

LCID Example 4 - Introduction

1) Purpose of the example

This real-life example exemplifies that an eSDS author can be confronted with the obstacle that the identified Lead Components might not share all uses and that the style of the incoming ES can also differ considerably.

The decision if information on safe use is given as an annex or embedded in the main body is made based on the classification of the mixture. This mixture is classified for systemic effects which often leads to more variability in OCs and RMMs which can be addressed by annexing exposure scenarios for the substances in the mixture. The LCID methodology is used to reduce the number of substance exposure scenarios. This mixture is intended to be used for both formulating another mixture or industrial end use. While annexing substance exposure scenarios will be a most welcome approach if the next actor in the supply chain is a formulator it will be more challenging for the end user as he will have to consolidate the information for his specific workplace situation.

2) Mixture description

a) Information on the mixture

Composition:	Glycerol, propoxylated ≥ 25 - $< 50\%$ Tris(1-chloroisopropyl)phosphate ≥ 5 - $< 10\%$ Polyether based on aromatic amine ≥ 5 - $< 10\%$ 1,1,1,3,3 - Pentafluorobutane $\geq 2,5$ - 3% N,N-dimethylcyclohexylamine $\geq 0,3$ - 1% Non-hazardous others ≥ 30 - $< 65\%$
Classification of the mixture:	H302
Use of the mixture:	Polyol components for the production of polyurethanes

b) Hazardous substances entering in the composition of the mixture

Substance	DNEL(s) (systemic-LT) Lowest PNEC(s) [other limit values]	CLP classification
Glycerol, propoxylated	not available	Acute Tox. 4 Oral H302
Tris(1-chloroisopropyl)phosphate	DNEL inhalation: 5,82 mg/m ³ DNEL dermal: 2,08 mg/kg bw/day PNEC marine water: 0,064 mg/l PNEC freshwater: 0,64 mg/l PNEC sediment (freshwater): 13,4 mg/kg dry weight PNEC sediment (marine water): 1,34 mg/kg dry weight soil: 1,7 mg/kg dry weight STP: 7,84 mg/l	Acute Tox. 4 Oral H302
Polyether based on aromatic amine	DNEL inhalation: 3,9 mg/m ³ DNEL dermal: 7,0 mg/kg bw/day PNEC marine water: 0,002 mg/l PNEC freshwater: 0,02 mg/l PNEC sediment (freshwater): 0,02	Acute Tox. 4 Oral H302 Eye Irrit. 2 H319

	mg/kg dry weight PNEC sediment (marine water): 0,002 mg/kg dry weight soil: 0,00588 mg/kg dry weight STP: 100 mg/l	
1,1,1,3,3 – Pentafluorobutane	not available	Flam. Liq. 2 H225
N,N-dimethylcyclohexylamine	DNEL inhalation: 35 mg/m ³ DNEL dermal: not available PNEC marine water: 0,0002 mg/l PNEC freshwater: 0,002 mg/l intermittent release: 0,02 mg/l PNEC sediment (freshwater): 0,0211 mg/kg dry weight PNEC sediment (marine water): 0,00211 mg/kg dry weight soil: 0,00305 mg/kg dry weight STP: 20,6 mg/l	Flam. Liq. 3 H226 Acute Tox. 3 Dermal H311 Acute Tox. 3 Inhalative H331 Acute Tox. 3 Oral H301 Skin Corr. 1 B H314 Eye Dam. 1 H318 Aquatic Chronic 2 H411

3) Outcome of the LCID methodology

Lead Component, dermal	Tris(1-chloroisopropyl)phosphate
Lead Component, inhalation	Polyether based on aromatic amine

As no toxicological data on the mixture itself is available, information on the Lead Components will be used. Scenarios covering safety to the environment or local effects human health are not warranted as the mixture is not classified for environmental hazards or local effects human health. Safe use information referring to human health hazards – systemic effects - is needed as the mixture is classified for a systemic toxicity endpoint.

4) Operation conditions (OC) and risk management measures (RMM) associated to Priority Substances, Lead Components and components driving local effects for the selected use of the mixture

Both Lead Components (Polyether based on aromatic amine, Tris(1-chloroisopropyl)phosphate) have multiple ES registered – only the ES for industrial end use are provided as examples. The lifecycle stage therefore is “industrial uses”. Please note that the main user group for both Lead Components in this example is “SU3” that is obsolete in the current Use Descriptor Guideline and had not been translated in the incoming ES. It might be an option to remedy this shortcoming when authoring the eSDS.

