC 8b	ERC 7
ES13 Use as a fuel	Professional	SU 22	PROC 1, PROC 16, PROC 2, PROC 3, PROC 8a, PROC 8b	ERC 9a
	Professional	SU 22	PROC 1, PROC 16, PROC 2, PROC 3, PROC 8a, PROC 8b	ERC 9b
	Industrial	SU 3	PROC 10, PROC 15	ERC 2
ES14 Use in laboratories			DDOC 10, DDOC 15	ERC 4
ES14 Use in laboratories	Industrial	SU 3	PROC 10, PROC 15	ERC 4
ES14 Use in laboratories ES15 Use in laboratories		SU 22	PROC 10, PROC 15	ERC 8a
	Industrial		-	

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Consumer	SU 21	PC 24, PC 35, PC 9a, PC 9b	ERC 8a
Consumer	SU 21	PC 24, PC 35, PC 9a, PC 9b	ERC 8d
Consumer	SU 21	PC 1, PC 24, PC 31	ERC 8a
Consumer	SU 21	PC 1, PC 24, PC 31	ERC 8d
Consumer	SU 21	PC 1, PC 24, PC 31	ERC 9a
Consumer	SU 21	PC 1, PC 24, PC 31	ERC 9b
Consumer	SU 21	PC 12, PC 27	ERC 8a
Consumer	SU 21	PC 12, PC 27	ERC 8d
Consumer	SU 21	PC 13	ERC 9a
Consumer	SU 21	PC 13	ERC 9b
	Consumer Consumer Consumer Consumer Consumer Consumer Consumer Consumer Consumer	Consumer SU 21	Consumer SU 21 PC 24, PC 35, PC 9a, PC 9b Consumer SU 21 PC 1, PC 24, PC 31 Consumer SU 21 PC 1, PC 24, PC 31 Consumer SU 21 PC 1, PC 24, PC 31 Consumer SU 21 PC 1, PC 24, PC 31 Consumer SU 21 PC 1, PC 24, PC 31 Consumer SU 21 PC 12, PC 27 Consumer SU 21 PC 12, PC 27 Consumer SU 21 PC 13

1.2.2 Uses advised against

Group		Uses advised against	. , ,	Environment al release category (ERC)	Article (AC)
	•	No uses advised against			

1.3. Details of the supplier of the safety data sheet

Supplier of the safety data sheet

Novatio*

Industrielaan 5B

B-2250 Olen

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info@novatio.be

*NOVATIO is a registered trademark of Novatech International N.V.

Manufacturer of the product

Novatech International N.V.

Industrielaan 5B

B-2250 Olen

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info@tec7.be

1.4. Emergency telephone number

24h/24h (Telephone advice: English, French, German, Dutch):

+32 14 58 45 45 (BIG)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classified as dangerous according to the criteria of Regulation (EC) No 1272/2008

Class	Category	Hazard statements
Flam. Liq.	category 2	H225: Highly flammable liquid and vapour.
Eye Irrit.	category 2	H319: Causes serious eye irritation.
STOT SE	category 3	H336: May cause drowsiness or dizziness.

2.2. Label elements





Signal word **H-statements**

H225 Highly flammable liquid and vapour. H319 Causes serious eye irritation.

May cause drowsiness or dizziness. H336

P-statements

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. P210 Wear protective gloves and eye protection/face protection. P280

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P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.

Continue rinsing.

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

Supplemental information

EUH066 Repeated exposure may cause skin dryness or cracking.

2.3. Other hazards

Gas/vapour spreads at floor level: ignition hazard Caution! Substance is absorbed through the skin

SECTION 3: Composition/information on ingredients

3.1. Substances

Name	CAS No	Conc. (C)	Classification according to CLP	Note	Remark
REACH Registration No	EC No				
butanone	78-93-3	C>99%	Flam. Liq. 2; H225	(1)(2)(10)	Mono-constituent
01-2119457290-43	201-159-0		Eye Irrit. 2; H319		
			STOT SE 3; H336		

- (1) For H-statements in full: see heading 16
- (2) Substance with a Community workplace exposure limit
- (10) Subject to restrictions of Annex XVII of Regulation (EC) No. 1907/2006

3.2. Mixtures

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

General

Check the vital functions. Unconscious: maintain adequate airway and respiration. Respiratory arrest: artificial respiration or oxygen. Cardiac arrest: perform resuscitation. Victim conscious with laboured breathing: half-seated. Victim in shock: on his back with legs slightly raised. Vomiting: prevent asphyxia/aspiration pneumonia. Prevent cooling by covering the victim (no warming up). Keep watching the victim. Give psychological aid. Keep the victim calm, avoid physical strain. Depending on the victim's condition: doctor/hospital.

After inhalation:

Remove the victim into fresh air. Respiratory problems: consult a doctor/medical service.

After skin contact:

Wash immediately with lots of water. Soap may be used. Do not apply (chemical) neutralizing agents. Take victim to a doctor if irritation persists.

After eye contact:

Rinse immediately with plenty of water. Remove contact lenses, if present and easy to do. Continue rinsing. Do not apply neutralizing agents. Take victim to an ophthalmologist if irritation persists.

After ingestion:

Rinse mouth with water. Immediately after ingestion: give lots of water to drink. Do not induce vomiting. Give activated charcoal. Consult a doctor/medical service if you feel unwell.

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

4.2.1 Acute symptoms

After inhalation:

Irritation of the nasal mucous membranes. Nausea. Headache. EXPOSURE TO HIGH CONCENTRATIONS: Irritation of the respiratory tract. Central nervous system depression. Dizziness. Mental confusion. Narcosis. Disturbances of consciousness.

After skin contact:

Red skin. ON CONTINUOUS EXPOSURE/CONTACT: Dry skin. Cracking of the skin.

After eye contact:

Irritation of the eye tissue. Inflammation/damage of the eye tissue.

After ingestion:

AFTER INGESTION OF HIGH QUANTITIES: Symptoms similar to those listed under inhalation. Risk of aspiration pneumonia.

4.2.2 Delayed symptoms

No effects known.

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

If applicable and available it will be listed below.

SECTION 5: Firefighting measures

5.1. Extinguishing media

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5.1.1 Suitable extinguishing media

Small fire: Quick-acting ABC powder extinguisher, Quick-acting BC powder extinguisher, Quick-acting class B foam extinguisher, Quick-acting CO2 extinguisher. Major fire: Class B foam (alcohol-resistant), Water spray if puddle cannot expand.

5.1.2 Hazardous extinguishing media

Small fire: Water (quick-acting extinguisher, reel); risk of puddle expansion.

Major fire: Water; risk of puddle expansion.

5.2. Special hazards arising from the substance or mixture

Upon combustion: CO and CO2 are formed. On heating: peroxidation resulting in increased fire or explosion risk.

5.3. Advice for firefighters

5.3.1 Instructions:

If exposed to fire cool the closed containers by spraying with water. Do not move the load if exposed to heat.

5.3.2 Special protective equipment for fire-fighters:

Gloves. Protective goggles. Protective clothing. Heat/fire exposure: compressed air/oxygen apparatus.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Stop engines and no smoking. No naked flames or sparks. Spark- and explosion proof appliances and lighting equipment.

6.1.1 Protective equipment for non-emergency personnel

See heading 8.2

6.1.2 Protective equipment for emergency responders

Gloves. Protective goggles. Protective clothing.

Suitable protective clothing

See heading 8.2

6.2. Environmental precautions

Contain released product. Dam up the liquid spill. Try to reduce evaporation. Prevent spreading in sewers.

6.3. Methods and material for containment and cleaning up

Take up liquid spill into a non combustible material e.g.: kieselguhr, powdered limestone or dry sand/earth/vermiculite. Scoop absorbed substance into closing containers. Carefully collect the spill/leftovers. Clean contaminated surfaces with an excess of water. Take collected spill to manufacturer/competent authority. Wash clothing and equipment after handling.

6.4. Reference to other sections

See heading 13.

SECTION 7: Handling and storage

The information in this section is a general description. If applicable and available, exposure scenarios are attached in annex. Always use the relevant exposure scenarios that correspond to your identified use.

7.1. Precautions for safe handling

Keep away from naked flames/heat. Insufficient ventilation: keep naked flames/sparks away. Insufficient ventilation: use spark-/explosionproof appliances and lighting system. Insufficient ventilation: take precautions against electrostatic charges. Gas/vapour heavier than air at 20°C. Observe normal hygiene standards. Keep container tightly closed. Remove contaminated clothing immediately. Do not discharge the waste into the drain.

7.2. Conditions for safe storage, including any incompatibilities

7.2.1 Safe storage requirements:

Storage temperature: < 30 °C. Store in a cool area. Keep out of direct sunlight. Store in a dark area. Ventilation at floor level. Fireproof storeroom. Keep locked up. Provide for an automatic sprinkler system. May be stored under inert gas. Meet the legal requirements.

7.2.2 Keep away from:

Heat sources, ignition sources, oxidizing agents, (strong) acids, (strong) bases, halogens, alcohols, amines.

7.2.3 Suitable packaging material:

Stainless steel, monel steel, carbon steel.

7.2.4 Non suitable packaging material:

Synthetic material, aluminium, copper.

7.3. Specific end use(s)

If applicable and available, exposure scenarios are attached in annex. See information supplied by the manufacturer.

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SECTION 8: Exposure controls/personal protection

8.1. Control parameters

8.1.1 Occupational exposure

a) Occupational exposure limit values

If limit values are applicable and available these will be listed below.

Time-weighted average exposure limit 8 h (Indicative occupational exposure limit value)	200 ppm
Time-weighted average exposure limit 8 h (Indicative occupational exposure limit value)	600 mg/m³
Short time value (Indicative occupational exposure limit value)	300 ppm
Short time value (Indicative occupational exposure limit value)	900 mg/m³

Belgium

2-Butanone	Time-weighted average exposure limit 8 h	200 ppm
	Time-weighted average exposure limit 8 h	600 mg/m³
	Short time value	300 ppm
	Short time value	900 mg/m³

The Netherlands

Time-weighted average exposure limit 8 h (Public occupational exposure limit value)	197 ppm
Time-weighted average exposure limit 8 h (Public occupational exposure limit value)	590 mg/m³
Short time value (Public occupational exposure limit value)	300 ppm
Short time value (Public occupational exposure limit value)	900 mg/m³

France

Méthyléthylcétone	Time-weighted average exposure limit 8 h (VRC: Valeur réglementaire contraignante)	200 ppm
	Time-weighted average exposure limit 8 h (VRC: Valeur réglementaire contraignante)	600 mg/m³
	Short time value (VRC: Valeur réglementaire contraignante)	300 ppm
	Short time value (VRC: Valeur réglementaire contraignante)	900 mg/m³

Germany

Butanon	Time-weighted average exposure limit 8 h (TRGS 900)	200 ppm
	Time-weighted average exposure limit 8 h (TRGS 900)	600 mg/m³

UK

Butan-2-one (methyl ethyl ketone)	Time-weighted average exposure limit 8 h (Workplace exposure limit (EH40/2005))	200 ppm
	Time-weighted average exposure limit 8 h (Workplace exposure limit (EH40/2005))	600 mg/m³
	Short time value (Workplace exposure limit (EH40/2005))	300 ppm
	Short time value (Workplace exposure limit (EH40/2005))	899 mg/m³

USA (TLV-ACGIH)

Methyl ethyl ketone (MEK)	Time-weighted average exposure limit 8 h (TLV - Adopted Value)	200 ppm
	Short time value (TLV - Adopted Value)	300 ppm

b) National biological limit values

If limit values are applicable and available these will be listed below.

