

Methyl acetate

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ANNEX: EXPOSURE SCENARIOS

Exposure Scenario 1

Exposure Scenario

Table 1: Description of exposure scenario

1. Title			
Free short title	Manufacture of the substance		
Systematic title based on use descriptor	ERC 1; PROC 1, 2, 3, 4, 8a, 8b, and 15; SU 8 and 9		
Processes, tasks activities covered	Manufacture of the substance. Includes recycling / recovery, material transfers, storage, maintenance, loading, sampling and associated laboratory activities		
Exposure assessment methodology	Tool used: ECETOC TRA workers (v2.3) modified ¹		
2. Operational conditions and risk management measures			
2.1 Control of workers exposure for PROC 1, 2, 3, and 4			
Frequency and duration of use			
Duration of exposure	> 4	Hours/day	
Frequency of exposure	≤ 240	Days/year	
Product characteristics			
Physical state of the product	liquid		
Concentration of substance in product	100	%	
Vapour pressure of substance	228	hPa	
Amounts used			
			Not relevant in ECETOC TRA
Human factors not influenced by risk management			
Exposed body parts dermal	Palm of one hand (240 cm ²)		Relevant for PROC 1 and 3
	Palm of both hands (480 cm ²)		Relevant for PROC 2 and 4
Other given operational conditions affecting workers exposure			
Domain	Industrial		
Inside/outside	Inside		
Technical conditions and measures at process level (source) to prevent release			
None			
Conditions and measures to control dispersion from source towards the worker			
Local exhaust ventilation required	No		Relevant for PROC 1 and 2
	Yes		PROC 3 and 4: Effectiveness: 90%
Organisational measures to prevent /limit releases, dispersion and exposure			
			Not relevant in ECETOC TRA
Conditions and measures related to personal protection, hygiene and health evaluation			
Respiratory protection required	No		
Use of suitable gloves	No		
2.2 Control of workers exposure for PROC 8a and 8b			
Frequency and duration of use			
Duration of exposure	> 4	Hours/day	
Frequency of exposure	≤ 240	Days/year	
Product characteristics (including package design affecting exposure)			
Physical state of the product	liquid		

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Concentration of substance in product	100	%	
Vapour pressure of substance	228	hPa	
Amounts used			
			Not relevant in ECETOC TRA
Human factors not influenced by risk management			
Exposed body parts dermal	Palm of both hands (480 cm ²)		Relevant for PROC 8b
	Both hands (960 cm ²)		Relevant for PROC 8a
Other given operational conditions affecting workers exposure			
Domain	Industrial		
Inside/outside	Inside		
Technical conditions and measures at process level (source) to prevent release			
None			
Conditions and measures to control dispersion from source towards the worker			
Local exhaust ventilation required	Yes		PROC 8b: Effectiveness: 97 % PROC 8a: Effectiveness: 90%
Organisational measures to prevent /limit releases, dispersion and exposure			
			Not relevant in ECETOC TRA
Conditions and measures related to personal protection, hygiene and health evaluation			
Respiratory protection required	No		
Use of suitable gloves	No		
2.3 Control of workers exposure for PROC 15			
Frequency and duration of use			
Duration of exposure	> 4	Hours/day	
Frequency of exposure	≤ 240	Days/year	
Product characteristics (including package design affecting exposure)			
Physical state of the product	liquid		
Concentration of substance in product	100	%	
Vapour pressure of substance	228	hPa	
Amounts used			
			Not relevant in ECETOC TRA
Human factors not influenced by risk management			
Exposed body parts dermal	Palm of one hand (240cm ²)		
Other given operational conditions affecting workers exposure			
Domain	Industrial		
Inside/outside	Inside		
Technical conditions and measures at process level (source) to prevent release			
None			
Conditions and measures to control dispersion from source towards the worker			
Local exhaust ventilation required	No		
Organisational measures to prevent /limit releases, dispersion and exposure			
			Not relevant in ECETOC TRA
Conditions and measures related to personal protection, hygiene and health evaluation			
Respiratory protection required	No		
Use of suitable gloves	No		

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- ¹ LEV: The LEV exposure modifying factors for dermal exposure implemented in the ECETOC TRA v2.3 are not considered
- RCR combined: RCR combined is calculated following the recommendation in the ECHA guidance document "Guidance on information requirements and chemical safety assessment – Part E: Risk characterization"

