

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Revision Date 20.01.2014

Version 16.1

SECTION 1. Identification of the substance/mixture and of the company/undertaking**1.1 Product identifier**

Catalogue No.	806072
Product name	1-Methyl-2-pyrrolidone EMPLURA®
REACH Registration Number	01-2119472430-46-XXXX
CAS-No.	872-50-4

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

Identified uses	Chemical for synthesis In compliance with the conditions described in the annex to this safety data sheet.
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1.3 Details of the supplier of the safety data sheet

Company	Merck KGaA * 64271 Darmstadt * Germany * Phone:+49 6151 72-0
Responsible Department	EQ-RS * e-mail: prodsafe@merckgroup.com

1.4 Emergency telephone number **Please contact the regional company representation in your country.**

SECTION 2. Hazards identification**2.1 Classification of the substance or mixture****Classification (REGULATION (EC) No 1272/2008)**

Reproductive toxicity, Category 1B, H360D
Eye irritation, Category 2, H319
Specific target organ toxicity - single exposure, Category 3, H335
Skin irritation, Category 2, H315
For the full text of the H-Statements mentioned in this Section, see Section 16.

Classification (67/548/EEC or 1999/45/EC)

Repr.Cat.2	Toxic to Reproduction Category 2	R61
Xi	Irritant	R36/37/38

For the full text of the R-phrases mentioned in this Section, see Section 16.

2.2 Label elements**Labelling (REGULATION (EC) No 1272/2008)***Hazard pictograms**Signal word*

Danger

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Product name 1-Methyl-2-pyrrolidone EMPLURA®

Hazard statements

H360D May damage the unborn child.
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.

Precautionary statements

Prevention

P201 Obtain special instructions before use.

Response

P302 + P352 IF ON SKIN: Wash with plenty of soap and water.

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

P308 + P313 IF exposed or concerned: Get medical advice/ attention.

Restricted to professional users.

Reduced labelling (≤125 ml)

Hazard pictograms



Signal word

Danger

Hazard statements

H360D May damage the unborn child.

Precautionary statements

P201 Obtain special instructions before use.

P308 + P313 IF exposed or concerned: Get medical advice/ attention.

Restricted to professional users.

Index-No. 606-021-00-7

2.3 Other hazards

None known.

SECTION 3. Composition/information on ingredients

3.1 Substance

Formula C₅H₉NO (Hill)
Index-No. 606-021-00-7
EC-No. 212-828-1
Molar mass 99,13 g/mol

Hazardous components (REGULATION (EC) No 1272/2008)

Chemical Name (Concentration)

CAS-No. Registration number Classification

N-methyl-2-pyrrolidone (<= 100 %)

Substance does not meet the criteria for PBT or vPvB according to Regulation (EC) No 1907/2006, Annex XIII.

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XXXX

Skin irritation, Category 2, H315

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Eye irritation, Category 2, H319
Reproductive toxicity, Category 1B, H360D
Specific target organ toxicity - single exposure, Category 3, H335

For the full text of the H-Statements mentioned in this Section, see Section 16.

Hazardous components (1999/45/EC)

Chemical Name (Concentration)

CAS-No.	Classification
N-methyl-2-pyrrolidone (<= 100 %)	
872-50-4	Repr.Cat.2; R61 Xi, Irritant; R36/37/38

For the full text of the R-phrases mentioned in this Section, see Section 16.

3.2 Mixture

not applicable

SECTION 4. First aid measures

4.1 Description of first aid measures

After inhalation: fresh air. Call in physician.

After skin contact: wash off with plenty of water. Remove contaminated clothing. Consult a physician.

After eye contact: rinse out with plenty of water. Call in ophthalmologist.

After swallowing: immediately make victim drink water (two glasses at most). Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed

irritant effects, Cough, Shortness of breath, pain, Diarrhoea, Vomiting

4.3 Indication of any immediate medical attention and special treatment needed

No information available.

SECTION 5. Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

Water, Carbon dioxide (CO₂), Foam, Dry powder

Unsuitable extinguishing media

For this substance/mixture no limitations of extinguishing agents are given.

5.2 Special hazards arising from the substance or mixture

Combustible.

Vapours are heavier than air and may spread along floors.

Forms explosive mixtures with air on intense heating.

Development of hazardous combustion gases or vapours possible in the event of fire.

Fire may cause evolution of:

nitrogen oxides

5.3 Advice for firefighters

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Special protective equipment for firefighters

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

Further information

Suppress (knock down) gases/vapours/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Do not breathe vapours, aerosols. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.

Advice for emergency responders: Protective equipment see section 8.