Germany

Butanon (2-Butanon; Ethylmethylketon)	Urin: expositionsende, bzw. schichtende	2 mg/l	05/2015 DFG
(Butanon (2-Butanon))			
UK			
Butan-2-one (butan-2-one) Urine: post shift		70 μmol/L	
USA (BEI-ACGIH)			
Methyl ethyl ketone (MEK)	urine: end of shift	2 mg/L	

8.1.2 Sampling methods

Product name	Test	Number
2-Butanone (MEK) (Methyl ethyl ketone)	NIOSH	2500
2-Butanone (Methyl ethyl ketone)	OSHA	84

Reason for revision: 2; 3; 5; 16 Publication date: 2002-11-06

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2-Butanone (organic and inorganic gases by Extractive FTIR)	NIOSH	3800
2-Butanone (Volatile Organic compounds)	NIOSH	2549
2-Butanone	OSHA	1004
2-Butanone	OSHA	13
ACETONE and METHYL ETHYL KETONE in urine	NIOSH	8319
MEK	NIOSH	8002
Methyl Ethyl Ketone (ketones I)	NIOSH	2555
Methyl Ethyl Ketone	OSHA	16

8.1.3 Applicable limit values when using the substance or mixture as intended

If limit values are applicable and available these will be listed below.

8.1.4 DNEL/PNEC values

DNEL/DMEL - Workers

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Effect level (DNEL/DMEL)	Туре	Value	Remark
DNEL	Long-term systemic effects dermal	1161 mg/kg bw/day	
	Long-term systemic effects inhalation	600 mg/m³	

DNEL/DMEL - General population

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···			
Effect level (DNEL/DMEL)	Туре	Value	Remark
DNEL	Long-term systemic effects dermal	412 mg/kg bw/day	
	Long-term systemic effects inhalation	106 mg/m³	
	Long-term systemic effects oral	31 mg/kg bw/day	

PNEC

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Compartments	Value	Remark
Fresh water	55.8 mg/l	
Fresh water sediment	284.7 mg/kg	
Aqua (intermittent releases)	55.8 mg/l	
Marine water sediment	284.7 mg/kg	
Marine water	55.8 mg/l	
STP	709 mg/l	
Soil	22.5 mg/kg	

8.1.5 Control banding

If applicable and available it will be listed below.

8.2. Exposure controls

The information in this section is a general description. If applicable and available, exposure scenarios are attached in annex. Always use the relevant exposure scenarios that correspond to your identified use.

8.2.1 Appropriate engineering controls

Keep away from naked flames/heat. Insufficient ventilation: keep naked flames/sparks away. Insufficient ventilation: use spark-/explosionproof appliances and lighting system. Insufficient ventilation: take precautions against electrostatic charges. Before use: check for peroxides and eliminate them. Measure the concentration in the air regularly. Work under local exhaust/ventilation.

8.2.2 Individual protection measures, such as personal protective equipment

Observe normal hygiene standards. Keep container tightly closed. Do not eat, drink or smoke during work.

a) Respiratory protection:

Wear gas mask with filter type A if conc. in air > exposure limit.

b) Hand protection:

Gloves.

Materials	Breakthrough time	Thickness
butyl rubber	> 60 minutes	>=0.5 mm

- materials (good resistance)

Butyl rubber.

- materials (poor resistance)

Natural rubber, neoprene, nitrile rubber, polyethylene, viton, PVC.

c) Eye protection:

Protective goggles.

d) Skin protection:

Protective clothing. Head/neck protection.

8.2.3 Environmental exposure controls:

See headings 6.2, 6.3 and 13

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SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical form	Liquid
Odour	Characteristic odour
Odour threshold	2 - 85 ppm
	6 - 251 mg/m³
Colour	Colourless
Particle size	Not applicable (solid)
Explosion limits	1.8 - 11.5 vol %
	50 - 350 g/m³
Flammability	Highly flammable
Log Kow	0.3 ; Experimental value ; OECD 117 ; 40 °C
Dynamic viscosity	0.0004 Pa.s ; 15 °C
Kinematic viscosity	0.51 mm²/s ; 20 °C
Melting point	-86 °C
Boiling point	80 °C
Flash point	-6 °C
Evaporation rate	2.7 ; Ether
	6 ; Butyl acetate
Relative vapour density	2.4
Vapour pressure	105 hPa ; 20 °C
	370 hPa ; 50 °C
Solubility	Water ; 28 g/100 ml ; 20 °C
	Ethanol ; complete
	Acetone ; complete
	Ether ; complete
Relative density	0.80 - 0.81 ; 20 °C
Decomposition temperature	No data available
Auto-ignition temperature	404 °C - 515 °C
Explosive properties	No chemical group associated with explosive properties
Oxidising properties	No chemical group associated with oxidising properties
рН	No data available

9.2. Other information

Minimum ignition energy	0.5 mJ
Specific conductivity	1E7 pS/m ; 25 °C
Critical temperature	263 °C
Critical pressure	41550 hPa
Surface tension	0.024 N/m ; 20 °C
Relative density saturated vapour/air mixture	1.2
Saturation concentration	311 g/m³
Absolute density	804 kg/m³ - 807 kg/m³ ; 20 °C

SECTION 10: Stability and reactivity

10.1. Reactivity

May be ignited by sparks. Gas/vapour spreads at floor level: ignition hazard.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

Reacts violently with (strong) oxidizers: (increased) risk of fire/explosion. Violent to explosive reaction with many compounds e.g.: with (some) halogens compounds, alcohols and with (some) acids/bases. Prolonged storage: peroxidation resulting in increased fire or explosion risk.

10.4. Conditions to avoid

Keep away from naked flames/heat. Insufficient ventilation: keep naked flames/sparks away. Insufficient ventilation: use spark-/explosionproof appliances and lighting system. Insufficient ventilation: take precautions against electrostatic charges.

10.5. Incompatible materials

Oxidizing agents, (strong) acids, (strong) bases, halogens, alcohols, amines.

10.6. Hazardous decomposition products

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Upon combustion: CO and CO2 are formed.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

11.1.1 Test results

Acute toxicity

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Route of exposure	Parameter	Method	Value	Exposure time		Value determination	Remark
Oral		Equivalent to OECD 423	2054 mg/kg		Rat (male)	Read-across	
Oral	LD50	Equivalent to OECD 423	2328 mg/kg		Rat (female)	Read-across	
Dermal		Equivalent to OECD 402	> 10 ml/kg bw		Rabbit (male)	Experimental value	
Inhalation	LC50		34 mg/l	4 h	Rat	Literature study	
Inhalation	LC50		11300 ppm	4 h	Rat	Literature study	

Conclusion

Not classified for acute toxicity

Corrosion/irritation

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Route of exposure	Result	Method	Exposure time	Time point		Value determination	Remark
Eye	0	Equivalent to OECD 405			Rabbit	Experimental value	Single exposure
Skin	Not irritating	OECD 404	4 h		Rabbit	Read-across	

Conclusion

Causes serious eye irritation.

Irritating to the eyes

Not classified as irritating to the $\mbox{\sc skin}$

Respiratory or skin sensitisation

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Route of exposure	Result	Method	•	Observation time point	Species	Value determination	Remark
Skin	•	Equivalent to OECD 413			Guinea pig (female)	Experimental value	

Conclusion

Not classified as sensitizing for skin

Specific target organ toxicity

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Route of exposure	Parameter	Method	Value	Organ	Effect	Exposure time		Value
								determination
		Equivalent to	5041 ppm	General		18 weeks (6h/day, 5	Rat (male/female)	Experimental value
(vapours)		OECD 413				days/week)		
Inhalation				Central nervous	Drowsiness,			Literature study
(vapours)				system	dizziness			
			l	-				

Conclusion

May cause drowsiness or dizziness.

Low sub-chronic toxicity by inhalation route

Mutagenicity (in vitro)

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- C/ (CEE/ (IV				
Result Method Te		Test substrate	Effect	Value determination
Negative	Equivalent to OECD 473	Rat liver cells	No effect	Experimental value
Negative	Equivalent to OECD 476	Mouse (lymphoma L5178Y cells)	No effect	Experimental value
Negative	Equivalent to OECD 471	Bacteria (S.typhimurium)	No effect	Experimental value

Mutagenicity (in vivo)

Reason for revision: 2; 3; 5; 16 Publication date: 2002-11-06

Date of revision: 2017-05-15

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Result	Method	Exposure time	Test substrate	Organ	Value determination
Negative	Equivalent to OECD		Mouse (male/female)		Experimental value
	474				

Conclusion

Not classified for mutagenic or genotoxic toxicity

Carcinogenicity

MEGACLEAN

No (test)data available

Conclusion

Not classified for carcinogenicity

Reproductive toxicity

MEGACLEAN

IL O/ ICEL/ III								
	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value
								determination
Developmental toxicity	NOAEC	Equivalent to OECD 414		18 days (7h/day)	Rat	No effect		Experimental value
	LOAEC	Equivalent to OECD 414		18 days (7h/day)		Weight reduction		Experimental value
	LOAEC	Equivalent to OECD 414	1 '''	18 days (7h/day)	Rat			Experimental value

Conclusion

Not classified for reprotoxic or developmental toxicity

Toxicity other effects

MEGACLEAN

Parameter	Method	Value	Organ	Effect	Exposure time	 Value determination
			Skin	Skin dryness or		Literature study
				cracking		

Conclusion

Repeated exposure may cause skin dryness or cracking.

Chronic effects from short and long-term exposure

MEGACLEAN

 ${\tt ON\ CONTINUOUS/REPEATED\ EXPOSURE/CONTACT:\ Dry\ skin.\ Itching.\ Skin\ rash/inflammation.}$

SECTION 12: Ecological information

12.1. Toxicity

MEGACLEAN

	Parameter	Method	Value	Duration	Species		Fresh/salt water	Value determination
Acute toxicity fishes	LC50	OECD 203	2990 mg/l	96 h	Pimephales promelas	Static system		Experimental value; Lethal
Acute toxicity crustacea	EC50	OECD 202	308 mg/l	48 h	Daphnia magna	Static system		Experimental value; Locomotor effect
Toxicity algae and other aquatic plants	EC50	OECD 201	1972 mg/l	72 h	Pseudokirchnerie Ila subcapitata	Static system		Experimental value; Growth rate
Toxicity aquatic micro- organisms	EC0	DIN 38412-8	1150 mg/l		Pseudomonas putida	Static system	Fresh water	Experimental value

Conclusion

Slightly harmful to plants

Not classified as dangerous for the environment according to the criteria of Regulation (EC) No 1272/2008

12.2. Persistence and degradability

MEGACLEAN

Biodegradation water

Method	Value	Duration	Value determination
OECD 301D: Closed Bottle Test	98 %	28 day(s)	Experimental value

Reason for revision: 2; 3; 5; 16 Publication date: 2002-11-06
Date of revision: 2017-05-15

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Conclusion

Readily biodegradable in water

12.3. Bioaccumulative potential

MEGACLEAN

Log Kow

Method	Remark	Value	Temperature	Value determination
OECD 117		0.3	40 °C	Experimental value

Conclusion

Low potential for bioaccumulation (Log Kow < 4)

12.4. Mobility in soil

No (test)data on mobility of the substance available

12.5. Results of PBT and vPvB assessment

Substance does not meet the criteria of PBT, nor the criteria of vPvB according to Annex XIII of Regulation (EC) No 1907/2006, so is neither PBT nor vPvB.