Exposure Estimation

Table 2: Estimated exposure for workers – PROC 1

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	0.34	mg/kg bw/d	
Long-term exposure, systemic, inhalative	0.03	mg/m ³	
Short-term exposure, systemic, dermal	0.34	mg/kg bw/d	
Short-term exposure, systemic, inhalative	0.06	mg/m ³	See 9. general remarks

Table 3: Estimated exposure for workers – PROC 2

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	1.37	mg/kg bw/d	
Long-term exposure, systemic, inhalative	154.4	mg/m ³	
Short-term exposure, systemic, dermal	1.37	mg/kg bw/d	
Short-term exposure, systemic, inhalative	308.8	mg/m ³	See 9. general remarks

Table 4: Estimated exposure for workers – PROC 3

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	0.34	mg/kg bw/d	
Long-term exposure, systemic, inhalative	30.9	mg/m ³	
Short-term exposure, systemic, dermal	0.34	mg/kg bw/d	
Short-term exposure, systemic, inhalative	61.8	mg/m ³	See 9. general remarks

Table 5: Estimated exposure for workers – PROC 4

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	6.86	mg/kg bw/d	
Long-term exposure, systemic, inhalative	30.9	mg/m ³	
Short-term exposure, systemic, dermal	6.86	mg/kg bw/d	
Short-term exposure, systemic, inhalative	61.8	mg/m ³	See 9. general remarks

Table 6: Estimated exposure for workers – PROC 8a

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	13.7	mg/kg bw/d	
Long-term exposure, systemic, inhalative	77.2	mg/m ³	
Short-term exposure, systemic, dermal	13.7	mg/kg bw/d	
Short-term exposure, systemic, inhalative	154.4	mg/m ³	See 9. general remarks

Table 7: Estimated exposure for workers – PROC 8b

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	6.86	mg/kg bw/d	
Long-term exposure, systemic, inhalative	13.9	mg/m ³	
Short-term exposure, systemic, dermal	6.86	mg/kg bw/d	
Short-term exposure, systemic, inhalative	27.8	mg/m ³	See 9. general remarks

Table 8: Estimated exposure for workers – PROC 15

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	0.34	mg/kg bw/d	
Long-term exposure, systemic, inhalative	154.4	mg/m ³	

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Short-term exposure, systemic, dermal	0.34	mg/kg bw/d	
Short-term exposure, systemic, inhalative	308.8	mg/m ³	See 9. general remarks

Exposure Scenario 2

Exposure Scenario

Table 9: Description of exposure scenario

1. Title			
Free short title	Distribution of the substance		
Systematic title based on use descriptor	ERC 1 and 2; PROC 1, 2, 3, 4, 8a, 8b, 9 and 15; SU 8 and 9		
Processes, tasks activities covered	Loading and repacking of the substance, including its distributing and associated laboratory activities		
Exposure assessment methodology	Tool used: ECETOC TRA workers (v2.3) modified ¹		
2. Operational conditions and risk management measures			
2.1 Control of workers exposure for PROC 1, 2, 3, and 4			
Frequency and duration of use			
Duration of exposure	> 4	Hours/day	
Frequency of exposure	≤ 240	Days/year	
Product characteristics			
Physical state of the product	liquid		
Concentration of substance in product	100	%	
Vapour pressure of substance	228	hPa	
Amounts used			
			Not relevant in ECETOC TRA
Human factors not influenced by risk management			
Exposed body parts dermal	Palm of one hand (240 cm ²)		Relevant for PROC 1 and 3
	Palm of both hands (480 cm ²)		Relevant for PROC 2 and 4
Other given operational conditions affecting workers exposure			
Domain	Industrial		
Inside/outside	Inside		
Technical conditions and measures at process level (source) to prevent release			
None			
Conditions and measures to control dispersion from source towards the worker			
Local exhaust ventilation required	No		Relevant for PROC 1 and 2
	Yes		PROC 3 and 4: Effectiveness: 90%
Organisational measures to prevent /limit releases, dispersion and exposure			
			Not relevant in ECETOC TRA
Conditions and measures related to personal protection, hygiene and health evaluation			
Respiratory protection required	No		
Use of suitable gloves	No		
2.2 Control of workers exposure for PROC 8a, 8b, and 9			
Frequency and duration of use			
Duration of exposure	> 4	Hours/day	
Frequency of exposure	≤ 240	Days/year	
Product characteristics (including package design affecting exposure)			
Physical state of the product	liquid		

