DEHA (N,N-Diethylhydroxylamine), 85%

Version 1.8 Revision Date 2016-05-17

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

Product information

Product Name : DEHA (N,N-Diethylhydroxylamine), 85%
Material : 1025310, 1067076, 1034532, 1031290, 1017929, 1034283, 1024842, 1031122

EC-No.Registration number

Chemical name	CAS-No. EC-No. Index No.	Legal Entity Registration number
Diethylhydroxylamine	3710-84-7 223-055-4	Chevron Phillips Chemicals International NV 01-2119962470-39-XXXX

Relevant Identified Uses Supported : Use as processing aid (water treatment)
Use in polymer processing –industrial
Colour stabilizer (film/photographic industry)
Colour stabilizer for chemical products (fuel, resins, etc.) and for de-colourisation of phenols

Company : Chevron Phillips Chemical Company LP
Specialty Chemicals
10001 Six Pines Drive
The Woodlands, TX 77380

Local : Chevron Phillips Chemicals International N.V.
Airport Plaza (Stockholm Building)
Leonardo Da Vincilaan 19
1831 Diegem
Belgium

SDS Requests: (800) 852-5530
Technical Information: (832) 813-4862
Responsible Party: Product Safety Group
Email:sds@cpchem.com

Emergency telephone:

Health:

866.442.9628 (North America)
1.832.813.4984 (International)
Transport:
CHEMTREC 800.424.9300 or 703.527.3887(int'l)
Asia: +800 CHEMCALL (+800 2436 2255) China:+86-21-22157316
EUROPE: BIG +32.14.584545 (phone) or +32.14583516 (telefax)
South America SOS-Cotec Inside Brazil: 0800.111.767 Outside Brazil: +55.19.3467.1600

Responsible Department	:	Product Safety and Toxicology Group
E-mail address	:	SDS@CPChem.com
Website	:	www.CPChem.com

SECTION 2: Hazards identification

Classification of the substance or mixture
REGULATION (EC) No 1272/2008

Flammable liquids, Category 3	H226: Flammable liquid and vapor.
Acute toxicity, Category 4	H332: Harmful if inhaled.
Acute toxicity, Category 4	H312: Harmful in contact with skin.
Specific target organ systemic toxicity - single exposure, Category 3 , Respiratory system	H335: May cause respiratory irritation.
Acute aquatic toxicity, Category 2	H401: Toxic to aquatic life.
Chronic aquatic toxicity, Category 2	H411: Toxic to aquatic life with long lasting effects.

Label elements

Labeling (REGULATION (EC) No 1272/2008)

Hazard pictograms :

Signal Word : Warning

Hazard Statements	:		
		H226	Flammable liquid and vapor.
		H312 + H332	Harmful in contact with skin or if inhaled.
		H335	May cause respiratory irritation.
		H411	Toxic to aquatic life with long lasting effects.

Precautionary Statements	:		
		Prevention:	
		P210	Keep away from heat/sparks/open flames/hot surfaces. No smoking.
		P261	Avoid breathing dust/fume/gas/mist/vapors/spray.
		P273	Avoid release to the environment.
		Response:	
		P301 + P310	IF SWALLOWED: Immediately call a POISON CENTER/doctor.
		P331	Do NOT induce vomiting.
		P370 + P378	In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.

Hazardous ingredients which must be listed on the label:
- 3710-84-7 Diethylhydroxylamine

SECTION 3: Composition/information on ingredients

Synonyms : Ethanamine, N-Ethyl-N-Hydroxy- (85%)

Molecular formula : (C2H5)2-N-OH

Mixtures

Hazardous ingredients

Chemical name	CAS-No. EC-No. Index No.	Classification (REGULATION (EC) No 1272/2008)	Concentration [wt%]
Diethylhydroxylamine	3710-84-7 223-055-4	Flam. Liq. 3; H226 Acute Tox. 4; H332 Acute Tox. 4; H312 STOT SE 3; H335 Aquatic Acute 2; H401 Aquatic Chronic 2; H411	85

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

SECTION 4: First aid measures

General advice : Move out of dangerous area. Show this material safety data sheet to the doctor in attendance. Material may produce a serious, potentially fatal pneumonia if swallowed or vomited.

If inhaled : If unconscious place in recovery position and seek medical advice. If symptoms persist, call a physician.

In case of skin contact : If on skin, rinse well with water. If on clothes, remove clothes.

In case of eye contact : Flush eyes with water as a precaution. Remove contact lenses. Protect unharmed eye. Keep eye wide open while rinsing. If eye irritation persists, consult a specialist.

If swallowed : Keep respiratory tract clear. Do NOT induce vomiting. Do not give milk or alcoholic beverages. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician. Take victim immediately to hospital.

SECTION 5: Firefighting measures

Flash point : 45 °C (113 °F)

Autoignition temperature : No data available

Suitable extinguishing media	:	Alcohol-resistant foam. Carbon dioxide (CO2). Dry chemical.
Unsuitable extinguishing media	:	High volume water jet.
Specific hazards during fire fighting	:	Do not allow run-off from fire fighting to enter drains or water courses.
Special protective equipment for fire-fighters	:	Wear self-contained breathing apparatus for firefighting if necessary.
Further information	:	Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. For safety reasons in case of fire, cans should be stored separately in closed containments. Use a water spray to cool fully closed containers.
Fire and explosion protection	:	Do not spray on an open flame or any other incandescent material. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Keep away from open flames, hot surfaces and sources of ignition.
Hazardous decomposition products	:	Diethylamine. Carbon oxides.

SECTION 6: Accidental release measures

Personal precautions	:	Use personal protective equipment. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.
Environmental precautions	:	Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. If the product contaminates rivers and lakes or drains inform respective authorities.
Methods for cleaning up	:	Neutralize with acid. Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).

SECTION 7: Handling and storage

Handling

Advice on safe handling	:	Avoid formation of aerosol. Do not breathe vapors/dust. Avoid exposure - obtain special instructions before use. For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. Take precautionary measures against static discharges. Provide sufficient air

exchange and/or exhaust in work rooms. Open drum carefully as content may be under pressure. Dispose of rinse water in accordance with local and national regulations.

Advice on protection against fire and explosion : Do not spray on an open flame or any other incandescent material. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Keep away from open flames, hot surfaces and sources of ignition.

Storage

Requirements for storage areas and containers : No smoking. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Observe label precautions. Electrical installations / working materials must comply with the technological safety standards.

SECTION 8: Exposure controls/personal protection

DNEL : End Use: Workers
Routes of exposure: Inhalation
Potential health effects: Long-term systemic effects
Value: 3,65 mg/m3

DNEL : End Use: Workers
Routes of exposure: Inhalation
Potential health effects: Acute systemic effects
Value: 45,6 mg/m3

DNEL : End Use: Workers
Routes of exposure: Inhalation
Potential health effects: Long-term local effects
Value: 2,92 mg/m3

DNEL : End Use: Workers
Routes of exposure: Inhalation
Potential health effects: Acute local effects
Value: 8,76 mg/m3

DNEL : End Use: Workers
Routes of exposure: Skin contact
Potential health effects: Long-term systemic effects
Value: 0,26 mg/kg

DNEL : End Use: Workers
Routes of exposure: Skin contact
Potential health effects: Acute systemic effects
Value: 4,7 mg/kg

PNEC : Fresh water
Value: 0,0082 mg/l

PNEC : Marine water
Value: 0,00082 mg/l

PNEC	:	Fresh water sediment Value: 0,0652 mg/kg
PNEC	:	Marine sediment Value: 0,00652 mg/kg
PNEC	:	Soil Value: 0,0082 mg/kg

Engineering measures

Consider the potential hazards of this material (see Section 2), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

Personal protective equipment

Respiratory protection	:	Wear a supplied-air NIOSH approved respirator unless ventilation or other engineering controls are adequate to maintain minimal oxygen content of 19.5% by volume under normal atmospheric pressure. Wear a NIOSH approved respirator that provides protection when working with this material if exposure to harmful levels of airborne material may occur, such as:. Air-Purifying Respirator for Organic Vapors. Use a positive pressure, air-supplying respirator if there is potential for uncontrolled release, exposure levels are not known, or other circumstances where air-purifying respirators may not provide adequate protection.
Hand protection	:	The suitability for a specific workplace should be discussed with the producers of the protective gloves. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.
Eye protection	:	Eye wash bottle with pure water. Tightly fitting safety goggles.
Skin and body protection	:	Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place. Wear as appropriate:. Flame retardant antistatic protective clothing. Footwear protecting against chemicals.
Hygiene measures	:	When using do not eat or drink. When using do not smoke. Wash hands before breaks and at the end of workday.