12.6. Other adverse effects

MEGACLEAN

Ozone-depleting potential (ODP)

Not classified as dangerous for the ozone layer (Regulation (EC) No 1005/2009)

Ground water

Ground water pollutant

SECTION 13: Disposal considerations

The information in this section is a general description. If applicable and available, exposure scenarios are attached in annex. Always use the relevant exposure scenarios that correspond to your identified use.

13.1. Waste treatment methods

13.1.1 Provisions relating to waste

European Union

Hazardous waste according to Directive 2008/98/EC, as amended by Regulation (EU) No 1357/2014.

Waste material code (Directive 2008/98/EC, Decision 2000/0532/EC).

07 01 04* (wastes from the manufacture, formulation, supply and use (MFSU) of basic organic chemicals: other organic solvents, washing liquids and mother liquors). Depending on branch of industry and production process, also other waste codes may be applicable.

13.1.2 Disposal methods

Recycle by distillation. Remove to an authorized waste incinerator for solvents with energy recovery. Should not be landfilled with household waste. Hazardous waste shall not be mixed together with other waste. Different types of hazardous waste shall not be mixed together if this may entail a risk of pollution or create problems for the further management of the waste. Hazardous waste shall be managed responsibly. All entities that store, transport or handle hazardous waste shall take the necessary measures to prevent risks of pollution or damage to people or animals. Remove waste in accordance with local and/or national regulations. May be discharged to wastewater treatment installation. Do not discharge into drains or the environment.

13.1.3 Packaging/Container

European Union

Waste material code packaging (Directive 2008/98/EC).

15 01 10* (packaging containing residues of or contaminated by dangerous substances).

SECTION 14: Transport information

Road (ADR)

14.1. UN number							
UN number	1193						
14.2. UN proper shipping name	14.2. UN proper shipping name						
Proper shipping name	Ethyl methyl ketone (methyl ethyl ketone)						
14.3. Transport hazard class(es)	14.3. Transport hazard class(es)						
Hazard identification number	33						
Class	3						
Classification code	F1						
14.4. Packing group							
Packing group	II						
Labels	3						
14.5. Environmental hazards							
Environmentally hazardous substance mark	no						

Reason for revision: 2; 3; 5; 16 Publication date: 2002-11-06
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Special provisions	
Limited quantities	Combination packagings: not more than 1 liter per inner packaging liquids. A package shall not weigh more than 30 kg. (gross mass)
(RID)	
.1. UN number	
UN number	1193
.2. UN proper shipping name	-
Proper shipping name	Ethyl methyl ketone (methyl ethyl ketone)
.3. Transport hazard class(es)	
Hazard identification number	33
Class	3
Classification code	F1
.4. Packing group	
Packing group	II
Labels	3
.5. Environmental hazards	3
	Inc
Environmentally hazardous substance mark .6. Special precautions for user	no
	1
Special provisions	Combination packagings not make than 4 literary in the second
Limited quantities	Combination packagings: not more than 1 liter per inner packaging liquids. A package shall not weigh more than 30 kg. (gross mass)
d waterways (ADN)	
.1. UN number	
UN number	1193
.2. UN proper shipping name	
Proper shipping name	Ethyl methyl ketone (methyl ethyl ketone)
.3. Transport hazard class(es)	•
Class	3
Classification code	F1
.4. Packing group	
Packing group	li .
Labels	3
.5. Environmental hazards	
Environmentally hazardous substance mark	no
.6. Special precautions for user	
Special provisions	
Limited quantities	Combination packagings: not more than 1 liter per inner packaging
	liquids. A package shall not weigh more than 30 kg. (gross mass)
IMDG/IMSBC)	
.1. UN number	Tura
UN number	1193
.2. UN proper shipping name	
Proper shipping name	Ethyl methyl ketone (methyl ethyl ketone)
.3. Transport hazard class(es)	
Class	3
.4. Packing group	
Packing group	II
Labels	3
.5. Environmental hazards	
Marine pollutant	-
Environmentally hazardous substance mark	no
.6. Special precautions for user	•
Special provisions	
Limited quantities	Combination packagings: not more than 1 liter per inner packaging
·	liquids. A package shall not weigh more than 30 kg. (gross mass)
.7. Transport in bulk according to Annex II of Marpol and the IBC Code	

14.1. UN number

Reason for revision: 2; 3; 5; 16 Publication date: 2002-11-06

Date of revision: 2017-05-15

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UN number	1193	
4.2. UN proper shipping name		
Proper shipping name	Ethyl methyl ketone	
14.3. Transport hazard class(es)	·	
Class	3	
14.4. Packing group		
Packing group	II .	
Labels	3	
14.5. Environmental hazards		
Environmentally hazardous substance mark	no	
14.6. Special precautions for user		
Special provisions		
limited quantities: maximum net quantity per packaging	1 L	

SECTION 15: Regulatory information

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

European legislation:

VOC content Directive 2010/75/EU

VOC content	Remark
100 %	

Ingredients according to Regulation (EC) No 648/2004 and amendments

≥30% aliphatic hydrocarbons

REACH Annex XVII - Restriction

Subject to restrictions of Annex XVII of Regulation (EC) No. 1907/2006: restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles.

dangerous substances, m	ixtules and articles.	
	Designation of the substance, of the group of substances or of the mixture	Conditions of restriction
• MEGACLEAN	Liquid substances or mixtures which are regarded as dangerous in accordance with Directive 1999/45/EC or are fulfilling the criteria for any of the following hazard classes or categories set out in Annex I to Regulation (EC) No 1272/2008: (a) hazard classes 2.1 to 2.4, 2.6 and 2.7, 2.8 types A and B, 2.9, 2.10, 2.12, 2.13 categories 1 and 2, 2.14 categories 1 and 2, 2.15 types A to F; (b) hazard classes 3.1 to 3.6, 3.7 adverse effects on sexual function and fertility or on development, 3.8 effects other than narcotic effects, 3.9 and 3.10; (c) hazard class 4.1; (d) hazard class 5.1.	1. Shall not be used in: — ornamental articles intended to produce light or colour effects by means of different phases, for example in ornamental lamps and ashtrays, — tricks and jokes, — games for one or more participants, or any article intended to be used as such, even with ornamental aspects, 2. Articles not complying with paragraph 1 shall not be placed on the market. 3. Shall not be placed on the market if they contain a colouring agent, unless required for fiscal reasons, or perfume, or both, if they: — can be used as fuel in decorative oil lamps for supply to the general public, and, — present an aspiration hazard and are labelled with R65 or H304,4. Decorative oil lamps for supply to the general public shall not be placed on the market unless they conform to the European Standard on Decorative oil lamps (EN 14059) adopted by the European Committee for Standardisation (CEN).5. Without prejudice to the implementation of other Community provisions relating to the classification, packaging and labelling of dangerous substances and mixtures, suppliers shall ensure, before the placing on the market, that the following requirements are met: a) lamp oils, labelled with R65 or H304, intended for supply to the general public are visibly, legibly and indelibly marked as follows: "Keep lamps filled with this liquid out of the reach of children"; and, by 1 December 2010, "Just a sip of lamp oil — or even sucking the wick of lamps — may lead to life- threatening lung damage"; b) grill lighter fluids, labelled with R65 or H304, intended for supply to the general public are legibly and indelibly marked by 1 December 2010 as follows: "Just a sip of grill lighter may lead to life- threatening lung damage"; c) lamp oils and grill lighters, labelled with R65 or H304, intended for supply to the general public are packaged in black opaque containers not exceeding 1 litre by 1 December 2010.6. No later than 1 June 2014, the Commission shall request the European Chemicals Agency to prepare a dossier, in accordance wi
· MEGACLEAN	Substances classified as flammable gases category 1 or 2, flammable liquids categories 1, 2 or 3, flammable solids category 1 or 2, substances and mixtures which, in contact with water, emit flammable gases, category 1, 2 or 3, pyrophoric liquids category 1 or pyrophoric solids category 1, regardless of whether they appear in Part 3 of Annex VI to that Regulation or not.	 artificial snow and frost, "whoopee" cushions, silly string aerosols,

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- stink bombs.2. Without prejudice to the application of other Community provisions on the
classification, packaging and labelling of substances, suppliers shall ensure before the placing
on the market that the packaging of aerosol dispensers referred to above is marked visibly,
legibly and indelibly with:
"For professional users only".3. By way of derogation, paragraphs 1 and 2 shall not apply to
the aerosol dispensers referred to Article 8 (1a) of Council Directive 75/ 324/EEC.4. The
aerosol dispensers referred to in paragraphs 1 and 2 shall not be placed on the market unless

National legislation Belgium

No data available

National legislation The Netherlands

Waste identification (the Netherlands)	LWCA (the Netherlands): KGA category 03
Waterbezwaarlijkheid	B (5)
Huidopname (wettelijk)	2-Butanon; H

they conform to the requirements indicated.

National legislation France

VME - Risque de pénétration	Méthyléthylcétone; PP
percutanée	

National legislation Germany

	1; Classification water polluting in compliance with Verwaltungsvorschrift wassergefährdender Stoffe (VwVwS) of 27 July 2005 (Anhang 2)
TA-Luft	5.2.5
	Butanon; Y; Risiko der Fruchtschädigung braucht bei Einhaltung des Arbeitsplatzgrenzwertes und des biologischen Grenzwertes nicht befürchtet zu werden
Hautresorptive Stoffe	Butanon; H; Hautresorptiv

National legislation United Kingdom

Skin absorption	Butan-2-one (methyl ethyl ketone): Sk

Other relevant data

No data available

15.2. Chemical safety assessment

SECTION 16: Other information

Full text of any H-statements referred to under headings 2 and 3:

H225 Highly flammable liquid and vapour.

H319 Causes serious eye irritation.

H336 May cause drowsiness or dizziness.