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Concentration of substance in product	100	%	
Vapour pressure of substance	228	hPa	
Amounts used			
			Not relevant in ECETOC TRA
Human factors not influenced by risk management			
Exposed body parts dermal	Palm of both hands (480 cm ²)		Relevant for PROC 8b and 9
	Both hands (960 cm ²)		Relevant for PROC 8a
Other given operational conditions affecting workers exposure			
Domain	Industrial		
Inside/outside	Inside		
Technical conditions and measures at process level (source) to prevent release			
None			
Conditions and measures to control dispersion from source towards the worker			
Local exhaust ventilation required	Yes		PROC 8b: Effectiveness: 97 % PROC 8a and 9: Effectiveness: 90%
Organisational measures to prevent /limit releases, dispersion and exposure			
			Not relevant in ECETOC TRA
Conditions and measures related to personal protection, hygiene and health evaluation			
Respiratory protection required	No		
Use of suitable gloves	No		
2.3 Control of workers exposure for PROC 15			
Frequency and duration of use			
Duration of exposure	> 4	Hours/day	
Frequency of exposure	≤ 240	Days/year	
Product characteristics (including package design affecting exposure)			
Physical state of the product	liquid		
Concentration of substance in product	100	%	
Vapour pressure of substance	228	hPa	
Amounts used			
			Not relevant in ECETOC TRA
Human factors not influenced by risk management			
Exposed body parts dermal	Palm of one hand (240cm ²)		
Other given operational conditions affecting workers exposure			
Domain	Industrial		
Inside/outside	Inside		
Technical conditions and measures at process level (source) to prevent release			
None			
Conditions and measures to control dispersion from source towards the worker			
Local exhaust ventilation required	No		
Organisational measures to prevent /limit releases, dispersion and exposure			
			Not relevant in ECETOC TRA
Conditions and measures related to personal protection, hygiene and health evaluation			
Respiratory protection required	No		
Use of suitable gloves	No		

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- ¹ LEV: The LEV exposure modifying factors for dermal exposure implemented in the ECETOC TRA v2.0 are not considered
- RCR combined: RCR combined is calculated following the recommendation in the ECHA guidance document "Guidance on information requirements and chemical safety assessment – Part E: Risk characterization"

Exposure Estimation

Table 10: Estimated exposure for workers – PROC 1

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	0.34	mg/kg bw/d	
Long-term exposure, systemic, inhalative	0.03	mg/m ³	
Short-term exposure, systemic, dermal	0.34	mg/kg bw/d	
Short-term exposure, systemic, inhalative	0.06	mg/m ³	See 9. general remarks

Table 11: Estimated exposure for workers – PROC 2

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	1.37	mg/kg bw/d	
Long-term exposure, systemic, inhalative	154.4	mg/m ³	
Short-term exposure, systemic, dermal	1.37	mg/kg bw/d	
Short-term exposure, systemic, inhalative	308.8	mg/m ³	See 9. general remarks

Table 12: Estimated exposure for workers – PROC 3

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	0.34	mg/kg bw/d	
Long-term exposure, systemic, inhalative	30.9	mg/m ³	
Short-term exposure, systemic, dermal	0.34	mg/kg bw/d	
Short-term exposure, systemic, inhalative	61.8	mg/m ³	See 9. general remarks

Table 13: Estimated exposure for workers – PROC 4

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	6.86	mg/kg bw/d	
Long-term exposure, systemic, inhalative	30.9	mg/m ³	
Short-term exposure, systemic, dermal	6.86	mg/kg bw/d	
Short-term exposure, systemic, inhalative	61.8	mg/m ³	See 9. general remarks

Table 14: Estimated exposure for workers – PROC 8a

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	13.7	mg/kg bw/d	
Long-term exposure, systemic, inhalative	77.2	mg/m ³	
Short-term exposure, systemic, dermal	13.7	mg/kg bw/d	
Short-term exposure, systemic, inhalative	154.4	mg/m ³	See 9. general remarks