6.2 Environmental precautions

Do not empty into drains.

6.3 Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills.

Observe possible material restrictions (see sections 7 and 10).

Take up with liquid-absorbent material (e.g. Chemizorb®). Dispose of properly. Clean up affected area.

6.4 Reference to other sections

Indications about waste treatment see section 13.

SECTION 7. Handling and storage

7.1 Precautions for safe handling

Advice on safe handling

Observe label precautions.

Hygiene measures

Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions

Tightly closed. Dry. Keep in a well-ventilated place. Keep locked up or in an area accessible only to qualified or authorised persons.

Recommended storage temperature see product label.

7.3 Specific end use(s)

See exposure scenario in the Annex to this MSDS.

SECTION 8. Exposure controls/personal protection

8.1 Control parameters

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Derived No Effect Level (DNEL)

Worker DNEL, longterm	Systemic effects	dermal	19,8 mg/kg Body weight
Worker DNEL, longterm	Systemic effects	inhalation	40 mg/m ³

Predicted No Effect Concentration (PNEC)

PNEC Fresh water	0,25 mg/l
PNEC Marine water	0,025 mg/l
PNEC Aquatic intermittent release	5 mg/l
PNEC Fresh water sediment	0,805 mg/kg
PNEC Marine sediment	0,0805 mg/kg
PNEC Soil	0,138 mg/kg
PNEC Sewage treatment plant	10 mg/l
PNEC oral	0,00167 mg/kg

8.2 Exposure controls

Engineering measures

Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.

See section 7.1.

Individual protection measures

Protective clothing needs to be selected specifically for the workplace, depending on concentrations and quantities of the hazardous substances handled. The chemical resistance of the protective equipment should be enquired at the respective supplier.

Eye/face protection

Safety glasses

Hand protection

full contact:

Glove material:	butyl-rubber
Glove thickness:	0,7 mm
Break through time:	> 480 min

splash contact:

Glove material:	natural latex
Glove thickness:	0,6 mm
Break through time:	> 60 min

The protective gloves to be used must comply with the specifications of EC Directive 89/686/EEC and the related standard EN374, for example KCL 898 Butoject® (full contact), KCL 706 Lapren® (splash contact).

The breakthrough times stated above were determined by KCL in laboratory tests acc. to EN374 with samples of the recommended glove types.

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).

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Other protective equipment
protective clothing

Respiratory protection

required when vapours are generated.

Empfohlener Filtertyp: Filter A-(P2)

The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.

Environmental exposure controls

Do not empty into drains.

SECTION 9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Form	liquid
Colour	colourless
Odour	amine-like
Odour Threshold	No information available.
pH	8,5 - 10,0 at 100 g/l 20 °C
Melting point	-24 °C
Boiling point/boiling range	202 °C at 1.013 hPa
Flash point	91 °C Method: c.c.
Evaporation rate	No information available.
Flammability (solid, gas)	No information available.
Lower explosion limit	1,3 %(V)
Upper explosion limit	9,5 %(V)
Vapour pressure	0,32 hPa at 20 °C 1,33 hPa at 40 °C
Relative vapour density	3,42
Relative density	1,03 g/cm ³ at 20 °C

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Water solubility	1.000 g/l at 25 °C
Partition coefficient: n-octanol/water	log Pow: -0,46 (25 °C) OECD Test Guideline 107 Bioaccumulation is not expected.
Auto-ignition temperature	No information available.
Decomposition temperature	No information available.
Viscosity, dynamic	1,80 mPa.s at 20 °C 0,97 mPa.s at 100 °C
Explosive properties	Not classified as explosive.
Oxidizing properties	none

9.2 Other data

Ignition temperature	245 °C
Conductivity	0,2 - 0,4 µS/cm

SECTION 10. Stability and reactivity

10.1 Reactivity

Forms explosive mixtures with air on intense heating.
A range from approx. 15 Kelvin below the flash point is to be rated as critical.

10.2 Chemical stability

The product is chemically stable under standard ambient conditions (room temperature) .

10.3 Possibility of hazardous reactions

Violent reactions possible with:
Strong oxidizing agents, Strong acids

10.4 Conditions to avoid

Strong heating.

10.5 Incompatible materials

various plastics

10.6 Hazardous decomposition products

in the event of fire: See section 5.

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SECTION 11. Toxicological information

11.1 Information on toxicological effects

Acute oral toxicity

LD50 rat: 3.598 mg/kg (IUCLID)

Symptoms: Vomiting, Irritations of mucous membranes in the mouth, pharynx, oesophagus and gastrointestinal tract.