(*) INTERNAL CLASSIFICATION BY BIG

CLP (EU-GHS) Classification, labelling and packaging (Globally Harmonised System in Europe)

DMEL Derived Minimal Effect Level
DNEL Derived No Effect Level
EC50 Effect Concentration 50 %

ErC50 EC50 in terms of reduction of growth rate

LC50 Lethal Concentration 50 %

LD50 Lethal Dose 50 %

NOAEL No Observed Adverse Effect Level
NOEC No Observed Effect Concentration

OECD Organisation for Economic Co-operation and Development

PBT Persistent, Bioaccumulative & Toxic
PNEC Predicted No Effect Concentration
STP Sludge Treatment Process

vPvB very Persistent & very Bioaccumulative

The information in this safety data sheet is based on data and samples provided to BIG. The sheet was written to the best of our ability and according to the state of knowledge at that time. The safety data sheet only constitutes a guideline for the safe handling, use, consumption, storage, transport and disposal of the substances/preparations/mixtures mentioned under point 1. New safety data sheets are written from time to time. Only the most recent versions may be used. Old versions must be destroyed. Unless indicated otherwise word for word on the safety data sheet, the information does not apply to substances/preparations/mixtures in purer form, mixed with other substances or in processes. The safety data sheet offers no quality specification for the substances/preparations/mixtures in question. Compliance with the instructions in this safety data sheet does not release the user from the obligation to take all measures dictated by common sense, regulations and recommendations or which are necessary and/or useful based on the real applicable circumstances. BIG does not guarantee

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is only to be used within the Euro risk. Use of this safety data sheet this is failing the general condition	pean Union, Switzerland, Iceland, Norway and Lied is subject to the licence and liability limiting cond	le for any changes by third parties. This safety data sheet chtenstein. Any use outside of this area is at your own itions as stated in your BIG licence agreement or when eet are the property of BIG and its distribution and
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Exposure scenario – worker

SECTION 1	TITLE EXPOSURE SCENARIO
Title	ES01: 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: ERC 1, ERC 4
Scope of the process	Manufacture of the substance or use as a process chemical or extraction agent within closed or contained systems. Includes incidental exposures during 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 characteristic		
Physical form of the product	Liquid, vapour pressure > 10 kPa at STP.	
Concentration of substance in product.	Covers percentage substance in the product up to 100% (unless stated differently).	
Frequency and duration of use/exposure		
Covers daily exposures up to 8 hours (unless stated differently).		
Other given operational conditions affecting workers exposure.		
Assumes a good basic standard of occupational hygiene is implemented.		

Contributing scenarios	Risk management measures
General measures (eye irritants).	Use suitable eye protection. Avoid direct contact of product with the eyes, also via contamination on hands.
General exposure (closed systems)	No other specific measures identified.
General exposure (open systems)	No other specific measures identified.
Process sampling	No other specific measures identified.
Laboratory activities	No other specific measures identified.



Bulk transfers (open systems)	No other specific measures identified.
Bulk transfers (closed systems)	No other specific measures identified.
Equipment cleaning and maintenance	Drain down system prior to equipment break-in or maintenance.
Storage	Store the substance in a closed system.

Section 2.2	Environmental exposure controls	
No exposure assessment presented for the environment.		

SECTION 3	EXPOSURE ESTIMATION
Section 3.1 - Health	
The ECCTOC TDA tool has been used to estimate weakington companying and expension	

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

Section 4.2 - Environment

No exposure assessment presented for the environment.

Exposure scenario – worker	
SECTION 1	TITLE EXPOSURE SCENARIO
Title	ES02: 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: ERC 6A
Scope of the 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 characteristic	
Physical form of the product	Liquid, vapour pressure > 10 kPa at STP.
Concentration of substance in product.	Covers percentage substance in the product up to 100% (unless stated differently).
Frequency and duration of use/exposure	
Covers daily exposures up to 8 hours (unless stated differently).	
Other given operational conditions affecting workers exposure.	
Assumes a good basic standard of occupational hygiene is implemented.	

Contributing scenarios	Risk management measures
General measures (eye irritants).	Use suitable eye protection. Avoid direct contact of product with the eyes, also via contamination on hands.
General exposure (closed systems)	No other specific measures identified.
General exposure (open systems)	No other specific measures identified.
Process sampling	No other specific measures identified.
Laboratory activities	No other specific measures identified.

Bulk transfers (open systems)	No other specific measures identified.
Bulk transfers (closed systems)	No other specific measures identified.
Equipment cleaning and maintenance	Drain down system prior to equipment break-in or maintenance.
Storage	Store the substance in a closed system.

Section 2.2	Environmental exposure controls	
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	

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

Section 4.2 - Environment

No exposure assessment presented for the environment.



Exposure scenario – worke	er e
SECTION 1	TITLE EXPOSURE SCENARIO
Title	ES03: 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: ERC 1, ERC 2, ERC 3, ERC
	4,
	ERC 5, ERC 6A, ERC 7
Scope of the 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 characteristic		
Physical form of the product	Liquid, vapour pressure > 10 kPa at STP.	
Concentration of substance in product.	Covers percentage substance in the product up to 100% (unless stated differently).	
Frequency and duration of use/exposure		
Covers daily exposures up to 8 hours (unless stated differently).		
Other given operational conditions affecting workers exposure.		
Assumes a good basic standard of occupational hygiene is implemented.		

Contributing scenarios	Risk management measures
General measures (eye irritants).	Use suitable eye protection. Avoid direct contact of product with the eyes, also via contamination on hands.
General exposure (closed systems)	No other specific measures identified.
General exposure (open systems)	Clear transfer lines prior to de-coupling. No other specific measures identified.
Process sampling	No other specific measures identified.
Laboratory activities	No other specific measures identified.

Bulk transfers (open systems)	No other specific measures identified.
Bulk transfers (closed systems)	No other specific measures identified.
Drum and small package filling	Fill containers/cans at dedicated fill points supplied with local extract ventilation.
Equipment cleaning and maintenance	Drain down and flush system prior to equipment break-in or maintenance.
Storage	No other specific measures identified.

Section 2.2	Environmental exposure controls	
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	

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

Section 4.2 - Environment

No exposure assessment presented for the environment.

Exposure scenario – worker	
SECTION 1	TITLE EXPOSURE SCENARIO
Title	ES04: Formulation & (re)packaging of substances and mixtures - Industrial
Use descriptor	Sector of use: SU 3, 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: ERC 2
Scope of the 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 characteristic	
Physical form of the product	Liquid, vapour pressure > 10 kPa at STP.
Concentration of substance in product.	Covers percentage substance in the product up to 100% (unless stated differently).
Frequency and duration of use	
Covers daily exposures up to 8 hours (unless stated differently).	
Other given operational conditions affecting workers exposure.	
Assumes a good basic standard of occupational hygiene is implemented.	

Contributing scenarios	Risk management measures
General measures (eye irritants).	Use suitable eye protection. Avoid direct contact of product with the eyes, also via contamination on hands.
General exposure (closed systems)	No other specific measures identified.
General exposure (open systems)	No other specific measures identified.
Batch processes at elevated temperatures (closed systems)	No other specific measures identified.

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Process sampling	No other specific measures identified.	
Laboratory activities	No other specific measures identified.	
Bulk transfers	No other specific measures identified.	
Mixing operations (open systems)	Provide extract ventilation to points where emissions occur. or Wear a respirator conforming to EN140 with Type A filter or better.	
Manual Transfer from/pouring from containers	Use drum pumps or carefully pour from container.	
Drum/batch transfers	Use drum pumps or carefully pour from container.	
Production or preparation or articles by tabletting, compression, extrusion or pelletisation.	Provide extract ventilation to points where emissions occur. or Wear a respirator conforming to EN140 with Type A filter or better.	
Drum and small package filling	Fill containers/cans at dedicated fill points supplied with local extract ventilation.	
Equipment cleaning and maintenance	Drain down and flush system prior to equipment break-in or maintenance.	
Storage	Store the substance in a closed system. Transfer via enclosed lines. Locate bulk storage outdoors.	

Section 2.2	Environmental exposure controls	
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	

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Where other risk management measures/operational conditions are adopted, users should ensure that risks are managed to at least equivalent levels.

Section 4.2 - Environment

No exposure assessment presented for the environment.



Exposure scenario – worker	
SECTION 1	TITLE EXPOSURE SCENARIO
Title	ES05: 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 10, PROC 13, PROC 15
	Environmental release categories: ERC 4
Scope of the 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 characteristic				
Physical form of the product	Liquid, vapour pressure > 10 kPa at STP.			
Concentration of substance in product.	Covers percentage substance in the product up to 100% (unless stated differently).			
Frequency and duration of	Frequency and duration of use/exposure			
Covers daily exposures up to 8 hours (unless stated differently).				
Other given operational con	nditions affecting workers exposure.			
Assumes use at not more than 20°C above ambient temperature (unless stated differently). Assumes a good basic standard of occupational hygiene is implemented.				

Contributing scenarios	Risk management measures
General measures (eye irritants).	Use suitable eye protection. Avoid direct contact of product with the eyes, also via contamination on hands.
General exposure (closed systems)	No other specific measures identified.
General exposure (closed systems) with sample collection	Ensure material transfers are under containment or extract ventilation.

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Film formation - air drying (closed systems)	Ensure material transfers are under containment or extract ventilation.	
Mixing operations (closed systems)	Ensure material transfers are under containment or extract ventilation.	
Film formation - air drying (open systems)	Provide extract ventilation to points where emissions occur.	
Preparation of material for application Mixing operations (open systems)	Provide extract ventilation to points where emissions occur.	
Spraying (automatic/robotic)	Carry out in a vented booth provided with laminar airflow.	
Manual spraying	Provide a good standard of controlled ventilation (10 to 15 air changes per hour). Wear a respirator conforming to EN140 with Type A filter or better.	
Material transfers	Provide extract ventilation to points where emissions occur. or Avoid carrying out activities involving exposure for more than 1 hour.	
Roller, spreader, flow application	Use ventilation to extract vapours from freshly coated articles/objects and surfaces.	
Dipping, immersion and pouring	Provide extract ventilation to points where emissions occur. Avoid manual contact with wet work pieces.	
Laboratory activities	Provide extract ventilation to points where emissions occur.	
Material transfers Drum/batch transfers Transfer from/pouring from containers	Ensure material transfers are under containment or extract ventilation.	
Production or preparation of articles by tabletting, compression, extrusion or pelletisation.	Provide extract ventilation to points where emissions occur.	
Storage	Store the substance in a closed system.	
		

	Section 2.2	Environmental exposure controls	
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.

Where other risk management measures/operational conditions are adopted, users should ensure that risks are managed to at least equivalent levels.

Section 4.2 - Environment

No exposure assessment presented for the environment.



Exposure scenario – worke	er e e e e e e e e e e e e e e e e e e
SECTION 1	TITLE EXPOSURE SCENARIO
Title	ES06: 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: ERC 8A, ERC 8D
Scope of the 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 characteristic		
Physical form of the product	Liquid, vapour pressure > 10 kPa at STP.	
Concentration of substance in product.	Covers percentage substance in the product stated differently).	et up to 100% (unless
Frequency and duration of	use	
Covers daily exposures up to	8 hours (unless stated differently).	
Other given operational cor	nditions affecting workers exposure.	
	in 20 ℃ above ambient temperature (unless sard of occupational hygiene is implemented.	stated differently).

Contributing scenarios	Risk management measures
General measures (eye irritants).	Use suitable eye protection. Avoid direct contact of product with the eyes, also via contamination on hands.
General exposure (closed systems)	No other specific measures identified.
General exposure (closed systems) with occasional controlled	No other specific measures identified.