In an “ideal REACH world” incoming information (like ES) would share uniform wording (like ECom Phrases) and always follow the most up to date guidance. In this real-life example the author of the eSDS had to deal with the situation that the style of the ES provided for the Lead Components differed. This information was arranged in the company specific layout before even applying the LCID methodology - without any change of information or wording. Any shortcomings of the incoming information (e.g. no indication of effectiveness for LEV) will obviously be transferred to Safe Use Information for the mixture.

Further, the description of ES titles differed considerably (and is not aligned with the ENES recommendation on structured short titles). While polyether based on aromatic amine has only one single scenario titled “Industrial End Use”, four scenarios describing various industrial uses (all

relevant for the company's customers) are provided for Tris(1-chloroisopropyl)phosphate. All substance ES are communicated along the supply chain. A downstream formulator might decide himself which information is relevant for his customers or potentially calculate different Lead Components for his formulation and will therefore profit from this relatively low level of consolidation when preparing his own mixtures SDS. A customer with one specific end use will pick each Lead Components scenario relevant for his process.

ES polyether based on aromatic amine:

- i) Industrial End Use
PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PROC15, PROC21

ES Tris(1-chloroisopropyl)phosphate

- ii) Use of coatings, adhesives, sealants and elastomers (CASE): Industrial
PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PC1, PC9a, PC21, PC32
- iii) Use in flexible foam: Industrial
PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC14, PROC21, PC32
- iv) Foam granules and rebound PUR Foam: Industrial
PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC14, PROC21, PC32
- v) Use in rigid foam: Industrial
PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC21, PC32

5) Consolidated OC/RMM for inclusion in the mixture safety data sheet

As polyether based on aromatic amine has no PROC 6 and Tris(1-chloroisopropyl)phosphate has no PROC 15, these will not apply to the mixture containing both. These PROCs are therefore not communicated along the supply chain. Instead a consolidated PROC table is prepared.

- 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)
- 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)
- PROC10: Roller application or brushing
- PROC13: Treatment of articles by dipping and pouring
- PROC14: Production of preparations or articles by tableting, compression, extrusion, pelletisation
- PROC21: Low energy manipulation of substances bound in materials and/ or articles

Example 4 - Safety Data Sheet content

Extract of relevant safe use information derived by application of the LCID methodology

1.1 Product identifier

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

Use:

Polyol components for the production of polyurethanes

For details of the identified uses according to REACH-Regulation (EU) No. 1907/2006 refer to the annex of this safety data sheet.

1.3 Details of the supplier of the safety data sheet

Mixtures TF

Tel.: XX

Email: ProductSafety@TF.com

1.4 Emergency telephone number

XX

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Acute toxicity, Oral, Category 4 (H302)

2.2 Label elements



Warning

Hazardous components which must be listed on the label

Glycerol, propoxylated

Hazard statements:

H302 Harmful if swallowed.

Precautionary statements:

P264 Wash skin thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

P301 + P312 + P330 IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth.

This product contains fluorinated hydrocarbons, which are subject to EU Regulation No. 517/2014, annex I.

2.3 Other hazards

No information available.

SECTION 3: Composition/information on ingredients

Type of product: Mixture

3.2 Mixtures

Polyol mixture, contains blowing agent.

Hazardous components

Glycerol, propoxylated

Concentration [wt.-%]: ≥ 25 - < 50

CAS-No.: 25791-96-2

Classification (1272/2008/CE): Acute Tox. 4 Oral H302

Tris(1-chloroisopropyl)phosphate

Concentration [wt.-%]: ≥ 5 - < 10

REACH Registration Number: 01-2119486772-26

Classification (1272/2008/CE): Acute Tox. 4 Oral H302

polyether based on aromatic amine

Concentration [wt.-%]: ≥ 5 - < 10

REACH Registration Number: 01-2119462836-28-0001

CAS-No.: 67800-94-6

Classification (1272/2008/CE): Acute Tox. 4 Oral H302 Eye Irrit. 2 H319

N,N-dimethylcyclohexylamine

Concentration [wt.-%]: $\geq 0,3$ - < 1

EC-No.: 202-715-5

REACH Registration Number: 01-2119533030-60

CAS-No.: 98-94-2

Classification (1272/2008/CE): Flam. Liq. 3 H226 Acute Tox. 3 Dermal H311 Acute Tox. 3

Inhalative H331 Acute Tox. 3 Oral H301 Skin Corr. 1B H314 Eye Dam. 1 H318 Aquatic

Chronic 2 H411

Candidate List of Substances of Very High Concern for Authorisation

This product contains no substances of very high concern in concentrations where an information obligation applies (REACH Regulation (EC) No. 1907/2006, Article 59).