For additional details, see the Exposure Scenario in the Annex portion

SECTION 9: Physical and chemical properties

Information on basic physical and chemical properties

Appearance

Form	:	Liquid
Physical state	:	Liquid
Color	:	Colorless to light yellow
Odor	:	Slight amine

Safety data

Flash point	:	45 °C (113 °F)
Lower explosion limit	:	1,7 %(V)
Upper explosion limit	:	11,2 %(V)
Oxidizing properties	:	no
Autoignition temperature	:	No data available
Molecular formula	:	(C2H5)2-N-OH
Molecular weight	:	89,14 g/mol
pH	:	10,2
Freezing point	:	No data available
Pour point		No data available
Boiling point/boiling range	:	95 - 132 °C (203 - 270 °F)
Vapor pressure	:	32,25 MMHG at 25 °C (77 °F)
Relative density	:	0,89 at 20 °C (68 °F)
Density	:	0,9 G/ML
Water solubility	:	Soluble
Partition coefficient: n-octanol/water	:	No data available
Viscosity, kinematic	:	No data available
Relative vapor density	:	No data available
Evaporation rate	:	No data available

SECTION 10: Stability and reactivity

Chemical stability	:	This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

Possibility of hazardous reactions

Conditions to avoid	:	Heat, flames and sparks.
Materials to avoid	:	May react with oxygen and strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.
Hazardous decomposition products	:	Diethylamine Carbon oxides
Other data	:	No decomposition if stored and applied as directed.

SECTION 11: Toxicological information

Acute oral toxicity

Diethylhydroxylamine	:	LD50: 2.190 mg/kg Species: Rat Sex: male

Acute inhalation toxicity

Diethylhydroxylamine	:	LC50: 11,4 mg/l Exposure time: 4 h Species: Rat Sex: male and female Test atmosphere: vapor

Acute dermal toxicity

Diethylhydroxylamine	:	LD50: 1.300 mg/kg Species: Rabbit

Skin irritation

Diethylhydroxylamine	:	No skin irritation

Eye irritation

Diethylhydroxylamine	:	slight irritation.

Sensitization

Diethylhydroxylamine	:	Did not cause sensitization on laboratory animals.

Repeated dose toxicity

Diethylhydroxylamine	:	Species: Rat, male and female Sex: male and female Application Route: Inhalation Dose: 15, 150, 1506 ppm Exposure time: 28 d Number of exposures: 6 h/d, 5d/wk NOEL: 150 ppm Lowest observable effect level: 1506 ppm

Method: OECD Guideline 412
Target Organs: Thymus, Liver

Reproductive toxicity

Diethylhydroxylamine : This information is not available.

Developmental Toxicity

Diethylhydroxylamine : Species: Rat
Application Route: oral gavage
Dose: 87.4, 393, 568 mg/kg
Number of exposures: daily
Test period: GD 6-15
Method: OECD Guideline 414
NOAEL Teratogenicity: >= 568 mg/kg
NOAEL Maternal: 87,4 mg/kg
No adverse effects expected

CMR effects

Diethylhydroxylamine : Teratogenicity: Animal testing did not show any effects on fetal development.

DEHA (N,N-Diethylhydroxylamine), 85%
Further information : Solvents may degrease the skin.

SECTION 12: Ecological information

Toxicity to fish

Diethylhydroxylamine : LC50: > 134 mg/l
Exposure time: 96 h
Species: Pimephales promelas (fathead minnow)
static test Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates

Diethylhydroxylamine : EC50: 8,2 mg/l
Exposure time: 48 h
Species: Daphnia magna (Water flea)
static test Method: OECD Test Guideline 202

Toxicity to algae

Diethylhydroxylamine : ErC50: > 101 mg/l
Exposure time: 72 h
Species: Pseudokirchneriella subcapitata (green algae)
Growth inhibition Method: OECD Test Guideline 201

Biodegradability

Diethylhydroxylamine	:	Result: Not readily biodegradable. 11 % Testing period: 28 d Method: OECD Test Guideline 301

Ecotoxicology Assessment

Acute aquatic toxicity
Diethylhydroxylamine : Toxic to aquatic life.

Chronic aquatic toxicity
Diethylhydroxylamine : Toxic to aquatic life with long lasting effects.

Results of PBT assessment
Diethylhydroxylamine : Non-classified PBT substance, Non-classified vPvB substance

Additional ecological information : Toxic to aquatic life with long lasting effects.

SECTION 13: Disposal considerations

The information in this SDS pertains only to the product as shipped.

Use material for its intended purpose or recycle if possible. This material, if it must be discarded, may meet the criteria of a hazardous waste as defined by US EPA under RCRA (40 CFR 261) or other State and local regulations. Measurement of certain physical properties and analysis for regulated components may be necessary to make a correct determination. If this material is classified as a hazardous waste, federal law requires disposal at a licensed hazardous waste disposal facility.

Product	:	The product should not be allowed to enter drains, water courses or the soil. Do not contaminate ponds, waterways or ditches with chemical or used container. Send to a licensed waste management company.
Contaminated packaging	:	Empty remaining contents. Dispose of as unused product. Do not re-use empty containers. Do not burn, or use a cutting torch on, the empty drum.

For additional details, see the Exposure Scenario in the Annex portion

SECTION 14: Transport information

The shipping descriptions shown here are for bulk shipments only, and may not apply to shipments in non-bulk packages (see regulatory definition).

Consult the appropriate domestic or international mode-specific and quantity-specific Dangerous Goods Regulations for additional shipping description requirements (e.g., technical name or names, etc.) Therefore, the information shown here, may not always agree with the bill of lading shipping description for the material. Flashpoints for the material may vary slightly between the SDS and the bill of lading.

US DOT (UNITED STATES DEPARTMENT OF TRANSPORTATION)
UN1993, FLAMMABLE LIQUIDS, N.O.S., (DIETHYLHYDROXYLAMINE), 3, III

IMO / IMDG (INTERNATIONAL MARITIME DANGEROUS GOODS)
UN1993, FLAMMABLE LIQUID, N.O.S., (DIETHYLHYDROXYLAMINE), 3, III, (45 °C), MARINE POLLUTANT, (DIETHYLHYDROXYLAMINE)

IATA (INTERNATIONAL AIR TRANSPORT ASSOCIATION)
UN1993, FLAMMABLE LIQUID, N.O.S., (DIETHYLHYDROXYLAMINE), 3, III

ADR (AGREEMENT ON DANGEROUS GOODS BY ROAD (EUROPE))
UN1993, FLAMMABLE LIQUID, N.O.S., (DIETHYLHYDROXYLAMINE), 3, III, (D/E), ENVIRONMENTALLY HAZARDOUS, (DIETHYLHYDROXYLAMINE)

RID (REGULATIONS CONCERNING THE INTERNATIONAL TRANSPORT OF DANGEROUS GOODS (EUROPE))
UN1993, FLAMMABLE LIQUID, N.O.S., (DIETHYLHYDROXYLAMINE), 3, III, ENVIRONMENTALLY HAZARDOUS, (DIETHYLHYDROXYLAMINE)

ADN (EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY INLAND WATERWAYS)
UN1993, FLAMMABLE LIQUID, N.O.S., (DIETHYLHYDROXYLAMINE), 3, III, ENVIRONMENTALLY HAZARDOUS, (DIETHYLHYDROXYLAMINE)

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

SECTION 15: Regulatory information

National legislation

Chemical Safety Assessment

Ingredients	:	N,N-diethylhydroxylamine	223-055-4

Major Accident Hazard Legislation : 96/82/EC Update: 2003
Flammable.
6
Quantity 1: 5.000 t
Quantity 2: 50.000 t