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exposure.	
Filling / preparation of equipment from drums or containers	Ensure material transfers are under containment or extract ventilation.
Preparation of material for application (closed systems)	No other specific measures identified.
Film formation - air drying Outdoor.	Avoid carrying out activities involving exposure for more than 1 hour. or Wear a respirator conforming to EN140 with Type A filter or better.
Film formation - air drying Indoor.	Provide a good standard of controlled ventilation (10 to 15 air changes per hour). Provide extract ventilation to points where emissions occur.
Preparation of material for application (open systems) Indoor	Provide a good standard of controlled ventilation (10 to 15 air changes per hour). Avoid carrying out operation for more than 1 hour. or Wear a respirator conforming to EN140 with Type A filter or better.
Preparation of material for application (open systems) Outdoor.	Wear a respirator conforming to EN140 with Type A filter or better.
Material transfers Drum/batch transfers	Provide a good standard of controlled ventilation (10 to 15 air changes per hour). Avoid carrying out operation for more than 1 hour. or Wear a respirator conforming to EN140 with Type A filter or better.
Roller, spreader, flow application Indoor	Provide a good standard of controlled ventilation (10 to 15 air changes per hour).
Roller, spreader, flow application Outdoor.	Wear a respirator conforming to EN140 with Type A filter or better.
Manual Spraying Indoor	Carry out in a vented booth or extracted enclosure. Wear a respirator conforming to EN140 with Type A filter or better.



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Manual spraying Outdoor.	Avoid carrying out activities involving exposure for more than 4 hours. Wear a respirator conforming to EN140 with Type A filter or better.
Dipping, immersion and pouring Indoor	Provide extract ventilation to points where emissions occur. Avoid manual contact with wet work pieces.
Dipping, immersion and pouring Outdoor.	Avoid manual contact with wet work pieces.
Laboratory activities	Provide a good standard of controlled ventilation (10 to 15 air changes per hour).
Manual application - Fingerpaints, pastels, adhesives Indoor	Provide a good standard of controlled ventilation (10 to 15 air changes per hour). Wear a respirator conforming to EN140 with Type A filter or better.
Manual application - Fingerpaints, pastels, adhesives Outdoor.	Wear a respirator conforming to EN140 with Type A filter or better.

Section 2.2	Environmental exposure controls	
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, users should ensure that risks are managed to at least equivalent levels.

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

Exposure scenario – worke	er e
SECTION 1	TITLE EXPOSURE SCENARIO
Title	ES07: Uses 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: ERC 4
Scope of the 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 characteristic	·
Physical form of the product	Liquid, vapour pressure > 10 kPa at STP.
Concentration of substance in product.	Covers percentage substance in the product up to 100% (unless stated differently).
Frequency and duration o	fuse
Covers daily exposures up	to 8 hours (unless stated differently).
Other given operational c	onditions affecting workers exposure.
Assumes a good basic stan	dard of occupational hygiene is implemented.

Contributing scenarios	Risk management measures
General measures (eye irritants).	Use suitable eye protection. Avoid direct contact of product with the eyes, also via contamination on hands.
Bulk transfers Dedicated facility	Avoid carrying out activities involving exposure for more than 1 hour.
Automated process with (semi) closed systems Use in contained systems	Avoid carrying out activities involving exposure for more than 4 hours.

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Drum/batch transfers	Avoid carrying out activities involving exposure for more than 1 hour. or Wear a respirator conforming to EN140 with Type A filter or better.
Application of cleaning products in closed systems	Avoid carrying out activities involving exposure for more than 4 hours.
Filling / preparation of equipment from drums or containers	Ensure material transfers are under containment or extract ventilation.
Use in contained batch processes	Provide extract ventilation to points where emissions occur.
Degreasing small objects in cleaning station	Provide extract ventilation to points where emissions occur.
Cleaning with low pressure washers	Provide a good standard of controlled ventilation (10 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.
Cleaning with high pressure washers	Provide a good standard of controlled ventilation (10 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.
Manual Surfaces cleaning No spraying	Provide a good standard of controlled ventilation (10 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.

Section 2.2	Environmental exposure controls	
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

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

Section 4.2 - Environment

No exposure assessment presented for the environment.



Exposure scenario – worker	
SECTION 1	TITLE EXPOSURE SCENARIO
Title	ES08: Uses in cleaning agents - Professional
Use descriptor	Sector of use: SU 22 Process categories: PROC 1, PROC 2, PROC 3, PROC 4, PROC 10, PROC 11, PROC 13, PROC 8a, PROC 8b Environmental release categories: ERC 8A, ERC 8B
Scope of the 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 characteristic		
Physical form of the product	Liquid, vapour pressure > 10 kPa at STP.	
Concentration of substance in product.	Covers percentage substance in the product up to 100% (unless stated differently).	
Frequency and duration of use		
Covers daily exposures up to 8 hours (unless stated differently).		
Other given operational conditions affecting workers exposure.		
Assumes a good basic standard of occupational hygiene is implemented.		

Contributing scenarios	Risk management measures
General measures (eye irritants).	Use suitable eye protection. Avoid direct contact of product with the eyes, also via contamination on hands.
Filling / preparation of equipment from drums or containers	Provide a good standard of controlled ventilation (10 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.
Automated process with (semi) closed systems	Avoid carrying out activities involving exposure for more than 4 hours.

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Use in contained systems	
Drum/batch transfers	Avoid carrying out activities involving exposure for more than 1 hour. 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) Filling / preparation of equipment from drums or containers.	Provide a good standard of controlled ventilation (10 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. Ensure operation is undertaken outdoors. Wear a respirator conforming to EN140 with Type A filter or better.
Manual Surfaces cleaning Dipping, immersion and pouring	Provide a good standard of controlled ventilation (10 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.
Cleaning with low pressure washers Rolling, brushing No spraying	Limit the substance content in the product to 5%. Provide a good standard of controlled ventilation (10 to 15 air changes per hour).
Cleaning with high pressure washers Spraying Indoor	Limit the substance content in the product to 1%. Provide a good standard of controlled ventilation (10 to 15 air changes per hour).
Cleaning with high pressure washers Spraying Outdoor.	Limit the substance content in the product to 1%. Avoid carrying out activities involving exposure for more than 4 hours. or Wear a respirator conforming to EN140 with Type A filter or better.
Manual Surfaces cleaning Spraying	Limit the substance content in the product to 25%. Provide a good standard of controlled ventilation (10 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.
Ad hoc manual application via trigger sprays, dipping, etc.	Limit the substance content in the product to 25%. Provide extract ventilation to points where emissions occur.

Rolling, brushing	Avoid carrying out operation for more than 4 hour. or Wear a respirator conforming to EN140 with Type A filter or better. Wear suitable gloves tested to EN374.
Application of cleaning products in closed systems Outdoor.	Avoid carrying out activities involving exposure for more than 1 hour. or Wear a respirator conforming to EN140 with Type A filter or better.
Cleaning of medical devices	Provide extract ventilation to 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.

Section 2.2	Environmental exposure controls	
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.

Where other risk management measures/operational conditions are adopted, users should ensure that risks are managed to at least equivalent levels.

Section 4.2 - Environment

No exposure assessment presented for the environment.

Exposure scenario – worker	
SECTION 1	TITLE EXPOSURE SCENARIO
Title	ES09: 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: ERC 4, ERC 7
Scope of the 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 characteristic	
Physical form of the product	Liquid, vapour pressure > 10 kPa at STP.
Concentration of substance in product.	Covers percentage substance in the product up to 100% (unless stated differently).
Frequency and duration of use/exposure	
Covers daily exposures up to 8 hours (unless stated differently).	
Other given operational conditions affecting workers exposure.	
Assumes a good basic standard of occupational hygiene is implemented.	

Contributing scenarios	Risk management measures
General measures (eye irritants).	Use suitable eye protection. Avoid direct contact of product with the eyes, also via contamination on hands.
General exposure (closed systems) with occasional controlled exposure.	No other specific measures identified.
General exposure (open systems)	No other specific measures identified.
Bulk transfers	No other specific measures identified.

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Filling / preparation of equipment from drums or containers	Transfer via enclosed lines Use drum pumps or carefully pour from container.
Initial factory fill of equipment	Ensure material transfers are under containment or extract ventilation.
Operation and lubrication of high energy open equipment	Restrict area of openings to equipment.
Manual Rolling, brushing	Provide a good standard of controlled ventilation (10 to 15 air changes per hour).
Treatment by dipping and pouring	Restrict area of openings to equipment.
Spraying	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings.
Maintenance (of larger plant items) and machine set up	Provide extract ventilation to emission points when contact with warm (>50°C) lubricant is likely. Wear suitable gloves tested to EN374.
Maintenance of small items	Avoid carrying out activities involving exposure for more than 4 hours.
Remanufacture of reject articles	Avoid carrying out activities involving exposure for more than 4 hours.
Storage	No other specific measures identified.

Section 2.2	Environmental exposure controls	
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.	

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Where other risk management measures/operational conditions are adopted, users should ensure that risks are managed to at least equivalent levels.

Section 4.2 - Environment



Exposure scenario – worke	er
SECTION 1	TITLE EXPOSURE SCENARIO
Title	ES10: Metal working fluids / rolling oils - 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 17 Environmental release categories: ERC 4
Scope of the process	Covers the use in formulated MWFs/rolling oils within closed or contained systems including incidental exposures during transfer operations, rolling and annealing activities, cutting/machining activities, automated application of corrosion protections, equipment maintenance, draining and disposal of waste oils.

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 characteristic	
Physical form of the product	Liquid, vapour pressure > 10 kPa at STP.
Concentration of substance in product.	Covers percentage substance in the product up to 100% (unless stated differently).
Frequency and duration of use	
Covers daily exposures up to 8 hours (unless stated differently).	
Other given operational conditions affecting workers exposure.	
Assumes a good basic standard of occupational hygiene is implemented.	

Contributing scenarios	Risk management measures
General measures (eye irritants).	Use suitable eye protection. Avoid direct contact of product with the eyes, also via contamination on hands.
General exposure (closed systems)	No other specific measures identified.
General exposure (open systems)	No other specific measures identified.
Bulk transfers	Provide enhanced general ventilation by mechanical means. or

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Ensure operation is undertaken outdoors. Avoid carrying out operation for more than 1 hour. Clear transfer lines prior to de-coupling.
Use drum pumps or carefully pour from container.
Use dedicated equipment.
Provide extract ventilation to points where emissions occur. Restrict area of openings to equipment.
Provide enhanced general ventilation by mechanical means.
Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings.
Provide enhanced general ventilation by mechanical means.
Handle substance within a predominantly closed system provided with extract ventilation. Provide extract ventilation to points where emissions occur.
Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings.
No other specific measures identified.
Provide enhanced general ventilation by mechanical means. Drain or remove substance from equipment prior to break-in or maintenance.
Store the substance in a closed system. Transfer via enclosed lines

Section 2.2	Environmental exposure controls	
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		

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

Section 4.2 - Environment



Exposure scenario – worke	r
SECTION 1	TITLE EXPOSURE SCENARIO
Title	ES11: Use in agrochemicals - 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: ERC 8A, ERC 8D
Scope of the 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 characteristic	
Physical form of the product	Liquid, vapour pressure > 10 kPa at STP.
Concentration of substance in product.	Covers percentage substance in the product up to 100% (unless stated differently).
Frequency and duration of use	
Covers daily exposures up to 8 hours (unless stated differently).	
Other given operational conditions affecting workers exposure.	
Assumes a good basic standard of occupational hygiene is implemented.	