SECTION 4: First aid measures

SECTION 5: Firefighting measures

SECTION 6: Accidental release measures

SECTION 7: Handling and storage

7.1 Precautions for safe handling

General conditions of use are further specified in the annex according to REACH-Regulation (EU) No. 1907/2006.

Ensure adequate ventilation and, if necessary, exhaust ventilation when handling or transferring the product. Keep away from fire, sparks and heated surfaces.

Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin and eyes.

In all workplaces or parts of the plant where high concentrations of aerosols and/or vapors may be generated (e.g. during pressure release, mold venting or when cleaning mixing heads with an air blast), appropriately located exhaust ventilation must be provided in such a way that the WEL is not exceeded.

The air should be drawn away from the personnel handling the product. The efficiency of the exhaust equipment should be periodically checked.

Precautions should generally be taken against electrostatic charges according to the equipment used and the way the product is handled and packaged.

Protection against fire and explosion: The vapors are heavier than air and may form explosive mixtures with air. Ensure proper ventilation and extraction, including at floor level.

Keep away from foodstuffs, drinks and tobacco. Wash hands before breaks and at the end of workday. Keep working clothes separately. Change contaminated or soaked clothing immediately.

7.2 Conditions for safe storage, including any incompatibilities

Keep containers tightly closed in a cool, well-ventilated place.

Further specific information see our : "Technical Information"

Storage class (TRGS 510) : 10: Combustible liquids

7.3 Specific end use(s)

For details of the identified uses according to REACH-Regulation (EU) No. 1907/2006 refer to the annex of this safety data sheet.

SECTION 8: Exposure controls/personal protection

Risk management measures are further specified in the annex according to REACH-Regulation (EU) No. 1907/2006.

8.1 Control parameters

No information on Exposure Limit Values necessary according to EC directive 2006/121/EG

For technical protective measures to limit exposure see also Section 7 "Handling and storage".

Derived No Effect Level (DNEL)

Tris(1-chloroisopropyl)phosphate

Value type	Route of exposure	Health Effects	Value	Remarks
Workers	Inhalation	Long-term systemic effects	5,82 mg/m ³	
Workers	Inhalation	Acute systemic effects	22,4 mg/m ³	
Workers	Dermal	Long-term systemic effects	2,08 mg/kg bw/day	
Workers	Dermal	Acute systemic effects	8 mg/kg	
Consumers	Inhalation	Long-term systemic effects	1,46 mg/m ³	
Consumers	Inhalation	Acute systemic effects	11,2 mg/m ³	
Consumers	Dermal	Long-term systemic effects	1,04 mg/kg bw/day	
Consumers	Dermal	Acute systemic effects	4 mg/kg	
Consumers	Oral	Long-term systemic effects	0,52 mg/kg bw/day	

polyether based on aromatic amine

Value type	Route of exposure	Health Effects	Value	Remarks
Workers	Inhalation	Long-term systemic effects	3,9 mg/m ³	Most sensitive endpoint: Repeated dose toxicity
Workers	Inhalation	Acute systemic effects		Not relevant
Workers	Inhalation	Long-term local effects		Not relevant
Workers	Inhalation	Acute local effects		Not relevant
Workers	Dermal	Long-term systemic effects	7,0 mg/kg bw/day	Most sensitive endpoint: Repeated dose toxicity
Workers	Dermal	Acute systemic effects		Not relevant
Workers	Dermal	Long-term local effects		Not relevant
Workers	Dermal	Acute local effects		Not relevant
Consumers	Inhalation	Long-term systemic effects	1,2 mg/m ³	Most sensitive endpoint: Repeated dose toxicity
Consumers	Inhalation	Acute systemic effects		Not relevant
Consumers	Inhalation	Long-term local effects		Not relevant
Consumers	Inhalation	Acute local effects		Not relevant
Consumers	Dermal	Long-term systemic effects	4,2 mg/kg bw/day	Most sensitive endpoint: Repeated dose toxicity
Consumers	Dermal	Acute systemic effects		Not relevant
Consumers	Dermal	Long-term local effects		Not relevant
Consumers	Dermal	Acute local effects		Not relevant
Consumers	Oral	Long-term systemic effects	0,33 mg/kg bw/day	Most sensitive endpoint: Repeated dose toxicity

Consumers	Oral	Acute systemic effects		Not relevant
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N,N-dimethylcyclohexylamine

Value type	Route of exposure	Health Effects	Value	Remarks
Workers	Inhalation	Long-term local effects	35 mg/m3	
Workers	Inhalation	Acute local effects	35 mg/m3	