Table 15: Estimated exposure for workers – PROC 8b

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	6.86	mg/kg bw/d	
Long-term exposure, systemic, inhalative	13.9	mg/m ³	
Short-term exposure, systemic, dermal	6.86	mg/kg bw/d	
Short-term exposure, systemic, inhalative	27.8	mg/m ³	See 9. general remarks

Table 16: Estimated exposure for workers – PROC 9

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	6.86	mg/kg bw/d	

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Long-term exposure, systemic, inhalative	61.8	mg/m ³	
Short-term exposure, systemic, dermal	6.86	mg/kg bw/d	
Short-term exposure, systemic, inhalative	123.5	mg/m ³	See 9. general remarks

Table 17: Estimated exposure for workers – PROC 15

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	0.34	mg/kg bw/d	
Long-term exposure, systemic, inhalative	154.4	mg/m ³	
Short-term exposure, systemic, dermal	0.34	mg/kg bw/d	
Short-term exposure, systemic, inhalative	308.8	mg/m ³	See 9. general remarks

Exposure Scenario 3

Exposure Scenario

Table 18: Description of exposure scenario

1. Title			
Free short title	Formulation and (re)packing of substance and mixtures		
Systematic title based on use descriptor	ERC 2; PROC 1, 2, 3, 4, 5, 8a, 8b, 9, 14 and 15; SU 10		
Processes, tasks activities covered	Formulation, packing and repacking of the substance and its mixtures in batch or continuous operations, including storage, material transfers, mixing, large and small scale packing, maintenance and associated laboratory activities		
Exposure assessment methodology	Tool used: ECETOC TRA workers (v2.3) modified ¹		
2. Operational conditions and risk management measures			
2.1 Control of workers exposure for PROC 1, 2, 3, 4 and 5			
Frequency and duration of use			
Duration of exposure	> 4	Hours/day	
Frequency of exposure	≤ 240	Days/year	
Product characteristics			
Physical state of the product	liquid		
Concentration of substance in product	100	%	
Vapour pressure of substance	228	hPa	
Amounts used			
			Not relevant in ECETOC TRA
Human factors not influenced by risk management			
Exposed body parts dermal	Palm of one hand (240 cm ²)		Relevant for PROC 1 and 3
	Palm of both hands (480 cm ²)		Relevant for PROC 2, 4 and 5
Other given operational conditions affecting workers exposure			
Domain	Industrial		
Inside/outside	Inside		
Technical conditions and measures at process level (source) to prevent release			
None			
Conditions and measures to control dispersion from source towards the worker			
Local exhaust ventilation re-	No		Relevant for PROC 1 and 2

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quired	Yes		PROC 3, 4 and 5: Effectiveness: 90%
Organisational measures to prevent /limit releases, dispersion and exposure			
			Not relevant in ECETOC TRA
Conditions and measures related to personal protection, hygiene and health evaluation			
Respiratory protection required	No		
Use of suitable gloves	No		
2.2 Control of workers exposure for PROC 8a, 8b, and 9			
Frequency and duration of use			
Duration of exposure	> 4	Hours/day	
Frequency of exposure	≤ 240	Days/year	
Product characteristics (including package design affecting exposure)			
Physical state of the product	liquid		
Concentration of substance in product	100	%	
Vapour pressure of substance	228	hPa	
Amounts used			
			Not relevant in ECETOC TRA
Human factors not influenced by risk management			
Exposed body parts dermal	Palm of both hands (480 cm ²)		Relevant for PROC 8b and 9
	Both hands (960 cm ²)		Relevant for PROC 8a
Other given operational conditions affecting workers exposure			
Domain	Industrial		
Inside/outside	Inside		
Technical conditions and measures at process level (source) to prevent release			
none			
Conditions and measures to control dispersion from source towards the worker			
Local exhaust ventilation required	Yes		PROC 8b: Effectiveness: 97 % PROC 8a and 9: Effectiveness: 90%
Organisational measures to prevent /limit releases, dispersion and exposure			
			Not relevant in ECETOC TRA
Conditions and measures related to personal protection, hygiene and health evaluation			
Respiratory protection required	No		
Use of suitable gloves	No		
2.3 Control of workers exposure for PROC 14, 15			
Frequency and duration of use			
Duration of exposure	> 4	Hours/day	
Frequency of exposure	≤ 240	Days/year	
Product characteristics (including package design affecting exposure)			
Physical state of the product	liquid		
Concentration of substance in	100	%	