Contributing scenarios	Risk management measures
General measures (eye irritants).	Use suitable eye protection. Avoid direct contact of product with the eyes, also via contamination on hands.
Transfer from/pouring from containers	Ensure operation is undertaken outdoors.
Mixing in containers.	Ensure operation is undertaken outdoors.
Spraying/fogging by manual application	Wear a full face respirator conforming to EN136 with Type A filter or better.
Spraying/fogging by machine application	Apply within a vented cab supplied with filtered air under positive pressure and with a protection factor of >20.
Ad hoc manual	Wear suitable gloves tested to EN374.



application via trigger sprays, dipping, etc.	Wear a respirator conforming to EN140 with Type A filter or better.
Equipment cleaning and maintenance	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Avoid carrying out activities involving exposure for more than 1 hour.
Disposal of waste	Ensure operation is undertaken outdoors. Wear suitable gloves tested to EN374. Avoid carrying out activities involving exposure for more than 1 hour.
Storage	Store the substance in a closed system.

Section 2.2	Environmental exposure controls	
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	

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

Section 4.2 - Environment

Exposure scenario – worke	er
SECTION 1	TITLE EXPOSURE SCENARIO
Title	ES12: Use as a fuel - Industrial
Use descriptor	Sector of use: SU 3 Process categories: PROC 1, PROC 2, PROC 3, PROC 8a, PROC 8b, PROC 16 Environmental release categories: ERC 7
Scope of the process	Covers the use as a fuel (or fuel additive) and includes activities associated with its transfer, use, equipment maintenance and handling of waste.

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 characteristic	
Physical form of the product	Liquid, vapour pressure > 10 kPa at STP.
Concentration of substance in product.	Covers percentage substance in the product up to 100% (unless stated differently).
Frequency and duration of use	
Covers daily exposures up to 8 hours (unless stated differently).	
Other given operational conditions affecting workers exposure.	
Assumes a good basic standard of occupational hygiene is implemented.	

Contributing scenarios	Risk management measures
General measures (eye irritants).	Use suitable eye protection. Avoid direct contact of product with the eyes, also via contamination on hands.
Bulk transfers	Transfer via enclosed lines Clear transfer lines prior to de-coupling.
Drum/batch transfers	Use drum pumps or carefully pour from container.
General exposure (closed systems)	No other specific measures identified.
Use as a fuel (closed systems)	No other specific measures identified.
Equipment cleaning and maintenance	Drain down and flush system prior to equipment break-in or maintenance.



Storage	Store the substance in a closed system.
	Transfer via enclosed lines
	Ensure operation is undertaken outdoors.

Section 2.2	Environmental exposure controls	
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.	
Where other risk management measures/operational conditions are adopted, users should	
ensure that risks are managed to at least equivalent levels.	

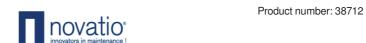
Section 4.2 - Environment No exposure assessment presented for the environment.

Exposure scenario – worker	
SECTION 1	TITLE EXPOSURE SCENARIO
Title	ES13: Use as a fuel - Professional
Use descriptor	Sector of use: SU 22 Process categories: PROC 1, PROC 2, PROC 3, PROC 8a, PROC 8b, PROC 16 Environmental release categories: ERC 9A, ERC 9B
Scope of the process	Covers the use as a fuel (or fuel additive) and includes activities associated with its transfer, use, equipment maintenance and handling of waste.

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 characteristic	
Physical form of the product	Liquid, vapour pressure > 10 kPa at STP.
Concentration of substance in product.	Covers percentage substance in the product up to 100% (unless stated differently).
Frequency and duration of use	
Covers daily exposures up to 8 hours (unless stated differently).	
Other given operational conditions affecting workers exposure.	
Assumes a good basic standard of occupational hygiene is implemented.	

Contributing scenarios	Risk management measures
General measures (eye irritants).	Use suitable eye protection. Avoid direct contact of product with the eyes, also via contamination on hands.
Bulk transfers	Transfer via enclosed lines Clear transfer lines prior to de-coupling.
Drum/batch transfers	Use drum pumps or carefully pour from container. Avoid spillage when withdrawing pump.
Refuelling	Use drum pumps or carefully pour from container. Avoid spillage when withdrawing pump.
General exposure (closed systems)	No other specific measures identified.
Use as a fuel	No other specific measures identified.



(closed systems)	
Equipment cleaning and maintenance	Drain down and flush system prior to equipment break-in or maintenance. Retain drain downs in sealed storage pending disposal or for subsequent recycle.
Storage	Store the substance in a closed system.

Section 2.2	Environmental exposure controls	
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.	
Where other risk management measures/operational conditions are adopted, users should	

Section 4.2 - Environment

No exposure assessment presented for the environment.

ensure that risks are managed to at least equivalent levels.

Exposure scenario – worker	
SECTION 1	TITLE EXPOSURE SCENARIO
Title	ES14: Use in laboratories - Industrial
Use descriptor	Sector of use: SU 3 Process categories: PROC 10, PROC 15 Environmental release categories: ERC 2, ERC 4
Scope of the 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 characteristic	
Physical form of the product	Liquid, vapour pressure > 10 kPa at STP.
Concentration of substance in product.	Covers percentage substance in the product up to 100% (unless stated differently).
Frequency and duration of use	
Covers daily exposures up to 8 hours (unless stated differently).	
Other given operational conditions affecting workers exposure.	
Assumes a good basic standard of occupational hygiene is implemented.	

Contributing scenarios	Risk management measures
General measures (eye irritants).	Use suitable eye protection. Avoid direct contact of product with the eyes, also via contamination on hands.
Laboratory activities	No other specific measures identified.
Cleaning	Provide a good standard of controlled ventilation (10 to 15 air changes per hour). Ensure the ventilation system is regularly maintained and tested.

Section 2.2	Environmental exposure controls	
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.	

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

Section 4.2 - Environment



Exposure scenario – worker	
SECTION 1	TITLE EXPOSURE SCENARIO
Title	ES15: Use in laboratories - Professional
Use descriptor	Sector of use: SU 22 Process categories: PROC 10, PROC 15 Environmental release categories: ERC 8A
Scope of the process	Use of small quantities 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 characteristic	
Physical form of the product	Liquid, vapour pressure > 10 kPa at STP.
Concentration of substance in product.	Covers percentage substance in the product up to 100% (unless stated differently).
Frequency and duration of use	
Covers daily exposures up to 8 hours (unless stated differently).	
Other given operational conditions affecting workers exposure.	
Assumes a good basic standard of occupational hygiene is implemented.	

Contributing scenarios	Risk management measures
General measures (eye irritants).	Use suitable eye protection. Avoid direct contact of product with the eyes, also via contamination on hands.
Laboratory activities	No other specific measures identified.
Cleaning	Provide a good standard of controlled ventilation (10 to 15 air changes per hour). Avoid carrying out activities involving exposure for more than 1 hour. Ensure the ventilation system is regularly maintained and tested.

Section 2.2	Environmental exposure controls	
No exposure assessment presented for the environment.		

SECTION 3	EXPOSURE ESTIMATION
Section 3.1 - Health	

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

Section 4.2 - Environment



Exposure scenario – consumer	
SECTION 1	TITLE EXPOSURE SCENARIO
Title	ES16: Uses in coatings - consumer
Use descriptor	Sector of use: SU 21 Product categories: PC1, PC4, PC8 (binding agents only), PC9a, PC9b, PC15, PC18, PC23, PC24, PC31, PC34 Environmental release categories: ERC 8A, ERC 8D
Scope of the 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.

Control of consumer exposure	
Liquid, vapour pressure > 10 Pa at STP	
Unless otherwise indicated.	
Covers concentrations up to (%): 100%	
se amounts up to (g):	13,800
Covers skin contact area up to (cm²):	
ise/exposure	•
-	
Covers use up to (times/day of use):	
Covers use up to (hours/event):	
ditions affecting user exposure	•
ratures. Covers use in	
	Liquid, vapour pressure > 10 Pa at STP Unless otherwise indicated. Covers concentrations up to (%): 100% se amounts up to (g): co (cm²): use/exposure of use): t): uditions affecting user exposure

Product categories	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES
Adhesives, sealants Glues, hobby use.	Covers concentrations up to 30%
	Covers use up to 365 days/year
	Covers use up to 1 time/day

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	0
	Covers skin contact area up to 35.73 cm ²
	For each use event, covers use amounts up to 9 g
	Covers use in room size of 20m ³
	Covers exposure up to 4 hours/event
Adhesives, sealants Glues DIY-use (carpet glue, tile glue, wood parquet glue)	Covers concentrations up to 30%
	Covers use up to 1 days/year
	Covers use up to 1 time/day
	Covers skin contact area up to 110.00 cm ²
	For each use event, covers use amounts up to 6,390 g
	Covers use in room size of 20m ³
	Covers exposure up to 6.00 hours/event
Adhesives, sealants Glue from spray	Covers concentrations up to 30%
	Covers use up to 6 days/year
	Covers use up to 1 time/day
	Covers skin contact area up to 35.73 cm ²
	For each use event, covers use amounts up to 85.05 g
	Covers use in room size of 20m ³
	Covers exposure up to 4.00 hours/event
Adhesives, sealants Sealants	Covers concentrations up to 20%
	Covers use up to 365 days/year
	Covers use up to 1 time/day
	Covers skin contact area up to 35.73 cm ²
	For each use event, covers use amounts up to 75 g
	Covers use in room size of 34 m ³
	Covers exposure up to 1.00 hours/event
Anti-freeze and de-icing products. Washing car windows	Covers concentrations up to 1%
	Covers use up to 365 days/year
	Covers use up to 1 time/day
	For each use event, covers use amounts up to 0.5 g
	Covers use in a one car garage (34 m³) under typical ventilation. 34 m³
	Covers use in room size of 34 m ³
	Covers exposure up to 0.02 hours/event
Anti-freeze and de-icing products. Pouring into radiator	Covers concentrations up to 10%
	Covers use up to 365 days/year