Predicted No Effect Concentration (PNEC)**Tris(1-chloroisopropyl)phosphate**

Compartment	Value	Remarks
Fresh water	0,64 mg/l	
Fresh water sediment	13,4 mg/kg	dry weight
Marine water	0,064 mg/l	
Marine sediment	1,34 mg/kg	dry weight
Sewage treatment plant	7,84 mg/l	
Soil	1,7 mg/kg	dry weight
Intermittent use/release	0,51 mg/l	

polyether based on aromatic amine

Compartment	Value	Remarks
Fresh water	0,02 mg/l	
Fresh water sediment	0,02 mg/kg	dry weight
Marine water	0,002 mg/l	
Marine sediment	0,002 mg/kg	dry weight
Sewage treatment plant	100 mg/l	
Soil	0,00588 mg/kg	dry weight
Oral		Not relevant
Intermittent use/release	2,81 mg/l	

N,N-dimethylcyclohexylamine

Compartment	Value	Remarks
Fresh water	0,002 mg/l	
Fresh water sediment	0,0211 mg/kg	dry weight
Marine water	0,0002 mg/l	
Marine sediment	0,00211 mg/kg	dry weight
Sewage treatment plant	20,6 mg/l	
Soil	0,00305 mg/kg	dry weight
Oral		no data available
Intermittent use/release	0,02 mg/l	

8.2 Exposure controls**Respiratory protection**

Unless the product is entirely enclosed, do not handle it until you have studied the respiratory precautions issued by the appropriate authority or accident prevention association. At substantial vapor concentrations respirators must be used. Put on full-mask respirator with filter type ABEK.

If applicable, further recommendations regarding respiratory protection can be found in the annex.

Hand protection

Conditionally suitable materials for protective gloves; EN 374:
Nitrile rubber - NBR (≥ 0.35 mm)
Breakthrough time not tested; dispose of immediately after contamination.

Eye protection

Wear eye/face protection.

Skin and body protection

Wear suitable protective clothing.

Safety precautions for handling freshly molded polyurethane parts: see section 16

SECTION 9: Physical and chemical properties**SECTION 10: Stability and reactivity****SECTION 11: Toxicological information**

Toxicological studies on the product are not yet available.

SECTION 12: Ecological information

SECTION 13: Disposal considerations**SECTION 14: Transport information****SECTION 15: Regulatory information****15.2 Chemical Safety Assessment**

A Chemical Safety Assessment has been carried out for:

Tris(1-chloroisopropyl)phosphate
polyether based on aromatic amine
N,N-dimethylcyclohexylamine

SECTION 16: Other information

Annex - Exposure Scenario

The operational conditions and the implementation of Risk Management Measures (RMM) are dependent on the following priority-/lead substances for the respective exposure routes:

Lead substance(s), aquatic environment:

Not relevant

Lead substance(s), ozone layer:

Not relevant

Local effects, Eyes:

Not relevant

Local effects, Skin:

Not relevant

Local effects, Inhalation:

Not relevant

Lead substance(s), Inhalation:

polyether based on aromatic amine

Lead substance(s), Dermal:

Tris(1-chloroisopropyl)phosphate

Lead substance(s), Oral:

Not relevant

Summary of Exposure Scenarios

- Use as intermediate for manufacturing other substances and formulating, repacking and distribution (ES1) : SU 3; SU 10; PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9; ERC2, ERC3, ERC6a, ERC6c
- Industrial end use (ES2) : SU 3; PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PROC21; ERC2, ERC3, ERC5, ERC6c
- Professional end use (ES3) : SU 22; PROC5, PROC8a, PROC8b, PROC10, PROC11, PROC13, PROC15, PROC21; ERC8c, ERC8f

[... Exposure Scenarios ES1 and ES3 are not shown in this example ...]

1. Short title of Exposure Scenario: - Industrial end use (ES2)

- | | |
|------------------|--|
| 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 preparations and articles (multistage and/ or significant contact)
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) |

Environmental release category	PROC10: Roller application or brushing
	PROC13: Treatment of articles by dipping and pouring
	PROC14: Production of preparations or articles by tableting, compression, extrusion, pelletisation
	PROC21: Low energy manipulation of substances bound in materials and/ or articles
	ERC2: Formulation of preparations
	ERC3: Formulation in materials
	ERC5: Industrial use resulting in inclusion into or onto a matrix
	ERC6c: Industrial use of monomers for manufacture of thermoplastics

2.1 Contributing scenario controlling worker exposure for:

PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PROC21

[polyether based on aromatic amine]

- Industrial end use

Product characteristics

Concentration of the Substance in Mixture/Article

Remarks : Covers the percentage of the substance in the product up to 100 % (unless stated differently)., Exceptions: Maximum 50% for PROC 7 and 10.