Acute inhalation toxicity

LC50 rat: > 5,1 mg/l; 4 h
OECD Test Guideline 403

Symptoms: mucosal irritations, Cough, Shortness of breath, Possible damages:, damage of respiratory tract

Acute dermal toxicity

LD50 rabbit: 8.000 mg/kg (IUCLID)
absorption

Skin irritation

rabbit
Result: Irritations
(External MSDS)
Causes skin irritation.

Eye irritation

rabbit
Result: slight irritation
(RTECS)
(Regulation (EC) No 1272/2008, Annex VI)
Causes serious eye irritation.

Sensitisation

Sensitisation test: guinea pig
Result: negative
(IUCLID)
Patch test: human
Result: negative
(IUCLID)

Germ cell mutagenicity

Genotoxicity in vitro

Ames test
Salmonella typhimurium
Result: negative
(National Toxicology Program)

Carcinogenicity

This information is not available.

Reproductive toxicity

This information is not available.

Teratogenicity

This information is not available.

CMR effects

Teratogenicity:
May damage the unborn child.

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Specific target organ toxicity - single exposure

May cause respiratory irritation.

Specific target organ toxicity - repeated exposure

This information is not available.

Aspiration hazard

This information is not available.

11.2 Further information

After absorption:

pain, Diarrhoea

Handle in accordance with good industrial hygiene and safety practice.

SECTION 12. Ecological information

12.1 Toxicity

Toxicity to fish

LC50 *Lepomis macrochirus* (Bluegill sunfish): 832 mg/l; 96 h (IUCLID)

Toxicity to daphnia and other aquatic invertebrates

EC50 *Daphnia magna* (Water flea): ca. 4.897 mg/l; 48 h (IUCLID)

Toxicity to algae

IC50 *Desmodesmus subspicatus* (green algae): > 500 mg/l; 72 h

OECD Test Guideline 201

Toxicity to bacteria

EC50 Bacteria: > 9.000 mg/l; 48 h (External MSDS)

12.2 Persistence and degradability

Biodegradability

> 90 %; 20 d

(IUCLID)

Easily eliminable.

Biochemical Oxygen Demand (BOD)

1.100 mg/g (5 d)

(Lit.)

Chemical Oxygen Demand (COD)

1.600 mg/g

(Lit.)

Ratio BOD/ThBOD

BOD1 99 %

(IUCLID)

Ratio COD/ThBOD

> 70 %

OECD Test Guideline 302B

12.3 Bioaccumulative potential

Partition coefficient: n-octanol/water

log Pow: -0,46 (25 °C)

OECD Test Guideline 107

Bioaccumulation is not expected.

12.4 Mobility in soil

No information available.

12.5 Results of PBT and vPvB assessment

Substance does not meet the criteria for PBT or vPvB according to Regulation (EC) No 1907/2006, Annex XIII.

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12.6 Other adverse effects

Discharge into the environment must be avoided.

SECTION 13. Disposal considerations

Waste treatment methods

See www.retrologistik.com for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

SECTION 14. Transport information

Land transport (ADR/RID)

14.1 - 14.6 Not classified as dangerous in the meaning of transport regulations.

Inland waterway transport (ADN)

Not relevant

Air transport (IATA)

14.1 - 14.6 Not classified as dangerous in the meaning of transport regulations.

Sea transport (IMDG)

14.1 - 14.6 Not classified as dangerous in the meaning of transport regulations.

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not relevant

SECTION 15. Regulatory information

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

EU regulations

Major Accident Hazard Legislation	96/82/EC
	Directive 96/82/EC does not apply
Occupational restrictions	Take note of Dir 94/33/EC on the protection of young people at work. Take note of Dir 92/85/EEC on the safety and health at work of pregnant workers.
Regulation (EC) No 1005/2009 on substances that deplete the ozone layer	not regulated
Regulation (EC) No 850/2004 of the European Parliament and of the Council of 29 April 2004 on persistent organic pollutants and amending Directive 79/117/EEC	not regulated
Regulation (EC) No 689/2008 concerning the export and import of dangerous chemicals	not regulated
Substances of very high concern (SVHC)	This product does contain substances of very high concern above the respective regulatory limit (> 0.1 % (w/w), Regulation (EC) No 1907/2006 (REACH), Article 57).

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Contains: N-methyl-2-pyrrolidone

National legislation

Storage class 6.1C

15.2 Chemical Safety Assessment

For this product a chemical safety assessment was not carried out.

SECTION 16. Other information

Full text of H-Statements referred to under sections 2 and 3.

H315 Causes skin irritation.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.
H360D May damage the unborn child.