Water contaminating class (Germany) : WGK 3 highly water endangering

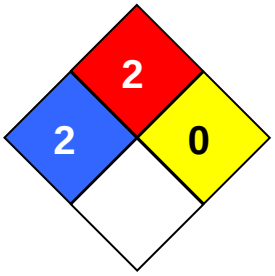
Notification status

Europe REACH	:	On the inventory, or in compliance with the inventory
United States of America TSCA	:	On the inventory, or in compliance with the inventory
Canada DSL	:	On the inventory, or in compliance with the inventory
Australia AICS	:	On the inventory, or in compliance with the inventory
New Zealand NZIoC	:	On the inventory, or in compliance with the inventory

Japan ENCS	:	On the inventory, or in compliance with the inventory
Korea KECI	:	On the inventory, or in compliance with the inventory
Philippines PICCS	:	On the inventory, or in compliance with the inventory
China IECSC	:	On the inventory, or in compliance with the inventory

SECTION 16: Other information

NFPA Classification : Health Hazard: 2
Fire Hazard: 2
Reactivity Hazard: 0



Further information

Legacy SDS Number : E020

Significant changes since the last version are highlighted in the margin. This version replaces all previous versions.

The information in this SDS pertains only to the product as shipped.

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

Key or legend to abbreviations and acronyms used in the safety data sheet			
ACGIH	American Conference of Government Industrial Hygienists	LD50	Lethal Dose 50%
AICS	Australia, Inventory of Chemical Substances	LOAEL	Lowest Observed Adverse Effect Level
DSL	Canada, Domestic Substances List	NFPA	National Fire Protection Agency
NDSL	Canada, Non-Domestic Substances List	NIOSH	National Institute for Occupational Safety & Health
CNS	Central Nervous System	NTP	National Toxicology Program
CAS	Chemical Abstract Service	NZIoC	New Zealand Inventory of Chemicals
EC50	Effective Concentration	NOAEL	No Observable Adverse Effect Level
EC50	Effective Concentration 50%	NOEC	No Observed Effect Concentration
EGEST	EOSCA Generic Exposure Scenario Tool	OSHA	Occupational Safety & Health Administration
EOSCA	European Oilfield Specialty Chemicals Association	PEL	Permissible Exposure Limit
EINECS	European Inventory of Existing Chemical Substances	PICCS	Philippines Inventory of Commercial Chemical Substances
MAK	Germany Maximum Concentration Values	PRNT	Presumed Not Toxic
GHS	Globally Harmonized System	RCRA	Resource Conservation Recovery Act

>=	Greater Than or Equal To	STEL	Short-term Exposure Limit
IC50	Inhibition Concentration 50%	SARA	Superfund Amendments and Reauthorization Act.
IARC	International Agency for Research on Cancer	TLV	Threshold Limit Value
IECSC	Inventory of Existing Chemical Substances in China	TWA	Time Weighted Average
ENCS	Japan, Inventory of Existing and New Chemical Substances	TSCA	Toxic Substance Control Act
KECI	Korea, Existing Chemical Inventory	UVCB	Unknown or Variable Composition, Complex Reaction Products, and Biological Materials
<=	Less Than or Equal To	WHMIS	Workplace Hazardous Materials Information System
LC50	Lethal Concentration 50%		

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

H226	Flammable liquid and vapor.
H312	Harmful in contact with skin.
H332	Harmful if inhaled.
H335	May cause respiratory irritation.
H401	Toxic to aquatic life.
H411	Toxic to aquatic life with long lasting effects.

Annex

1. Short title of Exposure Scenario: **Use as processing aid (water treatment)**

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Process category	:	**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 **PROC6:** Calendering operations **PROC7:** Industrial spraying **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) **PROC13:** Treatment of articles by dipping and pouring **PROC15:** Use as laboratory reagent
Environmental release category	:	**ERC6b:** Industrial use of reactive processing aids

2.1 Contributing scenario controlling environmental exposure for:ERC6b: Industrial use of reactive processing aids

Environment factors not influenced by risk management

Flow rate	:	18.000 m3/d

Other given operational conditions affecting environmental exposure

Initial release factor		
Number of emission days per year	:	100
Emission or Release Factor: Air	:	0,1 %
Final release factor		
Emission or Release Factor: Air	:	0,1 %
Local release rate: Water	:	0,0066
Local release rate: Air	:	9,2 kg/day
Local release rate: Soil	:	
Remarks	:	There is no direct exposure to soil.

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	:	Municipal sewage treatment plant, Yes
Flow rate of sewage treatment plant effluent	:	2.000 m3/d
Sludge Treatment	:	Agricultural soil, No

Conditions and measures related to external treatment of waste for disposal

Waste treatment	:	No

Remarks	:	ERC based assessment demonstrating control of risk with default conditions. Low risk assumed for waste life stage. Waste disposal according to national/local legislation is sufficient.

2.2 Contributing scenario controlling worker exposure for: PROC1: Use in closed process, no likelihood of exposure

Frequency and duration of use

Exposure duration	:	< 8 h

Human factors not influenced by risk management

Exposed skin area	:	One hand face only (240 cm2)

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor
Temperature	:	40 °C
Remarks	:	Basic general ventilation (1-3 air changes per hour)

Technical conditions and measures

Closed system (minimal contact during routine operations)
Local exhaust ventilation- inhalation:, No (Effectiveness: 0 %)

Conditions and measures related to personal protection, hygiene and health evaluation

Dermal Protection, No (Effectiveness: 0 %)
Respiratory Protection, No (Effectiveness: 0 %)

2.2 Contributing scenario controlling worker exposure for: PROC2: Use in closed, continuous process with occasional controlled exposure

Frequency and duration of use

Exposure duration	:	< 8 h

Human factors not influenced by risk management

Exposed skin area	:	Palms of both hands (480 cm2)

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor
Temperature	:	40 °C
Remarks	:	Enhanced general ventilation (5-10 air changes per hour)

Technical conditions and measures

Closed continuous process with occasional controlled exposure
Local exhaust ventilation- inhalation:, Yes (Effectiveness: 90 %)
Local exhaust ventilation-dermal:, No (Effectiveness: 0 %)

Conditions and measures related to personal protection, hygiene and health evaluation

Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 95 %)
Respiratory Protection, No (Effectiveness: 0 %)

2.2 Contributing scenario controlling worker exposure for: PROC3: Use in closed batch process (synthesis or formulation)

Frequency and duration of use
Exposure duration : < 8 h

Human factors not influenced by risk management
Exposed skin area : One hand face only (240 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Temperature : 40 °C
Remarks : Enhanced general ventilation (5-10 air changes per hour)

Technical conditions and measures
Closed continuous process with occasional controlled exposure
Local exhaust ventilation- inhalation:, Yes (Effectiveness: 90 %)
Local exhaust ventilation-dermal:, No (Effectiveness: 0 %)

Conditions and measures related to personal protection, hygiene and health evaluation

Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 95 %)
Respiratory Protection, No (Effectiveness: 0 %)

2.2 Contributing scenario controlling worker exposure for: PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises

Frequency and duration of use
Exposure duration : < 8 h

Human factors not influenced by risk management
Exposed skin area : Palms of both hands (480 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Temperature : 40 °C
Remarks : Enhanced general ventilation (5-10 air changes per hour)

Technical conditions and measures
Semi-closed process with occasional controlled exposure
Local exhaust ventilation- inhalation:, Yes (Effectiveness: 90 %)
Local exhaust ventilation-dermal:, Yes (Effectiveness: 90 %)

Conditions and measures related to personal protection, hygiene and health evaluation

Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 95 %)
Respiratory Protection, Yes, Respirator with APF of 10 (Effectiveness: 90 %)

2.2 Contributing scenario controlling worker exposure for: PROC6: Calendering operations

Frequency and duration of use
Exposure duration : < 4 h

Human factors not influenced by risk management
Exposed skin area : Two hands (960 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Remarks : Enhanced general ventilation (5-10 air changes per hour)