Physical Form (at time of use) : Liquid
solid for PROC 21 as bound in articles
Substance of unknown or variable composition, complex reaction products or biological material (UVCB)

Amount used

: Not applicable.

Frequency and duration of use

Exposure duration : 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor/Outdoor use

Technical conditions and measures

All contributing scenarios at product temperatures ABOVE 83.3 °C:

Provide extraction ventilation at points where emissions occur.

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

Wear suitable gloves tested to EN374. Wear suitable eye protection if exposure to the eyes may be possible, e.g. due to splashing, working overhead or when the face of the worker needs to be close to the source.

All contributing scenarios at product temperatures ABOVE 83.3 °C:

If above technical/organisational control measures are not feasible, then adopt following PPE: Wear a respirator conforming to EN140 with Type A filter or better. OR: Demonstrate, e.g. by workplace monitoring, that exposures are below the relevant worker DNEL values for acute and long-term.

2.2 Contributing scenario controlling worker exposure for:

PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PC1, PC9a, PC21, PC32

[Tris(1-chloroisopropyl)phosphate]**- Use of coatings, adhesives, sealants and elastomers (CASE): Industrial****Product characteristics**

Concentration of the Substance in Mixture/Article

All PROCs	: <= 30%
Molar Mass	: 327,57 g/mol
Vapour pressure	: 0,00001 hPa
Physical Form (at time of use)	: Low volatile liquid

Frequency and duration of use

General exposures : 8 hours/day

Human factors not influenced by risk management

Skin Absorption : 40 %

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor
Remarks : Covers use at ambient temperatures.

Technical conditions and measures**PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14**

Local exhaust ventilation is required.

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

Wear suitable protective clothing. Wear rubber boots. Wear suitable gloves tested to EN374.

These general measures are mandatory for all contributing scenarios.

General advice

Irrespective of the stated risk management measures respiratory protection is generally recommended for spraying applications.

2.3 Contributing scenario controlling worker exposure for:**PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC14, PROC21, PC32****[Tris(1-chloroisopropyl)phosphate]****- Use in flexible foam: Industrial****Product characteristics**

Concentration of the Substance in Mixture/Article

All PROCs	: <= 30%
Physical Form (at time of use)	: Low volatile liquid

Frequency and duration of use

General exposures : 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor
Remarks : Covers use at ambient temperatures.

Technical conditions and measures

Handle substance within a closed system. Transfer via enclosed lines.

These general measures are mandatory for all contributing scenarios. Additional measures are specific for the following contributing scenarios:

PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC14, PROC21

Local exhaust ventilation is required.

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

Use suitable respiratory protection. Wear suitable gloves tested to EN374. Wear eye/face protection.

These general measures are mandatory for all contributing scenarios.

2.4 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC21, PC32 [Tris(1-chloroisopropyl)phosphate] - Use in rigid foam: Industrial

Product characteristics

Concentration of the Substance in Mixture/Article

All PROCs : ≤ 30%

Physical Form (at time of use) : Low volatile liquid

Frequency and duration of use

General exposures : 8 hours/day

Human factors not influenced by risk management

Skin Absorption : 40 %

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Process Temperature : < 140 °C, worst case

Technical conditions and measures

Provide adequate ventilation.

These general measures are mandatory for all contributing scenarios. Additional measures are specific for the following contributing scenarios:

PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC21

Local exhaust ventilation is required.

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

Wear suitable gloves tested to EN374. Use suitable respiratory protection.

These general measures are mandatory for all contributing scenarios. Additional measures are specific for the following contributing scenarios:

PROC7: Industrial spraying

Wear suitable protective clothing. Wear rubber boots.

**2.5 Contributing scenario controlling worker exposure for:
PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC14, PROC21
[Tris(1-chloroisopropyl)phosphate]
- Foam granules and rebound PUR Foam: Industrial**

Product characteristics

Concentration of the Substance in Mixture/Article

All PROCs	: <= 30%
Molar Mass	: 327,57 g/mol
Physical Form (at time of use)	: Low volatile liquid

Frequency and duration of use

General exposures : 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor	: Indoor
Remarks	: Covers use at ambient temperatures.

Technical conditions and measures

Use product only in closed system. Dust must be extracted directly at the point of origin.