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product			
Vapour pressure of substance	228	hPa	
Amounts used			
			Not relevant in ECETOC TRA
Human factors not influenced by risk management			
Exposed body parts dermal	Palm of one hand (240cm ²)		Relevant for PROC 15
	Palm of both hands (480cm ²)		Relevant for PROC 14
Other given operational conditions affecting workers exposure			
Domain	Industrial		
Inside/outside	Inside		
Technical conditions and measures at process level (source) to prevent release			
None			
Conditions and measures to control dispersion from source towards the worker			
Local exhaust ventilation required	Yes		PROC 14: Effectiveness 90%
	No		Relevant for PROC 15
Organisational measures to prevent /limit releases, dispersion and exposure			
			Not relevant in ECETOC TRA
Conditions and measures related to personal protection, hygiene and health evaluation			
Respiratory protection required	No		
Use of suitable gloves	No		

¹ LEV: The LEV exposure modifying factors for dermal exposure implemented in the ECETOC TRA v2.3 are not considered
RCR combined: RCR combined is calculated following the recommendation in the ECHA guidance document "Guidance on information requirements and chemical safety assessment – Part E: Risk characterization"

Exposure Estimation

Table 19: Estimated exposure for workers – PROC 1

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	0.34	mg/kg bw/d	
Long-term exposure, systemic, inhalative	0.03	mg/m ³	
Short-term exposure, systemic, dermal	0.34	mg/kg bw/d	
Short-term exposure, systemic, inhalative	0.06	mg/m ³	See 9. general remarks

Table 20: Estimated exposure for workers – PROC 2

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	1.37	mg/kg bw/d	
Long-term exposure, systemic, inhalative	154.4	mg/m ³	
Short-term exposure, systemic, dermal	1.37	mg/kg bw/d	
Short-term exposure, systemic, inhalative	308.8	mg/m ³	See 9. general remarks

Table 21: Estimated exposure for workers – PROC 3

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	0.34	mg/kg bw/d	
Long-term exposure, systemic, inhalative	30.9	mg/m ³	
Short-term exposure, systemic, dermal	0.34	mg/kg bw/d	
Short-term exposure, systemic, inhalative	61.8	mg/m ³	See 9. general remarks

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Table 22: Estimated exposure for workers – PROC 4

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	6.86	mg/kg bw/d	
Long-term exposure, systemic, inhalative	30.9	mg/m ³	
Short-term exposure, systemic, dermal	6.86	mg/kg bw/d	
Short-term exposure, systemic, inhalative	61.8	mg/m ³	See 9. general remarks

Table 23: Estimated exposure for workers – PROC 5

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	13.7	mg/kg bw/d	
Long-term exposure, systemic, inhalative	77.2	mg/m ³	
Short-term exposure, systemic, dermal	13.7	mg/kg bw/d	
Short-term exposure, systemic, inhalative	154.4	mg/m ³	See 9. general remarks

Table 24: Estimated exposure for workers – PROC 8a

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	13.7	mg/kg bw/d	
Long-term exposure, systemic, inhalative	77.2	mg/m ³	
Short-term exposure, systemic, dermal	13.7	mg/kg bw/d	
Short-term exposure, systemic, inhalative	154.4	mg/m ³	See 9. general remarks

Table 25: Estimated exposure for workers – PROC 8b

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	6.86	mg/kg bw/d	
Long-term exposure, systemic, inhalative	13.9	mg/m ³	
Short-term exposure, systemic, dermal	6.86	mg/kg bw/d	
Short-term exposure, systemic, inhalative	27.8	mg/m ³	See 9. general remarks

Table 26: Estimated exposure for workers – PROC 9

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	6.86	mg/kg bw/d	
Long-term exposure, systemic, inhalative	61.8	mg/m ³	
Short-term exposure, systemic, dermal	6.86	mg/kg bw/d	
Short-term exposure, systemic, inhalative	123.5	mg/m ³	See 9. general remarks