Technical conditions and measures
Containment measures, No
Local exhaust ventilation- inhalation:, Yes (Effectiveness: 90 %)
Local exhaust ventilation-dermal:, Yes (Effectiveness: 90 %)

Conditions and measures related to personal protection, hygiene and health evaluation

Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 95 %)
Respiratory Protection, Yes, Respirator with APF of 10 (Effectiveness: 90 %)

2.2 Contributing scenario controlling worker exposure for: PROC7: Industrial spraying

Frequency and duration of use
Exposure duration : < 1 h

Human factors not influenced by risk management
Exposed skin area : Skin
: 1500 cm2

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Temperature : 40 °C
Remarks : Enhanced general ventilation (5-10 air changes per hour)

Technical conditions and measures
Containment measures, No
Local exhaust ventilation- inhalation:, Yes (Effectiveness: 95 %)
Local exhaust ventilation-dermal:, Yes (Effectiveness: 95 %)

Conditions and measures related to personal protection, hygiene and health evaluation

Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 95 %)
Respiratory Protection, Yes, Respirator with APF of 10 (Effectiveness: 90 %)

2.2 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

Frequency and duration of use
Exposure duration : < 4 h

Human factors not influenced by risk management
Exposed skin area : Two hands (960 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Temperature : 40 °C
Remarks : Good general ventilation (3-5 air changes per hour)

Technical conditions and measures
Containment measures, No
Local exhaust ventilation- inhalation:, Yes (Effectiveness: 90 %)
Local exhaust ventilation-dermal:, Yes (Effectiveness: 90 %)

Conditions and measures related to personal protection, hygiene and health evaluation

Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness: 90 %)
Respiratory Protection, Yes, APF 20 (Effectiveness: 95 %)

2.2 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

Frequency and duration of use
Exposure duration : < 8 h

Human factors not influenced by risk management
Exposed skin area : Two hands (960 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Temperature : 40 °C
Remarks : Enhanced general ventilation (5-10 air changes per hour)

Technical conditions and measures
Semi-closed process with occasional controlled exposure
Local exhaust ventilation- inhalation:, Yes (Effectiveness: 95 %)
Local exhaust ventilation-dermal:, Yes (Effectiveness: 95 %)

Conditions and measures related to personal protection, hygiene and health evaluation

Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 95 %)
Respiratory Protection, No (Effectiveness: 0 %)

2.2 Contributing scenario controlling worker exposure for: PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

Frequency and duration of use
Exposure duration : < 1 h

Human factors not influenced by risk management

Exposed skin area : Palms of both hands (480 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Temperature : 40 °C
Remarks : Enhanced general ventilation (5-10 air changes per hour)

Technical conditions and measures
Semi-closed process with occasional controlled exposure
Local exhaust ventilation- inhalation:, Yes (Effectiveness: 90 %)
Local exhaust ventilation-dermal:, No (Effectiveness: 0 %)

Conditions and measures related to personal protection, hygiene and health evaluation

Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 95 %)
Respiratory Protection, Yes, Respirator with APF of 10 (Effectiveness: 90 %)

2.2 Contributing scenario controlling worker exposure for: PROC13: Treatment of articles by dipping and pouring

Frequency and duration of use
Exposure duration : < 4 h

Human factors not influenced by risk management
Exposed skin area : Palms of both hands (480 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Temperature : 40 °C
Remarks : Enhanced general ventilation (5-10 air changes per hour)

Technical conditions and measures
Containment measures, No
Local exhaust ventilation- inhalation:, Yes (Effectiveness: 90 %)
Local exhaust ventilation-dermal:, Yes (Effectiveness: 90 %)

Conditions and measures related to personal protection, hygiene and health evaluation

Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 95 %)
Respiratory Protection, Yes, Respirator with APF of 10 (Effectiveness: 90 %)

2.2 Contributing scenario controlling worker exposure for: PROC15: Use as laboratory reagent

Frequency and duration of use
Exposure duration : < 8 h

Human factors not influenced by risk management
Exposed skin area : One hand face only (240 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor

Temperature : 40 °C
Remarks : Enhanced general ventilation (5-10 air changes per hour)

Technical conditions and measures
Containment measures, No
Local exhaust ventilation- inhalation:, Yes (Effectiveness: 90 %)
Local exhaust ventilation-dermal:, No (Effectiveness: 0 %)

Conditions and measures related to personal protection, hygiene and health evaluation

Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 95 %)
Respiratory Protection, No (Effectiveness: 0 %)

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	Risk characterization ratio
ERC6d	EUSES		Freshwater		0,000147 mg/L	0,018
			Freshwater sediment		0,001 mg/kg dryweight (d.w.)	0,018
			Marine water		0,000015 mg/L	0,018
			Marine sediment		0,000119 mg/kg dry weight (d.w.)	0,018
			Sewage treatment plant		0,0000033 mg/L	< 0,01
			Agricultural soil		0,001 mg/kg dryweight (d.w.)	0,151

ERC6d: Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers

Workers/Consumers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterization ratio
PROC1	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,037 mg/m3	0,01
			Worker – dermal, long-term – systemic	0,034 mg/kg bw/day	0,131
			Worker – long-term – systemic Combined routes		0,141
PROC2	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,557 mg/m3	0,153
			Worker – dermal, long-term – systemic	0,068 mg/kg bw/day	0,264
			Worker – long-term – systemic Combined routes		0,416
PROC3	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	1,114 mg/m3	0,305
			Worker – dermal, long-term – systemic	0,034 mg/kg bw/day	0,133
			Worker – long-term –		0,438

			systemic Combined routes		
PROC4	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	2,228 mg/m3	0,61
			Worker – dermal, long-term – systemic	0,034 mg/kg bw/day	0,132
			Worker – long-term – systemic Combined routes		0,742
PROC6	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	2,006 mg/m3	0,55
			Worker – dermal, long-term – systemic	0,049 mg/kg bw/day	0,19
			Worker – long-term – systemic Combined routes		0,739
PROC7	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	1,671 mg/m3	0,458
			Worker – dermal, long-term – systemic	0,013 mg/kg bw/day	0,049
			Worker – long-term – systemic Combined routes		0,507
PROC8a	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,39 mg/m3	0,107
			Worker – dermal, long-term – systemic	0,082 mg/kg bw/day	0,316
			Worker – long-term – systemic Combined routes		0,423
PROC8b	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	1,393 mg/m3	0,382
			Worker – dermal, long-term – systemic	0,034 mg/kg bw/day	0,132
			Worker – long-term – systemic Combined routes		0,513
PROC9	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	1,114 mg/m3	0,305
			Worker – dermal, long-term – systemic	0,069 mg/kg bw/day	0,264
			Worker – long-term – systemic Combined routes		0,569
PROC13	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	2,006 mg/m3	0,55
			Worker – dermal, long-term – systemic	0,025 mg/kg bw/day	0,095
			Worker – long-term – systemic Combined routes		0,644
PROC15	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	1,114 mg/m3	0,305
			Worker – dermal, long-term – systemic	0,017 mg/kg bw/day	0,065
			Worker – long-term – systemic Combined routes		0,371

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

PROC6: Calendering operations

PROC7: Industrial spraying

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)

PROC13: Treatment of articles by dipping and pouring

PROC15: Use as laboratory reagent

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

Not applicable

1. Short title of Exposure Scenario: **Use in polymer processing –industrial**

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Process category	:	**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 mixtures and articles (multistage and/or significant contact) Industrial setting; **PROC6:** Calendering operations **PROC7:** Industrial spraying **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) **PROC13:** Treatment of articles by dipping and pouring **PROC15:** Use as laboratory reagent
Environmental release category	:	**ERC6d:** Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers

2.1 Contributing scenario controlling environmental exposure for:ERC6d: Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers

Environment factors not influenced by risk management

Flow rate	:	18.000 m3/d

Other given operational conditions affecting environmental exposure

Initial release factor		
Number of emission days per year	:	100
Emission or Release Factor: Air	:	0,5 %
Emission or Release Factor: Water	:	0,001 %
Final release factor		
Emission or Release Factor: Air	:	0,5 %
Emission or Release Factor: Water	:	0,001 %
Emission or Release Factor: Soil	:	0 %
Local release rate: Water	:	0,092 kg/day
Local release rate: Air	:	46 kg/day
Local release rate: Soil	:	
Remarks	:	There is no direct exposure to soil.