These general measures are mandatory for all contributing scenarios. Additional measures are specific for the following contributing scenarios:

PROC8a, PROC8b, PROC9, PROC21

Local exhaust ventilation is required.

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

Wear suitable gloves tested to EN374.

These general measures are mandatory for all contributing scenarios.

3. Exposure estimation and reference to its source

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterisation ratio (Exposure value/DNEL)
2.1 PROC 1	*		long term, inhalation	1,85 mg/m ³	0,47
2.1 PROC 2	*		long term, inhalation	1,85 mg/m ³	0,47

2.1 PROC 3	*		long term, inhalation	1,85 mg/m ³	0,47
2.1 PROC 4	*		long term, inhalation	1,85 mg/m ³	0,47
2.1 PROC 5	*		long term, inhalation	1,85 mg/m ³	0,47
2.1 PROC 7	Measured value		long term, inhalation	0,87 mg/m ³	0,22
2.1 PROC 8a	*		long term, inhalation	1,85 mg/m ³	0,47
2.1 PROC 8b	*		long term, inhalation	1,85 mg/m ³	0,47
2.1 PROC 9	*		long term, inhalation	1,85 mg/m ³	0,47
2.1 PROC 10	Measured value		long term, inhalation	0,87 mg/m ³	0,22
2.1 PROC 13	*		long term, inhalation	1,85 mg/m ³	0,47
2.1 PROC 14	*		long term, inhalation	1,85 mg/m ³	0,47
2.1 PROC 21	*		long term, inhalation	1,85 mg/m ³	0,47
2.1 PROC 1	ECETOC TRA		long term, dermal	0,34 mg/kg body weight/day	0,05
2.1 PROC 2	ECETOC TRA		long term, dermal	1,37 mg/kg body weight/day	0,20
2.1 PROC 3	ECETOC TRA		long term, dermal	0,34 mg/kg body weight/day	0,05
2.1 PROC 4	ECETOC TRA	Gloves	long term, dermal	1,37 mg/kg body weight/day	0,20
2.1 PROC 5	ECETOC TRA	Gloves	long term, dermal	2,74 mg/kg body weight/day	0,40
2.1 PROC 7	ECETOC TRA	Gloves	long term, dermal	4,29 mg/kg body weight/day	0,61
2.1 PROC 8a	ECETOC TRA	Gloves	long term, dermal	2,74 mg/kg body weight/day	0,40
2.1 PROC 8b	ECETOC TRA	Gloves	long term, dermal	1,37 mg/kg body weight/day	0,20
2.1 PROC 9	ECETOC TRA	Gloves	long term, dermal	1,37 mg/kg body weight/day	0,20
2.1 PROC 10	ECETOC TRA	Gloves	long term, dermal	2,74 mg/kg body weight/day	0,40
2.1 PROC 13	ECETOC TRA	Gloves	long term, dermal	2,74 mg/kg body weight/day	0,40
2.1 PROC 14	ECETOC TRA	Gloves	long term, dermal	0,69 mg/kg body weight/day	0,10
2.1 PROC 21	ECETOC TRA		long term, dermal	2,83 mg/kg body weight/day	0,40

*For inhalation exposure the saturated vapour pressure was used for all PROCs.

For PROCs 7 and 10 a read-across was done using measured occupational hygiene data of MDI inhalation exposure during spraying

Based on the applied RMMs the risk towards humans and the environment is sufficiently controlled ($RCR \leq 1$).

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterisation ratio (Exposure value/DNEL)
2.2 PROC 1	ECETOC TRA v2.0		long term, inhalation	< 1,365 mg/m ³	< 1
2.2 PROC 1	ECETOC TRA v2.0		short term, inhalation	< 2,73 mg/m ³	< 1
2.2 PROC 1	ECETOC TRA v2.0		long term, dermal	< 1,371 mg/kg body weight/day	< 1
2.2 PROC 1	ECETOC TRA v2.0		short term, dermal	< 2,742 mg/kg body weight/day	< 1
2.2 PROC 2	ECETOC TRA v2.0		long term, inhalation	1,365 mg/m ³	< 1
2.2 PROC 2	ECETOC TRA v2.0		short term, inhalation	2,73 mg/m ³	< 1
2.2 PROC 2	ECETOC TRA v2.0		long term, dermal	1,371 mg/kg body weight/day	< 1
2.2 PROC 2	ECETOC TRA v2.0		short term, dermal	2,742 mg/kg body weight/day	< 1