Full text of R-phrases referred to under sections 2 and 3

R36/37/38 Irritating to eyes, respiratory system and skin.
R61 May cause harm to the unborn child.

Training advice

Provide adequate information, instruction and training for operators.

Labelling (67/548/EEC or 1999/45/EC)


Symbol(s)  T Toxic
R-phrase(s) 61-36/37/38 May cause harm to the unborn child. Irritating to eyes, respiratory system and skin.
S-phrase(s) 53-45 Avoid exposure - obtain special instructions before use. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

Further information

Restricted to professional users.

EC-No. 212-828-1 EC Label

Reduced labelling (≤125 ml)

Symbol(s)  T Toxic
R-phrase(s) 61 May cause harm to the unborn child.
S-phrase(s) 53-45 Avoid exposure - obtain special instructions before use. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

Key or legend to abbreviations and acronyms used in the safety data sheet

Used abbreviations and acronyms can be looked up at www.wikipedia.org.

Regional representation

This information is given on the authorised Safety Data Sheet for your country.

The information contained herein is based on the present state of our knowledge. It characterises the product with regard to the appropriate safety precautions. It does not represent a guarantee of any properties of the product.

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Product name 1-Methyl-2-pyrrolidone EMPLURA®

EXPOSURE SCENARIO 1 (Industrial use)

1. Industrial use (Chemical for synthesis)

Sectors of end-use

SU 3 Industrial uses: Uses of substances as such or in preparations at industrial sites
SU 9 Manufacture of fine chemicals
SU 10 Formulation [mixing] of preparations and/ or re-packaging (excluding alloys)

Chemical product category

PC19 Intermediate
PC21 Laboratory chemicals

Process categories

PROC1 Use in closed process, no likelihood of exposure
PROC2 Use in closed, continuous process with occasional controlled exposure
PROC3 Use in closed batch process (synthesis or formulation)
PROC4 Use in batch and other process (synthesis) where opportunity for exposure arises
PROC5 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)
PROC8a Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities
PROC8b Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities
PROC9 Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
PROC10 Roller application or brushing
PROC15 Use as laboratory reagent

Environmental Release Categories

ERC1 Manufacture of substances
ERC2 Formulation of preparations
ERC4 Industrial use of processing aids in processes and products, not becoming part of articles
ERC6a Industrial use resulting in manufacture of another substance (use of intermediates)
ERC6b Industrial use of reactive processing aids

2. Contributing scenarios: Operational conditions and risk management measures

2.1 Contributing scenario controlling worker exposure for: PROC1

Product characteristics

Concentration of the Substance in Mixture/Article	Covers the percentage of the substance in the product up to 100 %.
Physical Form (at time of use)	Medium volatile liquid
Process Temperature	< 130 °C

Frequency and duration of use

Frequency of use	8 hours/day
Frequency of use	5 days/week

Other operational conditions affecting workers exposure

Outdoor / Indoor	Indoor without local exhaust ventilation (LEV)
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Organisational measures to prevent /limit releases, dispersion and exposure

The Safety Data Sheets for catalogue items are available at www.merck-chemicals.com

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Covers daily exposures up to 8 hours.

Additional good practice advice beyond the REACH Chemical Safety Assessment

Additional good practice advice Wear suitable gloves tested to EN374.

2.2 Contributing scenario controlling worker exposure for: PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC15

Product characteristics

Concentration of the Substance in Mixture/Article Covers the percentage of the substance in the product up to 100 %.
Physical Form (at time of use) Medium volatile liquid
Process Temperature < 130 °C

Frequency and duration of use

Frequency of use 8 hours/day
Frequency of use 5 days/week

Other operational conditions affecting workers exposure

Outdoor / Indoor Indoor with local exhaust ventilation (LEV)

Technical conditions and measures

Use only in area provided with appropriate exhaust ventilation.

Organisational measures to prevent /limit releases, dispersion and exposure

Covers daily exposures up to 8 hours.

Additional good practice advice beyond the REACH Chemical Safety Assessment

Additional good practice advice Wear suitable gloves tested to EN374.

3. Exposure estimation and reference to its source

Environment

A chemical safety assessment was performed according REACH Article 14(3), Annex I, sections 3 (Environmental Hazard Assessment) and 4 (PBT/vPvB Assessment). As no hazard was identified, an exposure assessment and risk characterisation is not necessary (REACH Annex I section 5.0).