Technical conditions and measures / Organizational measures

Water	:	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of ≥ (%): (Effectiveness: 99,9 %)
Remarks	:	Do not apply industrial sludge to natural soils.
Air	:	Treat air emission to provide the required removal efficiency of (%): (Effectiveness: 99,5 %)
Remarks	:	Sludge should be incinerated, contained or reclaimed.
Remarks	:	Soil emission controls are not applicable as there is no direct release to soil.

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	:	Municipal sewage treatment plant, Yes
Flow rate of sewage treatment plant effluent	:	2.000 m3/d
Effectiveness (of a measure)	:	0,7 %
Sludge Treatment	:	Agricultural soil, No

Conditions and measures related to external treatment of waste for disposal

Waste treatment	:	No
Remarks	:	ERC based assessment demonstrating control of risk with default conditions. Low risk assumed for waste life stage. Waste disposal according to national/local legislation is sufficient.

2.2 Contributing scenario controlling worker exposure for: PROC1: Use in closed process, no likelihood of exposure

Frequency and duration of use

Exposure duration	:	< 8 h

Human factors not influenced by risk management

Exposed skin area	:	One hand face only (240 cm2)

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor
Temperature	:	40 °C
Remarks	:	Basic general ventilation (1-3 air changes per hour)

Technical conditions and measures

Closed system (minimal contact during routine operations)
Local exhaust ventilation- inhalation:, No (Effectiveness: 0 %)

Conditions and measures related to personal protection, hygiene and health evaluation

Dermal Protection, No (Effectiveness: 0 %)
Respiratory Protection, No (Effectiveness: 0 %)

2.2 Contributing scenario controlling worker exposure for: PROC2: Use in closed, continuous process with occasional controlled exposure

Frequency and duration of use
Exposure duration : < 8 h

Human factors not influenced by risk management
Exposed skin area : Palms of both hands (480 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Temperature : 40 °C
Remarks : Enhanced general ventilation (5-10 air changes per hour)

Technical conditions and measures
Closed continuous process with occasional controlled exposure
Local exhaust ventilation- inhalation:, Yes (Effectiveness: 90 %)
Local exhaust ventilation-dermal:, No (Effectiveness: 0 %)

Conditions and measures related to personal protection, hygiene and health evaluation

Dermal Protection, Yes (Effectiveness: 95 %)
Respiratory Protection, No (Effectiveness: 0 %)

2.2 Contributing scenario controlling worker exposure for: PROC3: Use in closed batch process (synthesis or formulation)

Frequency and duration of use
Exposure duration : < 8 h

Human factors not influenced by risk management
Exposed skin area : One hand face only (240 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Temperature : 40 °C
Remarks : Enhanced general ventilation (5-10 air changes per hour)

Technical conditions and measures
Closed batch process with occasional controlled exposure.
Local exhaust ventilation- inhalation:, Yes (Effectiveness: 90 %)
Local exhaust ventilation-dermal:, No (Effectiveness: 0 %)

Conditions and measures related to personal protection, hygiene and health evaluation

Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 95 %)

Respiratory Protection, No (Effectiveness: 0 %)

2.2 Contributing scenario controlling worker exposure for: PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises

Frequency and duration of use
Exposure duration : < 8 h

Human factors not influenced by risk management
Exposed skin area : Palms of both hands (480 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Temperature : 40 °C
Remarks : Enhanced general ventilation (5-10 air changes per hour)

Technical conditions and measures
Semi-closed process with occasional controlled exposure
Local exhaust ventilation- inhalation:, Yes (Effectiveness: 90 %)
Local exhaust ventilation-dermal:, Yes (Effectiveness: 90 %)

Conditions and measures related to personal protection, hygiene and health evaluation

Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 95 %)
Respiratory Protection, Yes, Respirator with APF of 10 (Effectiveness: 90 %)

2.2 Contributing scenario controlling worker exposure for: PROC5: Mixing or blending in batch processes for formulation of mixtures and articles (multistage and/or significant contact) Industrial setting;

Frequency and duration of use
Exposure duration : < 1 h

Human factors not influenced by risk management
Exposed skin area : Palms of both hands (480 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Temperature : 40 °C
Remarks : Enhanced general ventilation (5-10 air changes per hour)

Technical conditions and measures
Containment measures, No
Local exhaust ventilation- inhalation:, Yes (Effectiveness: 90 %)
Local exhaust ventilation-dermal:, No (Effectiveness: 0 %)

Conditions and measures related to personal protection, hygiene and health evaluation

Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 95 %)
Respiratory Protection, Yes, Respirator with APF of 10 (Effectiveness: 90 %)

2.2 Contributing scenario controlling worker exposure for: PROC6: Calendering operations

Frequency and duration of use
Exposure duration : < 4 h

Human factors not influenced by risk management
Exposed skin area : Two hands (960 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Remarks : Enhanced general ventilation (5-10 air changes per hour)

Technical conditions and measures
Containment measures, No
Local exhaust ventilation- inhalation:, Yes (Effectiveness: 90 %)
Local exhaust ventilation-dermal:, Yes (Effectiveness: 90 %)

Conditions and measures related to personal protection, hygiene and health evaluation

Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 95 %)
Respiratory Protection, Yes, Respirator with APF of 10 (Effectiveness: 90 %)

2.2 Contributing scenario controlling worker exposure for: PROC7: Industrial spraying

Frequency and duration of use
Exposure duration : < 1 h

Human factors not influenced by risk management
Exposed skin area : Skin
: 1500 cm2

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Temperature : 40 °C
Remarks : Enhanced general ventilation (5-10 air changes per hour)

Technical conditions and measures
Containment measures, No
Local exhaust ventilation- inhalation:, Yes (Effectiveness: 95 %)
Local exhaust ventilation-dermal:, Yes (Effectiveness: 95 %)

Conditions and measures related to personal protection, hygiene and health evaluation

Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 95 %)
Respiratory Protection, Yes, Respirator with APF of 10 (Effectiveness: 90 %)

2.2 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

Frequency and duration of use
Exposure duration : < 4 h

Human factors not influenced by risk management
Exposed skin area : Two hands (960 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Temperature : 40 °C
Remarks : Good general ventilation (3-5 air changes per hour)

Technical conditions and measures
Containment measures, No
Local exhaust ventilation- inhalation:, Yes (Effectiveness: 90 %)
Local exhaust ventilation-dermal:, No (Effectiveness: 90 %)

Conditions and measures related to personal protection, hygiene and health evaluation

Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 90 %)
Respiratory Protection, Yes, APF 20 (Effectiveness: 95 %)

2.2 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

Frequency and duration of use
Exposure duration : < 8 h

Human factors not influenced by risk management
Exposed skin area : Two hands (960 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Temperature : 40 °C
Remarks : Enhanced general ventilation (5-10 air changes per hour)

Technical conditions and measures
Semi-closed process with occasional controlled exposure
Local exhaust ventilation- inhalation:, Yes (Effectiveness: 95 %)
Local exhaust ventilation-dermal:, Yes (Effectiveness: 95 %)

Conditions and measures related to personal protection, hygiene and health evaluation

Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 95 %)
Respiratory Protection, Yes (Effectiveness: 90 %)

2.2 Contributing scenario controlling worker exposure for: PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

Frequency and duration of use
Exposure duration : < 1 h

Human factors not influenced by risk management
Exposed skin area : Palms of both hands (480 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Temperature : 40 °C
Remarks : Enhanced general ventilation (5-10 air changes per hour)

Technical conditions and measures
Semi-closed process with occasional controlled exposure
Local exhaust ventilation- inhalation:, Yes (Effectiveness: 90 %)
Local exhaust ventilation-dermal:, No (Effectiveness: 0 %)

Conditions and measures related to personal protection, hygiene and health evaluation

Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 95 %)
Short term/high peak exposure, Respiratory Protection, Yes, Respirator with APF of 10 (Effectiveness: 90 %)