	Oncome con to 4 the older
	Covers use up to 1 time/day
	Covers skin contact area up to 428 cm ²
	For each use event, covers use amounts up to 2,000 g
	Covers use in a one car garage (34 m ³) under typical ventilation.
	34 m³
	Covers use in room size of 34 m ³
	Covers exposure up to 0.17 hours/event
Biocidal products (e.g. disinfectants, pest control) cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners) PC8 (binding agents only)	Covers concentrations up to 5%
	Covers use up to 128 days/year
	Covers use up to 128 days/year Covers use up to 1 time/day
	Covers use up to 1 time/day Covers skin contact area up to 857.50 cm ²
	For each use event, covers use amounts up to 27 g
	Tot each use event, covers use amounts up to 27 g
	Covers use in room size of 20m ³
	Covers exposure up to 0.33 hours/event
Biocidal products (e.g. disinfectants, pest control) Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners) PC8 (binding agents only)	Covers concentrations up to 15%
	Covers use up to 128 days/year
	Covers use up to 1 time/day
	Covers skin contact area up to 428 cm ²
	For each use event, covers use amounts up to 35 g
	Covers use in room size of 20m³
	Covers exposure up to 0.17 hours/event
Coatings and paints, thinners, paint removers Solvent rich, high solid, water borne paint	Covers concentrations up to 27.5%
	Covers use up to 6 days/year
	Covers use up to 1 time/day
	Covers skin contact area up to 428.75 cm ³
	For each use event, covers use amounts up to 744 g
	Covers use in room size of 20m³



	Covers exposure up to 2.20 hours/event
Coatings and paints,	Covers concentrations up to 50%
thinners, paint removers Aerosol spray can	·
	Covers use up to 2 days/year
	Covers use up to 2 days/year Covers use up to 1 time/day
	For each use event, covers use amounts up to 215 g
	For each use event, covers use amounts up to 213 g
	Covers use in a one car garage (34 m ³) under typical ventilation.
	Covers use in room size of 34 m ³
	Covers exposure up to 0.33 hours/event
Coatings and paints, thinners, paint removers Removers (paint-, glue-, wall paper-, sealant-remover)	Covers concentrations up to 50%
	Covers use up to 3 days/year
	Covers use up to 1 time/day
	Covers skin contact area up to 857.50 cm ²
	For each use event, covers use amounts up to 491 g
	Covers use in room size of 20m³
	Covers exposure up to 2.00 hours/event
Fillers and putty	Covers concentrations up to 2%
	Covers use up to 12 days/year
	Covers use up to 1 time/day
	Covers skin contact area up to 35.73 cm ³
	For each use event, covers use amounts up to 85 g
	Covers use in room size of 20m ³
	Covers exposure up to 4 hours/event
Fillers and putty Plasters and floor equalizers	Covers concentrations up to 2%
	Covers use up to 12 days/year
	Covers use up to 1 time/day
	Covers skin contact area up to 857.50 cm ²
	For each use event, covers use amounts up to 13,800 g
	Covers use in room size of 20m³
	Covers exposure up to 2.00 hours/event
Non-metal-surface treatment products Solvent rich, high solid, water borne paint	Covers concentrations up to 27.5%
	Covers use up to 6 days/year



	Covers use up to 1 time/day
	Covers skin contact area up to 428.75 cm ²
	For each use event, covers use amounts up to 744 g
	Covers use in room size of 20m ³
	Covers exposure up to 2.20 hours/event
Non-metal-surface treatment products Aerosol spray can	Covers concentrations up to 50%
	Covers use up to 2 days/year
	Covers use up to 1 time/day
	For each use event, covers use amounts up to 215 g
	Covers use in a one car garage (34 m³) under typical ventilation.
	Covers use in room size of 34 m ³
	Covers exposure up to 0.33 hours/event
Non-metal-surface treatment products Removers (paint-, glue-, wall paper-, sealant-remover)	Covers concentrations up to 50%
	Covers use up to 3 days/year
	Covers use up to 1 time/day
	Covers skin contact area up to 857.50 cm ²
	For each use event, covers use amounts up to 491 g
	Covers use in room size of 20m ³
	Covers exposure up to 2.00 hours/event
Ink and toners	Covers concentrations up to 10%
	Covers use up to 365 days/year
	Covers use up to 1 time/day
	Covers skin contact area up to 71.40 cm ²
	For each use event, covers use amounts up to 40 g
	Covers use in room size of 20m ³
	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 days/year
	Covers use up to 1 time/day
	Covers skin contact area up to 430.00 cm ²
	For each use event, covers use amounts up to 56 g
	Covers use in room size of 20m ³
	Covers exposure up to 1.23 hours/event
Leather tanning,	Covers concentrations up to 50%
J /	-



due finialaine impresention	
dye, finishing, impregnation and care products Polishes,	
spray (furniture, shoes)	
spray (rumlare, snoes)	
	Covers use up to 8 days/year
	Covers use up to 1 time/day
	Covers skin contact area up to 430.00 cm ²
	For each use event, covers use amounts up to 56 g
	Covers use in room size of 20m ³
	Covers exposure up to 0.33 hours/event
Lubricants, greases and release products Liquids	Covers concentrations up to 100%
	Covers use up to 4 days/year
	Covers use up to 1 time/day
	Covers skin contact area up to 468.00 cm ²
	For each use event, covers use amounts up to 2,200 g
	Covers use in a one car garage (34 m³) under typical ventilation.
	Covers use in room size of 34 m ³
	Covers exposure up to 0.17 hours/event
Lubricants, greases and release products Pastes	Covers concentrations up to 20%
•	Covers use up to 10 days/year
	Covers use up to 1 time/day
	Covers skin contact area up to 468.00 cm ²
	For each use event, covers use amounts up to 34 g
	Covers use in room size of 20m ³
Lubricants, greases and release products Sprays	Covers concentrations up to 50%
	Covers use up to 6 days/year
	Covers use up to 1 time/day
	Covers skin contact area up to 428.75 cm ²
	For each use event, covers use amounts up to 73 g
	Covers use in room size of 20m ³
	Covers exposure up to 0.17 hours/event
Polishes and wax blends Polishes, wax / cream (floor, furniture, shoes)	Covers concentrations up to 50%
,	Covers use up to 29 days/year
	Covers use up to 1 time/day
	Covers skin contact area up to 430.00 cm ²
	For each use event, covers use amounts up to 142 g
	Covers use in room size of 20m ³
	Covers exposure up to 1.23 hours/event
Polishes and wax blends Polishes, spray (furniture,	Covers concentrations up to 50%

shoes)	
	Covers use up to 8 days/year
	Covers use up to 1 time/day
	Covers skin contact area up to 430.00 cm ²
	For each use event, covers use amounts up to 35 g
	Covers use in room size of 20m ³
	Covers exposure up to 0.33 hours/event
Textile dyes, finishing and impregnating products; including bleaches and other processing aids	Covers concentrations up to 10%
	Covers use up to 365 days/year
	Covers use up to 1 time/day
	Covers skin contact area up to 857.50 cm ²
	For each use event, covers use amounts up to (g): 115 g
	Covers use in room size of 20m ³
	Covers exposure up to 1.00 hours/event

Section 2.2	Environmental exposure controls	
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	
D 11 - 1	· · · · · · · · · · · · · · · · · · ·

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, users should

Where other risk management measures/operational conditions are adopted, users should ensure that risks are managed to at least equivalent levels.

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

Exposure scenario – consumer	
SECTION 1	TITLE EXPOSURE SCENARIO
Title	ES17: Uses in cleaning agents - consumer
Use descriptor	Sector of use: SU 21 Product categories: PC9a, PC9b, PC24, PC35 Environmental release categories: ERC 8A, ERC 8D
Scope of the 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 exposure	
Product characteristic		
Physical form of the	Liquid, vapour pressure > 10 Pa at STP	
product		
Concentration of	Unless otherwise indicated.	
substance in product.	Offiess otherwise indicated.	
	Covers concentrations up to (%): 50%	
A		
Amounts used		
Unless otherwise indicated.		
For each use event, covers use amounts up to (g): 13,800		13,800
Covers skin contact area up to (cm²): 857.5		857.5
Frequency and duration of	use/exposure	
Unless otherwise indicated.		
Covers use up to (times/day of use): 0.35		0.35
Covers use up to (hours/event): 2.2		2.2
Other given operational co	nditions affecting user exposure	
Unless otherwise indicated.		
On the state of th		

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
Coatings and paints, thinners, paint removers Solvent rich, high solid, water borne paint	Covers concentrations up to 27.5%
	Covers use up to 6 days/year

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	Covers use up to 1 time/day
	Covers skin contact area up to 428.75 cm ²
	For each use event, covers use amounts up to 744 g
	т от опет от
	Covers use in room size of 20m ³
	Covers exposure up to 2.20 hours/event
Coatings and paints,	Covers concentrations up to 50%
thinners, paint removers	
Aerosol spray can	
. ,	
	Covers use up to 2 days/year
	Covers use up to 1 time/day
	For each use event, covers use amounts up to 215 g
	Covers use in a one car garage (34 m ³) under typical ventilation.
	Covers use in room size of 34 m ³
	Covers exposure up to 0.33 hours/event
Coatings and paints,	Covers concentrations up to 50%
thinners, paint removers	
Removers (paint-, glue-, wall	
paper-, sealant-remover)	
,	
	Covers use up to 3 days/year
	Covers use up to 1 time/day
	Covers skin contact area up to 857.50 cm ²
	For each use event, covers use amounts up to 491 g
	Covers use in room size of 20m ³
	Covers exposure up to 2.00 hours/event
Fillers and putty Plasters and	Covers concentrations up to 2%
floor equalizers	
	Covers use up to 12 days/year
	Covers use up to 1 time/day
	Covers skin contact area up to 857.50 cm ²
	For each use event, covers use amounts up to 13,800 g
	Covers use in room size of 20m ³
	Covers exposure up to 2.00 hours/event
Lubricants, greases and	Covers concentrations up to 50%
release products	·
Liquids	
	Covers use up to 4 days/year
	Covers use up to 1 time/day
	Covers skin contact area up to 468 cm ²
	For each use event, covers use amounts up to 2,200 g
	Covers use in a one car garage (34 m ³) under typical ventilation.
	Covers use in room size of 34 m ³
	Covers exposure up to 0.17 hours/event
	process of process of the control of



Lubricants, greases and	Covers concentrations up to 20%
release products Pastes	Covers use up to 10 days/year
	Covers use up to 10 days/year Covers use up to 1 time/day
	Covers skin contact area up to 468 cm ²
	For each use event, covers use amounts up to 34 g
	To out out and over the design and t
	Covers use in room size of 20m ³
Lubricants, greases and	Covers concentrations up to 20%
release products Sprays	
	Covers use up to 6 days/year
	Covers use up to 1 time/day
	Covers skin contact area up to 428.75 cm ²
	For each use event, covers use amounts up
	to 73 g
	Covers use in room size of 20m ³
	Covers exposure up to 0.17 hours/event
Washing and cleaning products (including solvent	Covers concentrations up to 5%
based products) Cleaners,	
liquids (all purpose cleaners,	
sanitary products, floor cleaners, glass cleaners,	
carpet cleaners, metal	
cleaners)	
	Covers use up to 128 days/year
	Covers use up to 1 time/day
	Covers skin contact area up to 857.50 cm ²
	For each use event, covers use amounts up to 27 g
	Covers use in room size of 20m ³
	Covers exposure up to 0.33 hours/event
Washing and cleaning products (including solvent based products) Cleaners, trigger sprays (all purpose cleaners, sanitary	Covers concentrations up to 15%
products, glass cleaners)	
	Covers use up to 128 days/year
	Covers use up to 1 time/day
	Covers skin contact area up to 428 cm ²
	For each use event, covers use amounts up to 35 g
	Covers use in room size of 20m ³
	Covers exposure up to 0.17 hours/event

Section 2.2	Environmental exposure controls	
No exposure assessment pre	sented 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/operational conditions outlined in section 2 are implemented.