Table 27: Estimated exposure for workers – PROC 14

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	3.43	mg/kg bw/d	
Long-term exposure, systemic, inhalative	77.2	mg/m ³	
Short-term exposure, systemic, dermal	3.43	mg/kg bw/d	
Short-term exposure, systemic, inhalative	154.4	mg/m ³	See 9. general remarks

Table 28: Estimated exposure for workers – PROC 15

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	0.34	mg/kg bw/d	
Long-term exposure, systemic, inhalative	154.4	mg/m ³	
Short-term exposure, systemic, dermal	0.34	mg/kg bw/d	
Short-term exposure, systemic, inhalative	308.8	mg/m ³	See 9. general remarks

Exposure Scenario 4

Exposure Scenario

Table 29: Description of exposure scenario

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1. Title			
Free short title	Use as an intermediate		
Systematic title based on use descriptor	ERC 6a; PROC 1, 2, 3 and 4; SU 8		
Processes, tasks activities covered	Industrial use resulting in manufacture of another substance		
Exposure assessment methodology	Tool used: ECETOC TRA workers (v2.3) modified ¹		
2. Operational conditions and risk management measures			
2.1 Control of workers exposure for PROC 1, 2, 3 and 4			
Frequency and duration of use			
Duration of exposure	> 4	Hours/day	
Frequency of exposure	≤ 240	Days/year	
Product characteristics			
Physical state of the product	liquid		
Concentration of substance in product	100	%	
Vapour pressure of substance	228	hPa	
Amounts used			
			Not relevant in ECETOC TRA
Human factors not influenced by risk management			
Exposed body parts dermal	Palm of one hand (240 cm ²)		Relevant for PROC 1 and 3
	Palm of both hands (480 cm ²)		Relevant for PROC 2 and 4
Other given operational conditions affecting workers exposure			
Domain	Industrial		
Inside/outside	Inside		
Technical conditions and measures at process level (source) to prevent release			
None			
Conditions and measures to control dispersion from source towards the worker			
Local exhaust ventilation required	No		Relevant for PROC 1 and 2
	Yes		PROC 3 and 4: Effectiveness: 90%
Organisational measures to prevent /limit releases, dispersion and exposure			
			Not relevant in ECETOC TRA
Conditions and measures related to personal protection, hygiene and health evaluation			
Respiratory protection required	No		
Use of suitable gloves	No		

¹ LEV: The LEV exposure modifying factors for dermal exposure implemented in the ECETOC TRA v2.3 are not considered

Preparation: Concentration of substance is considered following a linear approach; this applies for inhalative and dermal exposure values for liquids and solids

RCR combined: RCR combined is calculated following the recommendation in the ECHA guidance document "Guidance on information requirements and chemical safety assessment – Part E: Risk characterization"

Exposure Estimation

Table 30: Estimated exposure for workers – PROC 1

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	0.34	mg/kg bw/d	
Long-term exposure, systemic, inhalative	0.03	mg/m ³	
Short-term exposure, systemic, dermal	0.34	mg/kg bw/d	

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Short-term exposure, systemic, inhalative	0.06	mg/m ³	See 9. general remarks
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Table 31: Estimated exposure for workers – PROC 2

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	1.37	mg/kg bw/d	
Long-term exposure, systemic, inhalative	154.4	mg/m ³	
Short-term exposure, systemic, dermal	1.37	mg/kg bw/d	
Short-term exposure, systemic, inhalative	308.8	mg/m ³	See 9. general remarks

Table 32: Estimated exposure for workers – PROC 3

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	0.34	mg/kg bw/d	
Long-term exposure, systemic, inhalative	30.9	mg/m ³	
Short-term exposure, systemic, dermal	0.34	mg/kg bw/d	
Short-term exposure, systemic, inhalative	61.8	mg/m ³	See 9. general remarks

Table 33: Estimated exposure for workers – PROC 4

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	6.86	mg/kg bw/d	
Long-term exposure, systemic, inhalative	30.9	mg/m ³	
Short-term exposure, systemic, dermal	6.86	mg/kg bw/d	
Short-term exposure, systemic, inhalative	61.8	mg/m ³	See 9. general remarks