2.2 Contributing scenario controlling worker exposure for: PROC13: Treatment of articles by dipping and pouring

Frequency and duration of use
Exposure duration : < 4 h

Human factors not influenced by risk management
Exposed skin area : Palms of both hands (480 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Temperature : 40 °C
Remarks : Enhanced general ventilation (5-10 air changes per hour)

Technical conditions and measures
Containment measures, No
Local exhaust ventilation- inhalation:, Yes (Effectiveness: 90 %)
Local exhaust ventilation-dermal:, Yes (Effectiveness: 90 %)

Conditions and measures related to personal protection, hygiene and health evaluation

Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 95 %)
Short term/high peak exposure, Respiratory Protection, Yes, Respirator with APF of 10 (Effectiveness: 90 %)

2.2 Contributing scenario controlling worker exposure for: PROC15: Use as laboratory reagent

Frequency and duration of use
Exposure duration : < 8 h

Human factors not influenced by risk management

Exposed skin area : One hand face only (240 cm2)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor
Temperature : 40 °C
Remarks : Enhanced general ventilation (5-10 air changes per hour)

Technical conditions and measures

Containment measures, No
Local exhaust ventilation- inhalation:, Yes (Effectiveness: 90 %)
Local exhaust ventilation-dermal:, No (Effectiveness: 0 %)

Conditions and measures related to personal protection, hygiene and health evaluation

Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 95 %)
Respiratory Protection, No (Effectiveness: 0 %)

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	Risk characterization ratio
ERC6d	EUSES		Freshwater		0,005 mg/L	0,575
			Freshwater sediment		0,037 mg/kg dryweight (d.w.)	0,575
			Marine water		0,00047 mg/L	0,576
			Marine sediment		0,004 mg/kg dryweight (d.w.)	0,575
			Sewage treatment plant		0,046 mg/L	< 0,01
			Agricultural soil		0,006 mg/kg dryweight (d.w.)	0,71

ERC6d: Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers

Workers/Consumers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterization ratio
PROC1	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,037 mg/m3	0,01
			Worker – dermal, long-term – systemic	0,034 mg/kg bw/day	0,131
			Worker – long-term – systemic Combined routes		0,141
PROC2	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,557 mg/m3	0,153
			Worker – dermal, long-term – systemic	0,068 mg/kg bw/day	0,264
			Worker – long-term – systemic Combined routes		0,416
PROC3	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	1,114 mg/m3	0,305
			Worker – dermal, long-	0,034 mg/kg	0,133

			term – systemic	bw/day	
			Worker – long-term – systemic Combined routes		0,438
PROC4	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	2,228 mg/m3	0,61
			Worker – dermal, long-term – systemic	0,034 mg/kg bw/day	0,132
			Worker – long-term – systemic Combined routes		0,742
PROC5	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	1,114 mg/m3	0,305
			Worker – dermal, long-term – systemic	0,137 mg/kg bw/day	0,527
			Worker – long-term – systemic Combined routes		0,833
PROC6	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	2,006 mg/m3	0,55
			Worker – dermal, long-term – systemic	0,049 mg/kg bw/day	0,19
			Worker – long-term – systemic Combined routes		0,739
PROC7	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	1,671 mg/m3	0,458
			Worker – dermal, long-term – systemic	0,013 mg/kg bw/day	0,049
			Worker – long-term – systemic Combined routes		0,733
PROC8a	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,39 mg/m3	0,107
			Worker – dermal, long-term – systemic	0,082 mg/kg bw/day	0,316
			Worker – long-term – systemic Combined routes		0,423
PROC8b	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	1,393 mg/m3	0,382
			Worker – dermal, long-term – systemic	0,034 mg/kg bw/day	0,132
			Worker – long-term – systemic Combined routes		0,513
PROC9	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	1,114 mg/m3	0,305
			Worker – dermal, long-term – systemic	0,069 mg/kg bw/day	0,264
			Worker – long-term – systemic Combined routes		0,569
PROC13	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	2,006 mg/m3	0,55
			Worker – dermal, long-term – systemic	0,025 mg/kg bw/day	0,095
			Worker – long-term – systemic Combined routes		0,644
PROC15	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	1,114 mg/m3	0,305
			Worker – dermal, long-term – systemic	0,017 mg/kg bw/day	0,065
			Worker – long-term – systemic Combined routes		0,371

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 mixtures and articles (multistage and/or significant contact) Industrial setting;

PROC6: Calendering operations

PROC7: Industrial spraying

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)

PROC13: Treatment of articles by dipping and pouring

PROC15: Use as laboratory reagent

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

Not applicable

1. Short title of Exposure Scenario: **Colour stabilizer (film/photographic industry)**

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Process category	:	**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 **PROC11:** Non industrial spraying **PROC15:** Use as laboratory reagent
Environmental release category	:	**ERC8b:** Wide dispersive indoor use of reactive substances in open systems

2.1 Contributing scenario controlling environmental exposure for:ERC8b: Wide dispersive indoor use of reactive substances in open systems

Environment factors not influenced by risk management

Flow rate	:	18.000 m3/d

Other given operational conditions affecting environmental exposure

Initial release factor		
Number of emission days per year	:	365
Emission or Release Factor: Air	:	0,1 %
Emission or Release Factor: Water	:	2 %
Final release factor		
Emission or Release Factor: Air	:	0,1 %
Emission or Release Factor: Water	:	2 %
Emission or Release Factor: Soil	:	0 %
Local release rate: Water	:	0,00088 kg/day

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	:	Municipal sewage treatment plant, Yes
Flow rate of sewage treatment plant effluent	:	2.000 m3/d
Effectiveness (of a measure)	:	0,7 %
Sludge Treatment	:	Agricultural soil, Yes

Conditions and measures related to external treatment of waste for disposal

Waste treatment	:	No
Remarks	:	ERC based assessment demonstrating control of risk with default conditions. Low risk assumed for waste life stage. Waste disposal according to national/local legislation is sufficient.

2.2 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

Frequency and duration of use

Exposure duration	:	< 1 h

Human factors not influenced by risk management

Exposed skin area	:	Two hands (960 cm2)

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor
Temperature	:	40 °C
Remarks	:	Basic general ventilation (1-3 air changes per hour)

Technical conditions and measures

Semi-closed process with occasional controlled exposure
Local exhaust ventilation- inhalation:, Yes (Effectiveness: 80 %)
Local exhaust ventilation-dermal:, No (Effectiveness: 0 %)

Conditions and measures related to personal protection, hygiene and health evaluation

Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 90 %)
Respiratory Protection, Yes, Respirator with APF of 10 (Effectiveness: 90 %)

2.2 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

Frequency and duration of use
Exposure duration : < 1 h

Human factors not influenced by risk management
Exposed skin area : Two hands (960 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Temperature : 40 °C

Technical conditions and measures
Semi-closed process with occasional controlled exposure
Local exhaust ventilation- inhalation:, Yes (Effectiveness: 90 %)
Local exhaust ventilation-dermal:, No (Effectiveness: 0 %)

Conditions and measures related to personal protection, hygiene and health evaluation

Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 90 %)
Respiratory Protection, Yes, Respirator with APF of 10 (Effectiveness: 90 %)

2.2 Contributing scenario controlling worker exposure for: PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

Frequency and duration of use
Exposure duration : < 1 h

Human factors not influenced by risk management
Exposed skin area : Palms of both hands (480 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Temperature : 40 °C
Remarks : Basic general ventilation (1-3 air changes per hour)

Technical conditions and measures
Semi-closed process with occasional controlled exposure
Local exhaust ventilation- inhalation:, Yes (Effectiveness: 80 %)
Local exhaust ventilation-dermal:, No (Effectiveness: 0 %)

Conditions and measures related to personal protection, hygiene and health evaluation

Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training. (Effectiveness: 90 %)
Respiratory Protection, Yes, Respirator with APF of 10, Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness: 90 %)

2.2 Contributing scenario controlling worker exposure for: PROC10: Roller application or brushing

Frequency and duration of use

Exposure duration : < 1 h

Human factors not influenced by risk management
Exposed skin area : Two hands (960 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Temperature : 40 °C
Remarks : Basic general ventilation (1-3 air changes per hour)