Workers

CS	Use descriptor	Exposure duration, route, effect	RCR	Exposure Assessment Method
2.1	PROC1	longterm, inhalative, systemic	0,001	ECETOC TRA
		longterm, dermal, systemic	0,017	ECETOC TRA
		longterm, combined, systemic	0,02	

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2.2	PROC2	longterm, inhalative, systemic	0,103	ECETOC TRA
		longterm, dermal, systemic	0,007	ECETOC TRA
		longterm, combined, systemic	0,11	
2.2	PROC3	longterm, inhalative, systemic	0,258	ECETOC TRA
		longterm, dermal, systemic	0,002	ECETOC TRA
		longterm, combined, systemic	0,26	
2.2	PROC4	longterm, inhalative, systemic	0,206	ECETOC TRA
		longterm, dermal, systemic	0,035	ECETOC TRA
		longterm, combined, systemic	0,24	
2.2	PROC5	longterm, inhalative, systemic	0,515	ECETOC TRA
		longterm, dermal, systemic	0,003	ECETOC TRA
		longterm, combined, systemic	0,52	
2.2	PROC8a	longterm, inhalative, systemic	0,515	ECETOC TRA
		longterm, dermal, systemic	0,007	ECETOC TRA
		longterm, combined, systemic	0,52	
2.2	PROC8b	longterm, inhalative, systemic	0,155	ECETOC TRA
		longterm, dermal, systemic	0,035	ECETOC TRA
		longterm, combined, systemic	0,19	
2.2	PROC9	longterm, inhalative, systemic	0,515	ECETOC TRA
		longterm, dermal, systemic	0,035	ECETOC TRA
		longterm, combined, systemic	0,55	
2.2	PROC10	longterm, inhalative, systemic	0,515	ECETOC TRA
		longterm, dermal, systemic	0,069	ECETOC TRA
		longterm, combined, systemic	0,58	
2.2	PROC15	longterm, inhalative, systemic	0,103	ECETOC TRA
		longterm, dermal, systemic	0,002	ECETOC TRA
		longterm, combined, systemic	0,1	

The default parameters and -efficiencies of the applied exposure assessment model were used for the calculation (unless stated differently).

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Please refer to the following documents: ECHA Guidance on information requirements and chemical safety assessment Chapter R.12: Use descriptor system; ECHA Guidance for downstream users; ECHA Guidance on information requirements and chemical safety assessment Part D: Exposure Scenario Building, Part E: Risk Characterisation and Part G: Extending the SDS; VCI/Cefic REACH Practical Guides on Exposure Assessment and Communications in the Supply Chain; CEFIC Guidance Specific Environmental Release Categories (SPERCs).

For scaling of worker exposure assessments performed with ECETOC TRA, please consult the Merck tool SciDeEx® at www.merck-chemicals.com.

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EXPOSURE SCENARIO 2 (Professional use)

1. Professional use (Chemical for synthesis)

Sectors of end-use

SU 22 Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

Chemical product category

PC21 Laboratory chemicals

Process categories

PROC15 Use as laboratory reagent

Environmental Release Categories

ERC2 Formulation of preparations

ERC6a Industrial use resulting in manufacture of another substance (use of intermediates)

ERC6b Industrial use of reactive processing aids

2. Contributing scenarios: Operational conditions and risk management measures

2.1 Contributing scenario controlling worker exposure for: PROC15

Product characteristics

Concentration of the Substance in Mixture/Article	Covers the percentage of the substance in the product up to 100 %.
Physical Form (at time of use)	Medium volatile liquid
Process Temperature	< 130 °C

Frequency and duration of use

Frequency of use	8 hours/day
Frequency of use	5 workdays/week

Other operational conditions affecting workers exposure

Outdoor / Indoor	Indoor with local exhaust ventilation (LEV)
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Technical conditions and measures

Use only in area provided with appropriate exhaust ventilation.

Organisational measures to prevent /limit releases, dispersion and exposure

Covers daily exposures up to 8 hours.

Additional good practice advice beyond the REACH Chemical Safety Assessment

Additional good practice advice	Wear suitable gloves tested to EN374.
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3. Exposure estimation and reference to its source

Environment

A chemical safety assessment was performed according REACH Article 14(3), Annex I, sections 3 (Environmental Hazard Assessment) and 4 (PBT/vPvB Assessment). As no hazard was identified, an exposure assessment and risk characterisation is not necessary (REACH Annex I section 5.0).

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Workers

CS	Use descriptor	Exposure duration, route, effect	RCR	Exposure Assessment Method
2.1	PROC15	longterm, inhalative, systemic	0,206	ECETOC TRA
		longterm, dermal, systemic	0,002	ECETOC TRA
		longterm, combined, systemic	0,21	

The default parameters and -efficiencies of the applied exposure assessment model were used for the calculation (unless stated differently).

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

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