2.2 PROC 3	ECETOC TRA v2.0		long term, inhalation	1,365 mg/m ³	< 1
2.2 PROC 3	ECETOC TRA v2.0		short term, inhalation	2,73 mg/m ³	< 1
2.2 PROC 3	ECETOC TRA v2.0		long term, dermal	< 1,371 mg/kg body weight/day	< 1
2.2 PROC 3	ECETOC TRA v2.0		short term, dermal	< 2,742 mg/kg body weight/day	< 1
2.2 PROC 7	ECETOC TRA v2.0		long term, inhalation	< 1,365 mg/m ³	< 1
2.2 PROC 7	ECETOC TRA v2.0		short term, inhalation	< 2,73 mg/m ³	< 1
2.2 PROC 7	ECETOC TRA v2.0		long term, dermal	0,064 mg/kg body weight/day	< 1
2.2 PROC 7	ECETOC TRA v2.0		short term, dermal	< 2,742 mg/kg body weight/day	< 1
2.2 All other PROCs	ECETOC TRA v2.0		long term, inhalation	< 1,365 mg/m ³	< 1
2.2 All other PROCs	ECETOC TRA v2.0		short term, inhalation	< 2,73 mg/m ³	< 1
2.2 All other PROCs	ECETOC TRA v2.0		long term, dermal	< 1,371 mg/kg body weight/day	< 1
2.2 All other PROCs	ECETOC TRA v2.0		short term, dermal	< 2,742 mg/kg body weight/day	< 1

Based on the applied RMMs the risk towards humans is sufficiently controlled (RCR ≤ 1).

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterisation ratio (Exposure value/DNEL)
2.3 PROC 1 PROC 3	ECETOC TRA v2.0		long term, inhalation	< 1,365 mg/m ³	< 1
2.3 PROC 1 PROC 3	ECETOC TRA v2.0		short term, inhalation	< 2,73 mg/m ³	< 1
2.3 PROC 1 PROC 3	ECETOC TRA v2.0		long term, dermal	< 1,371 mg/kg body weight/day	< 1
2.3 PROC 1 PROC 3	ECETOC TRA v2.0		short term, dermal	< 2,73 mg/kg body weight/day	< 1
2.3 PROC 2	ECETOC TRA v2.0		long term, inhalation	1,365 mg/m ³	< 1
2.3 PROC 2	ECETOC TRA v2.0		short term, inhalation	2,73 mg/m ³	< 1
2.3 PROC 2	ECETOC TRA v2.0		long term, dermal	1,371 mg/kg body weight/day	< 1
2.3 PROC 2	ECETOC TRA v2.0		short term, dermal	2,73 mg/kg body weight/day	< 1
2.3 All other PROCs	ECETOC TRA v2.0		long term, inhalation	< 1,365 mg/m ³	< 1
2.3 All other PROCs	ECETOC TRA v2.0		short term, inhalation	< 2,73 mg/m ³	< 1
2.3 All other PROCs	ECETOC TRA v2.0		long term, dermal	< 1,371 mg/kg body weight/day	< 1
2.3 All other PROCs	ECETOC TRA v2.0		short term, dermal	< 2,73 mg/kg body weight/day	< 1

Based on the applied RMMs the risk towards humans is sufficiently controlled (RCR ≤ 1).

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterisation ratio (Exposure value/DNEL)
2.4 PROC 1	ECETOC TRA v2.0		long term, inhalation	< 1,365 mg/m ³	< 1
2.4 PROC 1	ECETOC TRA v2.0		short term, inhalation	< 2,73 mg/m ³	< 1
2.4 PROC 1	ECETOC TRA v2.0		long term, dermal	< 1,371 mg/kg body weight/day	< 1
2.4 PROC 1	ECETOC TRA v2.0		short term, dermal	< 2,742 mg/kg body weight/day	< 1
2.4 PROC 2	ECETOC TRA v2.0		long term, inhalation	1,365 mg/m ³	< 1
2.4 PROC 2	ECETOC TRA v2.0		short term, inhalation	2,73 mg/m ³	< 1