Technical conditions and measures
Containment measures, No
Local exhaust ventilation- inhalation:, Yes, Use extract ventilation to minimize exposure. (Effectiveness: 80 %)
Local exhaust ventilation-dermal:, No (Effectiveness: 0 %)

Conditions and measures related to personal protection, hygiene and health evaluation

Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness: 90 %)
Respiratory Protection, Yes, Respirator with APF of 10, Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness: 90 %)

2.2 Contributing scenario controlling worker exposure for: PROC11: Non industrial spraying

Frequency and duration of use
Exposure duration : < 4 h

Human factors not influenced by risk management
Exposed skin area : Skin
: 1500 cm2

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Temperature : 40 °C
Remarks : Basic general ventilation (1-3 air changes per hour)

Technical conditions and measures
Containment measures, No
Local exhaust ventilation- inhalation:, Yes (Effectiveness: 80 %)
Local exhaust ventilation-dermal:, Yes (Effectiveness: 80 %)

Conditions and measures related to personal protection, hygiene and health evaluation

Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness: 90 %)
Respiratory Protection, Yes, APF 20 (Effectiveness: 95 %)

2.2 Contributing scenario controlling worker exposure for: PROC15: Use as laboratory reagent

Frequency and duration of use
Exposure duration : < 8 h

Human factors not influenced by risk management

Exposed skin area : One hand face only (240 cm2)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor
Temperature : 40 °C
Remarks : Basic general ventilation (1-3 air changes per hour)

Technical conditions and measures

Containment measures, No
Local exhaust ventilation- inhalation:, Yes, Handle in a fume cupboard or under extract ventilation. (Effectiveness: 80 %)
Local exhaust ventilation-dermal:, No (Effectiveness: 0 %)

Conditions and measures related to personal protection, hygiene and health evaluation

Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness: 90 %)
Respiratory Protection, No (Effectiveness: 0 %)

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	Risk characterization ratio
ERC8b	EUSES		Freshwater		0,00019 mg/L	0,023
			Freshwater sediment		0,002 mg/kg dryweight (d.w.)	0,023
			Marine water		0,000019 mg/L	0,024
			Marine sediment		0,00015 mg/kg dry weight (d.w.)	0,024
			Sewage treatment plant		0,00043 mg/L	< 0,01
			Agricultural soil		0,00011 mg/kg dry weight (d.w.)	0,014

ERC8b: Wide dispersive indoor use of reactive substances in open systems

Workers/Consumers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterization ratio
PROC8a	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,297 mg/m3	0,081
			Worker – dermal, long-term – systemic	0,055 mg/kg bw/day	0,211
			Worker – long-term – systemic Combined routes		0,292
PROC8b	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,074 mg/m3	0,02
			Worker – dermal, long-term – systemic	0,055 mg/kg bw/day	0,211
			Worker – long-term – systemic Combined		0,231

			routes		
PROC9	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,297 mg/m3	0,081
			Worker – dermal, long-term – systemic	0,027 mg/kg bw/day	0,106
			Worker – long-term – systemic Combined routes		0,187
PROC10	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,297 mg/m3	0,081
			Worker – dermal, long-term – systemic	0,11 mg/kg bw/day	0,422
			Worker – long-term – systemic Combined routes		0,503
PROC11	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	1,114 mg/m3	0,305
			Worker – dermal, long-term – systemic	0,129 mg/kg bw/day	0,495
			Worker – long-term – systemic Combined routes		0,8
PROC15	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	1,486 mg/m3	0,407
			Worker – dermal, long-term – systemic	0,007 mg/kg bw/day	0,026
			Worker – long-term – systemic Combined routes		0,433

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

PROC11: Non industrial spraying

PROC15: Use as laboratory reagent

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

Not applicable

1. Short title of Exposure Scenario: **Colour stabilizer for chemical products (fuel, resins, etc.) and for de-colourisation of phenols**

Main User Groups : **SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites

Process category : **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
PROC6: Calendering operations

		PROC7: Industrial spraying **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) **PROC13:** Treatment of articles by dipping and pouring **PROC15:** Use as laboratory reagent
Environmental release category	:	**ERC6d:** Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers

2.1 Contributing scenario controlling environmental exposure for:ERC6d: Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers

Environment factors not influenced by risk management

Flow rate	:	18.000 m3/d

Other given operational conditions affecting environmental exposure

Initial release factor		
Number of emission days per year	:	100
Emission or Release Factor: Air	:	5 %
Emission or Release Factor: Water	:	0,005 %
Final release factor		
Emission or Release Factor: Air	:	5 %
Emission or Release Factor: Water	:	0,005 %
Emission or Release Factor: Soil	:	0,025 %
Local release rate: Water	:	0,04 kg/day
Local release rate: Air	:	40 kg/day
Local release rate: Soil	:	
Remarks	:	There is no direct exposure to soil.

Technical conditions and measures / Organizational measures

Air	:	Treat air emission to provide a typical removal efficiency of (%): (Effectiveness: 95 %)
Remarks	:	Do not apply industrial sludge to natural soils.
Remarks	:	Sludge should be incinerated, contained or reclaimed.

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	:	Municipal sewage treatment plant, Yes
Flow rate of sewage treatment plant effluent	:	2.000 m3/d
Effectiveness (of a measure)	:	0,7 %
Sludge Treatment	:	Agricultural soil, No

Conditions and measures related to external treatment of waste for disposal

Waste treatment	:	No
Remarks	:	ERC based assessment demonstrating control of risk with default conditions. Low risk assumed for waste life stage. Waste disposal according to national/local legislation is sufficient.

2.2 Contributing scenario controlling worker exposure for: PROC1: Use in closed process, no likelihood of exposure

Frequency and duration of use
Exposure duration : < 8 h

Human factors not influenced by risk management
Exposed skin area : One hand face only (240 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Temperature : 40 °C

Technical conditions and measures
Closed continuous process with occasional controlled exposure
Local exhaust ventilation- inhalation:, No (Effectiveness: 0 %)

Conditions and measures related to personal protection, hygiene and health evaluation

Dermal Protection, No (Effectiveness: 0 %)
Respiratory Protection, No (Effectiveness: 0 %)

2.2 Contributing scenario controlling worker exposure for: PROC2: Use in closed, continuous process with occasional controlled exposure

Frequency and duration of use
Exposure duration : < 8 h

Human factors not influenced by risk management
Exposed skin area : Palms of both hands (480 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Temperature : 40 °C
Remarks : Enhanced general ventilation (5-10 air changes per hour)

Technical conditions and measures
Closed continuous process with occasional controlled exposure
Local exhaust ventilation- inhalation:, Yes, Provide extraction ventilation at points where emissions occur. (Effectiveness: 90 %)
Local exhaust ventilation-dermal:, No (Effectiveness: 0 %)

Conditions and measures related to personal protection, hygiene and health evaluation

Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 95 %)
Respiratory Protection, No (Effectiveness: 0 %)

2.2 Contributing scenario controlling worker exposure for: PROC3: Use in closed batch process (synthesis or formulation)

Frequency and duration of use
Exposure duration : < 8 h

Human factors not influenced by risk management
Exposed skin area : One hand face only (240 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Temperature : 40 °C
Remarks : Enhanced general ventilation (5-10 air changes per hour)

Technical conditions and measures
Closed batch process with occasional controlled exposure.
Local exhaust ventilation- inhalation:, Yes, Provide extraction ventilation at points where emissions occur. (Effectiveness: 90 %)
Local exhaust ventilation-dermal:, No (Effectiveness: 0 %)

Conditions and measures related to personal protection, hygiene and health evaluation

Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 95 %)
Respiratory Protection, No (Effectiveness: 0 %)

2.2 Contributing scenario controlling worker exposure for: PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises

Frequency and duration of use
Exposure duration : < 8 h

Human factors not influenced by risk management
Exposed skin area : Palms of both hands (480 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Temperature : 40 °C
Remarks : Enhanced general ventilation (5-10 air changes per hour)

Technical conditions and measures
Semi-closed process with occasional controlled exposure
Local exhaust ventilation- inhalation:, Yes, Provide enhanced general ventilation by mechanical means., Provide extraction ventilation at points where emissions occur. (Effectiveness: 90 %)
Local exhaust ventilation-dermal:, Yes (Effectiveness: 90 %)