Where other risk management measures/operational conditions are adopted, users should ensure that risks are managed to at least equivalent levels.

Section 4.2 - Environment



Exposure scenario – consu	Exposure scenario – consumer	
SECTION 1	TITLE EXPOSURE SCENARIO	
Title	ES18: Lubricants – consumer	
Use descriptor	Sector of use: SU 21 Product categories: PC1, PC24, PC31 Environmental release categories: ERC 8A, ERC 8D, ERC 9A, ERC 9B	
Scope of the 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 characteristic		
Physical form of the product	Liquid, vapour pressure > 10 Pa at ST	ГР
Concentration of substance in product.	Unless otherwise indicated.	
•	Covers concentrations up to (%): 100	%
Amounts used		
Unless otherwise indicated		
For each use event, covers	use amounts up to (g):	6,390
Covers skin contact area u	o to (cm²):	468
Frequency and duration of	f use/exposure	•
Unless otherwise indicated		
Covers use up to (times/da	y of use):	1
Covers use up to (hours/ev		6
Other given operational of	onditions affecting user exposure	•
Unless otherwise indicated		
Covers use at ambient tem room size of 20m ³	peratures. Covers use in	

Product categories	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES
Adhesives, sealants Glues, hobby use.	Covers concentrations up to 30%
	Covers use up to 365 days/year
	Covers use up to 1 time/day
	Covers skin contact area up to 35.73 cm ²

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Covers use under typical household ventilation.

	For each use event, covers use amounts up to 9 g
	, ,
	Covers use in room size of 20m ³
	Covers exposure up to 4.00 hours/event
Adhesives, sealants Glues DIY-use (carpet glue, tile glue, wood parquet glue)	Covers concentrations up to 30%
	Covers use up to 1 days/year
	Covers use up to 1 time/day
	Covers skin contact area up to 110.00 cm ²
	For each use event, covers use amounts up to 6,390 g
	Covers use in room size of 20m ³
	Covers exposure up to 6.00 hours/event
Adhesives, sealants Glue from spray	Covers concentrations up to 30%
	Covers use up to 6 days/year
	Covers use up to 1 time/day
	Covers skin contact area up to 35.73 cm ²
	For each use event, covers use amounts up to 85.05 g
	Covers use in room size of 20m ³
	Covers exposure up to 4.00 hours/event
Adhesives, sealants Plasters and floor equalizers Sealants	Covers concentrations up to 25%
	Covers use up to 365 days/year
	Covers use up to 1 time/day
	Covers skin contact area up to 35.73 cm ²
	For each use event, covers use amounts up to 75 g
	Covers use in room size of 20m ³
Lubricants, greases and	
release products Liquids	Covers exposure up to 1.00 hours/event Covers concentrations up to 100%
	Covers exposure up to 1.00 hours/event Covers concentrations up to 100%
	Covers exposure up to 1.00 hours/event Covers concentrations up to 100% Covers use up to 4 days/year
	Covers exposure up to 1.00 hours/event Covers concentrations up to 100% Covers use up to 4 days/year Covers use up to 1 time/day
	Covers exposure up to 1.00 hours/event Covers concentrations up to 100% Covers use up to 4 days/year
	Covers exposure up to 1.00 hours/event Covers concentrations up to 100% Covers use up to 4 days/year Covers use up to 1 time/day Covers skin contact area up to 468 cm² For each use event, covers use amounts up to 2,200 g Covers use in a one car garage (34 m³) under typical ventilation.
	Covers exposure up to 1.00 hours/event Covers concentrations up to 100% Covers use up to 4 days/year Covers use up to 1 time/day Covers skin contact area up to 468 cm² For each use event, covers use amounts up to 2,200 g
	Covers exposure up to 1.00 hours/event Covers concentrations up to 100% Covers use up to 4 days/year Covers use up to 1 time/day Covers skin contact area up to 468 cm² For each use event, covers use amounts up to 2,200 g Covers use in a one car garage (34 m³) under typical ventilation.
	Covers exposure up to 1.00 hours/event Covers concentrations up to 100% Covers use up to 4 days/year Covers use up to 1 time/day Covers skin contact area up to 468 cm² For each use event, covers use amounts 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 use up to 1 time/day
	Covers skin contact area up to 468 cm ²
	For each use event, covers use amounts up to 34 g
	Covers use in room size of 20m³
Lubricants, greases and release products Sprays	Covers concentrations up to 50%
	Covers use up to 6 days/year
	Covers use up to 1 time/day
	Covers skin contact area up to 428.75 cm ²
	For each use event, covers use amounts up to 73 g
	Covers use in room size of 20m³
	Covers exposure up to 0.17 hours/event
Polishes and wax blends Polishes, wax / cream (floor, furniture, shoes)	Covers concentrations up to 50%
	Covers use up to 29 days/year
	Covers use up to 1 time/day
	Covers skin contact area up to 430.00 cm ²
	For each use event, covers use amounts up to 142 g
	Covers use in room size of 20m³
	Covers exposure up to 1.23 hours/event
Polishes and wax blends Polishes, spray (furniture, shoes)	Covers concentrations up to 50%
	Covers use up to 8 days/year
	Covers use up to 1 time/day
	Covers skin contact area up to 430.00 cm ²
	For each use event, covers use amounts up to 35 g
	Covers use in room size of 20m³
	Covers exposure up to 0.33 hours/event

Section 2.2	Environmental exposure controls	
No exposure assessment pre	sented for the environment.	

SECTION 3	EXPOSURE ESTIMATION
Section 3.1 - Health	
The ECETOC TRA tool has be indicated.	peen used to estimate consumer 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		
Predicted exposures are not expected to exceed the DN(M)FL when the		

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risk management measures/operational conditions outlined in section 2 are implemented. Where other risk management measures/operational conditions are adopted, users should ensure that risks are managed to at least equivalent levels.

Section 4.2 - Environment



Exposure scenario – consumer		
SECTION 1	TITLE EXPOSURE SCENARIO	
Title	ES19: Use in agrochemicals - consumer	
Use descriptor	Sector of use: SU 21 Product categories: PC12, PC27 Environmental release categories: ERC 8A, ERC 8D	
Scope of the process	Covers the consumer use in agrochemicals in liquid and solid forms.	

SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES
Additional information	No exposure assessment presented for the environment.

Liquid, vapour pressure > 10 Pa at STP Unless otherwise indicated. Covers concentrations up to (%): 4%		
Unless otherwise indicated.		
Covers concentrations up to (%): 4%		
e amounts up to (g):	50	
(cm ²):	857.5	
Frequency and duration of use/exposure		
use):	1	
Covers use up to (hours/event): 0.5		
Other given operational conditions affecting user exposure		
Unless otherwise indicated.		
Covers use at ambient temperatures. Covers use in		
room size of 20m ³		
Covers use under typical household ventilation.		
	(cm²): se/exposure use): b: ditions affecting user exposure atures. Covers use in	

Product categories	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES	
Fertilizers Lawn and garden preparations	Covers concentrations up to 4%	
	Covers use up to 365 days/year	
	Covers use up to 1 time/day	
	Covers skin contact area up to 857.50 cm ²	
	For each use event, assumes swallowed amount of 0.3 g	
	For each use event, covers use amounts up to 50 g	

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	Covers use in room size of 20m ³	
	Covers exposure up to 0.50 hours/event	
Plant protection products	Covers concentrations up to 42.5%	
	Covers use up to 365 days/year	
	Covers use up to 1 time/day	
	Covers skin contact area up to 857.50 cm ²	
	For each use event, assumes swallowed amount of 0.3 g	
	For each use event, covers use amounts up to 50 g	
	Covers use in room size of 20m ³	
	Covers exposure up to 0.50 hours/event	

Section 2.2	Environmental exposure controls	
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		

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/operational conditions outlined in section 2 are implemented. Where other risk management measures/operational conditions are adopted, users should ensure that risks are managed to at least equivalent levels.

Section 4.2 - Environment

Exposure scenario – consumer		
SECTION 1	TITLE EXPOSURE SCENARIO	
Title	ES20: Use as a fuel - consumer	
Use descriptor	Sector of use: SU 21 Product categories: PC13 Environmental release categories: ERC 9A, ERC 9B	
Scope of the process	Covers consumer uses in liquid fuels.	

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 characteristic		
Physical form of the product	Liquid, vapour pressure > 10 Pa at STP	
Concentration of substance in product.	Unless otherwise indicated.	
	Covers concentrations up to (%): 100%	
Amounts used		
Unless otherwise indicated.		
For each use event, covers use amounts up to (g):		37,500
Covers skin contact area up to (cm²):		420
Frequency and duration of use/exposure		
Unless otherwise indicated.		
Covers use up to (times/day of use):		0.143
Covers use up to (hours/event):		2
Other given operational conditions affecting user exposure		
Unless otherwise indicated.		
Covers use at ambient temperatures. Covers use in room size of 20m³		

Product categories	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES
Fuels Liquid: Automotive refuelling	Covers concentrations up to 100%
	Covers use up to 52 days/year
	Covers use up to 1 time/day
	Covers skin contact area up to 210.00 cm ²
	For each use event, covers use amounts up to 37,500 g
	Covers outdoor use.
	Covers use in room size of 100 m ³
	Covers exposure up to 0.05 hours/event

Covers use under typical household ventilation.

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Fuels Liquid: scooter refuelling	Covers concentrations up to 100%
	Covers use up to 52 days/year
	Covers use up to 1 time/day
	Covers skin contact area up to 210.00 cm ²
	For each use event, covers use amounts up to 3,750 g
	Covers outdoor use.
	Covers use in room size of 100 m ³
	Covers exposure up to 0.03 hours/event
Fuels Liquid: Garden equipment - use	Covers concentrations up to 100%
•	Covers use up to 26 days/year
	Covers use up to 1 time/day
	For each use event, covers use amounts up to 750 g
	Covers outdoor use.
	Covers use in room size of 100 m ³
	Covers exposure up to 2.00 hours/event
Fuels Liquid: Garden equipment - refuelling	Covers concentrations up to 100%
	Covers use up to 26 days/year
	Covers use up to 1 time/day
	Covers skin contact area up to 420.00 cm ²
	For each use event, covers use amounts up to 750 g
	Covers use in a one car garage (34 m³) under typical ventilation.
	Covers use in room size of 34 m ³
	Covers exposure up to 0.03 hours/event
Fuels Liquid: Lamp oil	Covers concentrations up to 100%
	Covers use up to 52 days/year
	Covers use up to 1 time/day
	Covers skin contact area up to 210.00 cm ³
	For each use event, covers use amounts up to 100 g
	Covers use in room size of 20m³
	Covers exposure up to 0.01 hours/event

Section 2.2	Environmental exposure controls	
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
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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, users should ensure that risks are managed to at least equivalent levels.

Section 4.2 - Environment