2.4 PROC 2	ECETOC TRA v2.0		long term, dermal	1,371 mg/kg body weight/day	< 1
2.4 PROC 2	ECETOC TRA v2.0		short term, dermal	2,742 mg/kg body weight/day	< 1
2.4 PROC 3	ECETOC TRA v2.0		long term, inhalation	1,365 mg/m ³	< 1
2.4 PROC 3	ECETOC TRA v2.0		short term, inhalation	2,73 mg/m ³	< 1
2.4 PROC 3	ECETOC TRA v2.0		long term, dermal	< 1,371 mg/kg body weight/day	< 1
2.4 PROC 3	ECETOC TRA v2.0		short term, dermal	< 2,742 mg/kg body weight/day	< 1
2.4 PROC 4 PROC 5 PROC 8a PROC 8b PROC 9 PROC 21	ECETOC TRA v2.0		long term, inhalation	< 1,365 mg/m ³	< 1
2.4 PROC 4 PROC 5 PROC 8a PROC 8b PROC 9 PROC 21	ECETOC TRA v2.0		short term, inhalation	< 2,73 mg/m ³	< 1
2.4 PROC 4 PROC 5 PROC 8a PROC 8b PROC 9 PROC 21	ECETOC TRA v2.0		long term, dermal	< 1,371 mg/kg body weight/day	< 1
2.4 PROC 4 PROC 5 PROC 8a PROC 8b PROC 9 PROC 21	ECETOC TRA v2.0		short term, dermal	< 2,742 mg/kg body weight/day	< 1
2.4 PROC 7	ECETOC TRA v2.0		long term, inhalation	< 1,365 mg/m ³	< 1
2.4 PROC 7	ECETOC TRA v2.0		short term, inhalation	< 2,73 mg/m ³	< 1
2.4 PROC 7	ECETOC TRA v2.0		long term, dermal	0,064 mg/kg body weight/day	< 1
2.4 PROC 7	ECETOC TRA v2.0		short term, dermal	< 2,742 mg/kg body weight/day	< 1

Based on the applied RMMs the risk towards humans is sufficiently controlled (RCR ≤ 1).

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterisation ratio (Exposure value/DNEL)
2.5 PROC 1 PROC 4 PROC 5 PROC 14	ECETOC TRA v2.0		long term, inhalation	< 1,365 mg/m ³	< 1
2.5 PROC 1 PROC 4 PROC 5 PROC 14	ECETOC TRA v2.0		short term, inhalation	< 2,73 mg/m ³	< 1
2.5 PROC 1 PROC 4 PROC 5 PROC 14	ECETOC TRA v2.0		long term, dermal	< 1,371 mg/kg body weight/day	< 1
2.5 PROC 1 PROC 4 PROC 5 PROC 14	ECETOC TRA v2.0		short term, dermal	< 2,742 mg/kg body weight/day	< 1
2.5 PROC 2	ECETOC TRA v2.0		long term, inhalation	1,365 mg/m ³	< 1
2.5 PROC 2	ECETOC TRA v2.0		short term, inhalation	2,73 mg/m ³	< 1
2.5 PROC 2	ECETOC TRA v2.0		long term, dermal	1,371 mg/kg body weight/day	< 1
2.5 PROC 2	ECETOC TRA v2.0		short term, dermal	2,742 mg/kg body weight/day	< 1
2.5 PROC 3	ECETOC TRA v2.0		long term, inhalation	1,365 mg/m ³	< 1

2.5 PROC 3	ECETOC TRA v2.0		short term, inhalation	2,73 mg/m ³	< 1
2.5 PROC 3	ECETOC TRA v2.0		long term, dermal	< 1,371 mg/kg body weight/day	< 1
2.5 PROC 3	ECETOC TRA v2.0		short term, dermal	< 2,742 mg/kg body weight/day	< 1
2.5 PROC 8a PROC 8b PROC 9 PROC 21	ECETOC TRA v2.0		long term, inhalation	< 1,365 mg/m ³	< 1
2.5 PROC 8a PROC 8b PROC 9 PROC 21	ECETOC TRA v2.0		short term, inhalation	< 2,73 mg/m ³	< 1
2.5 PROC 8a PROC 8b PROC 9 PROC 21	ECETOC TRA v2.0		long term, dermal	< 1,371 mg/kg body weight/day	< 1
2.5 PROC 8a PROC 8b PROC 9 PROC 21	ECETOC TRA v2.0		short term, dermal	< 2,742 mg/kg body weight/day	< 1

Based on the applied RMMs the risk towards humans is sufficiently controlled (RCR ≤ 1).

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

The risk management measures given in this exposure scenario apply to the specified substance in a concentration as indicated in the scenario. The concentration of the substance in the product may differ. A downstream user should evaluate if the risk management measures may be adapted accordingly.

A downstream user may evaluate whether he operates within the conditions set in the exposure scenario by using the information provided in section 2. This evaluation may be based on an expert judgement or on the utilisation of risk assessment tools that are recommended by ECHA.

polyether based on aromatic amine

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

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

Further information on the assumptions contained in this Exposure Scenario can be found at: www.ISOPA.org - "ISOPA interpretation on selection of Use Descriptors"

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