Conditions and measures related to personal protection, hygiene and health evaluation

Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 95 %)
Short term/high peak exposure, Respiratory Protection, Yes, Respirator with APF of 10 (Effectiveness: 90 %)

2.2 Contributing scenario controlling worker exposure for: PROC6: Calendering operations

Frequency and duration of use
Exposure duration : < 4 h

Human factors not influenced by risk management
Exposed skin area : Two hands (960 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Remarks : Enhanced general ventilation (5-10 air changes per hour)

Technical conditions and measures
Containment measures, No
Local exhaust ventilation- inhalation:, Yes, Provide extraction ventilation at points where emissions occur. (Effectiveness: 90 %)
Local exhaust ventilation-dermal:, Yes (Effectiveness: 90 %)

Conditions and measures related to personal protection, hygiene and health evaluation

Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 95 %)
Short term/high peak exposure, Respiratory Protection, Yes, Respirator with APF of 10 (Effectiveness: 90 %)

2.2 Contributing scenario controlling worker exposure for: PROC7: Industrial spraying

Frequency and duration of use
Exposure duration : < 4 h

Human factors not influenced by risk management
Exposed skin area : Skin
: 1500 cm2

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Temperature : 40 °C
Remarks : Enhanced general ventilation (5-10 air changes per hour)

Technical conditions and measures
Containment measures, No
Local exhaust ventilation- inhalation:, Yes (Effectiveness: 95 %)
Local exhaust ventilation-dermal:, Yes (Effectiveness: 95 %)

Conditions and measures related to personal protection, hygiene and health evaluation

Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 95 %)
Respiratory Protection, Yes, Respirator with APF of 10 (Effectiveness: 90 %)

2.2 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

Frequency and duration of use
Exposure duration : < 4 h

Human factors not influenced by risk management
Exposed skin area : Two hands (960 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Temperature : 40 °C
Remarks : Good general ventilation (3-5 air changes per hour)

Technical conditions and measures
Containment measures, No
Local exhaust ventilation- inhalation:, Yes (Effectiveness: 90 %)
Local exhaust ventilation-dermal:, Yes (Effectiveness: 90 %)

Conditions and measures related to personal protection, hygiene and health evaluation

Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness: 90 %)
Respiratory Protection, Yes, APF 20 (Effectiveness: 95 %)

2.2 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

Frequency and duration of use
Exposure duration : < 1 h

Human factors not influenced by risk management
Exposed skin area : Two hands (960 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Temperature : 40 °C
Remarks : Basic general ventilation (1-3 air changes per hour)

Technical conditions and measures
Semi-closed process with occasional controlled exposure
Local exhaust ventilation- inhalation:, Yes, Provide extraction ventilation at points where emissions occur. (Effectiveness: 95 %)
Local exhaust ventilation-dermal:, Yes (Effectiveness: 95 %)

Conditions and measures related to personal protection, hygiene and health evaluation

Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness: 90 %)
Short term/high peak exposure, Respiratory Protection, Yes, Respirator with APF of 10 (Effectiveness: 90 %)

2.2 Contributing scenario controlling worker exposure for: PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

Frequency and duration of use
Exposure duration : < 1 h

Human factors not influenced by risk management
Exposed skin area : Palms of both hands (480 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Temperature : 40 °C
Remarks : Enhanced general ventilation (5-10 air changes per hour)

Technical conditions and measures
Semi-closed process with occasional controlled exposure
Local exhaust ventilation- inhalation:, Yes (Effectiveness: 90 %)
Local exhaust ventilation-dermal:, No (Effectiveness: 0 %)

Conditions and measures related to personal protection, hygiene and health evaluation

Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 95 %)
Short term/high peak exposure, Respiratory Protection, Yes, Respirator with APF of 10 (Effectiveness: 90 %)

2.2 Contributing scenario controlling worker exposure for: PROC13: Treatment of articles by dipping and pouring

Frequency and duration of use
Exposure duration : < 4 h

Human factors not influenced by risk management
Exposed skin area : Palms of both hands (480 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Temperature : 40 °C
Remarks : Enhanced general ventilation (5-10 air changes per hour)

Technical conditions and measures
Containment measures, No
Local exhaust ventilation- inhalation:, Yes, Provide extraction ventilation at points where emissions occur. (Effectiveness: 90 %)
Local exhaust ventilation-dermal:, Yes (Effectiveness: 90 %)

Conditions and measures related to personal protection, hygiene and health evaluation

Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 95 %)
Short term/high peak exposure, Respiratory Protection, Yes, Respirator with APF of 10 (Effectiveness: 90 %)

2.2 Contributing scenario controlling worker exposure for: PROC15: Use as laboratory reagent

Frequency and duration of use
Exposure duration : < 8 h

Human factors not influenced by risk management

Exposed skin area : One hand face only (240 cm2)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor
Temperature : 40 °C
Remarks : Enhanced general ventilation (5-10 air changes per hour)

Technical conditions and measures

Containment measures, No
Local exhaust ventilation- inhalation:, Yes (Effectiveness: 90 %)
Local exhaust ventilation-dermal:, No (Effectiveness: 0 %)

Conditions and measures related to personal protection, hygiene and health evaluation

Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 95 %)
Respiratory Protection, No (Effectiveness: 0 %)

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	Risk characterization ratio
ERC6d	EUSES		Freshwater		0,002 mg/L	0,261
			Freshwater sediment		0,017 mg/kg dryweight (d.w.)	0,261
			Marine water		0,0002148 mg/L	0,262
			Marine sediment		0,002 mg/kg dryweight (d.w.)	0,262
			Sewage treatment plant		0,02 mg/L	< 0,01
			Agricultural soil		0,005 mg/kg dryweight (d.w.)	0,622

ERC6d: Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers

Workers/Consumers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterization ratio
PROC1	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,037 mg/m3	0,01
			Worker – dermal, long-term – systemic	0,034 mg/kg bw/day	0,131
			Worker – long-term – systemic Combined routes		0,141
PROC2	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,557 mg/m3	0,153
			Worker – dermal, long-term – systemic	0,068 mg/kg bw/day	0,264
			Worker – long-term – systemic Combined routes		0,416

PROC3	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	1,114 mg/m3	0,305
			Worker – dermal, long-term – systemic	0,034 mg/kg bw/day	0,133
			Worker – long-term – systemic Combined routes		0,438
PROC4	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	2,228 mg/m3	0,61
			Worker – dermal, long-term – systemic	0,034 mg/kg bw/day	0,132
			Worker – long-term – systemic Combined routes		0,742
PROC6	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	2,006 mg/m3	0,55
			Worker – dermal, long-term – systemic	0,049 mg/kg bw/day	0,19
			Worker – long-term – systemic Combined routes		0,739
PROC7	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,501 mg/m3	0,137
			Worker – dermal, long-term – systemic	0,039 mg/kg bw/day	0,148
			Worker – long-term – systemic Combined routes		0,286
PROC8a	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,39 mg/m3	0,107
			Worker – dermal, long-term – systemic	0,082 mg/kg bw/day	0,316
			Worker – long-term – systemic Combined routes		0,423
PROC8b	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,928 mg/m3	0,254
			Worker – dermal, long-term – systemic	0,014 mg/kg bw/day	0,053
			Worker – long-term – systemic Combined routes		0,307
PROC9	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	1,114 mg/m3	0,305
			Worker – dermal, long-term – systemic	0,069 mg/kg bw/day	0,264
			Worker – long-term – systemic Combined routes		0,569
PROC13	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	2,006 mg/m3	0,55
			Worker – dermal, long-term – systemic	0,025 mg/kg bw/day	0,095
			Worker – long-term – systemic Combined routes		0,644
PROC15	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	1,114 mg/m3	0,305
			Worker – dermal, long-term – systemic	0,017 mg/kg bw/day	0,065
			Worker – long-term – systemic Combined routes		0,371

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

PROC6: Calendering operations

PROC7: Industrial spraying

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)

PROC13: Treatment of articles by dipping and pouring

PROC15: Use as laboratory reagent

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

Not applicable