Exposure Scenario 5

Exposure Scenario

Table 9.34: Description of exposure scenario

1. Title			
Free short title	Industrial uses in coatings		
Systematic title based on use descriptor	ERC 4; PROC 1, 2, 3, 4, 5, 7, 8a, 8b, 9, 10, 13, 14 and 15; SU 3		
Processes, tasks activities covered	Covers the use in coatings (paints, inks, adhesives, etc) including exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application by spray, roller, brush, spreader by hand or similar methods, and film formation), and equipment cleaning, maintenance and associated laboratory activities.		
Exposure assessment methodology	Tool used: ECETOC TRA workers (v2.3) modified ¹		
2. Operational conditions and risk management measures			
2.1 Control of workers exposure for PROC 1, 2, 3, 4 and 5			
Frequency and duration of use			
Duration of exposure	> 4	Hours/day	
Frequency of exposure	≤ 240	Days/year	
Product characteristics			
Physical state of the product	liquid		
Concentration of substance in product	60	%	
Vapour pressure of substance	228	hPa	
Amounts used			
			Not relevant in ECETOC TRA
Human factors not influenced by risk management			

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Exposed body parts dermal	Palm of one hand (240 cm ²)		Relevant for PROC 1 and 3
	Palm of both hands (480 cm ²)		Relevant for PROC 2, 4 and 5
Other given operational conditions affecting workers exposure			
Domain	Industrial		
Inside/outside	Inside		
Technical conditions and measures at process level (source) to prevent release			
None			
Conditions and measures to control dispersion from source towards the worker			
Local exhaust ventilation required	No		Relevant for PROC 1 and 2
	Yes		PROC 3, 4 and 5: Effectiveness: 90%
Organisational measures to prevent /limit releases, dispersion and exposure			
			Not relevant in ECETOC TRA
Conditions and measures related to personal protection, hygiene and health evaluation			
Respiratory protection required	No		
Use of suitable gloves	No		
2.2 Control of workers exposure for PROC 8a, 8b and 9			
Frequency and duration of use			
Duration of exposure	> 4	Hours/day	
Frequency of exposure	≤ 240	Days/year	
Product characteristics (including package design affecting exposure)			
Physical state of the product	liquid		
Concentration of substance in product	60	%	
Vapour pressure of substance	228	hPa	
Amounts used			
			Not relevant in ECETOC TRA
Human factors not influenced by risk management			
Exposed body parts dermal	Palm of both hands (480 cm ²)		Relevant for PROC 8b and 9
	Both hands (960 cm ²)		Relevant for PROC 8a
Other given operational conditions affecting workers exposure			
Domain	Industrial		
Inside/outside	Inside		
Technical conditions and measures at process level (source) to prevent release			
none			
Conditions and measures to control dispersion from source towards the worker			
Local exhaust ventilation required	Yes		PROC 8a and 9: Effectiveness: 90% PROC 8b: Effectiveness: 97%
Organisational measures to prevent /limit releases, dispersion and exposure			
			Not relevant in ECETOC TRA
Conditions and measures related to personal protection, hygiene and health evaluation			
Respiratory protection required	No		
Use of suitable gloves	No		
2.3 Control of workers exposure for PROC 7, 10 and 13			
Frequency and duration of use			
Duration of exposure	> 4	Hours/day	

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Frequency of exposure	≤ 240	Days/year	
Product characteristics (including package design affecting exposure)			
Physical state of the product	liquid		
Concentration of substance in product	60	%	
Vapour pressure of substance	228	hPa	
Amounts used			
			Not relevant in ECETOC TRA
Human factors not influenced by risk management			
Exposed body parts dermal	Two hands and forearms (1500 cm ²)		Relevant for PROC 7
	Both hands (960 cm ²)		Relevant for PROC 10
	Palm of both hands (480 cm ²)		Relevant for PROC 13
Other given operational conditions affecting workers exposure			
Domain	Industrial		
Inside/outside	Inside		
Technical conditions and measures at process level (source) to prevent release			
none			
Conditions and measures to control dispersion from source towards the worker			
Local exhaust ventilation required	Yes		PROC 7: Effectiveness: 95% PROC 10 and 13: Effectiveness: 90%
Organisational measures to prevent /limit releases, dispersion and exposure			
			Not relevant in ECETOC TRA
Conditions and measures related to personal protection, hygiene and health evaluation			
Respiratory protection required	No		
Use of suitable gloves	No		
2.4 Control of workers exposure for PROC 14, 15			
Frequency and duration of use			
Duration of exposure	> 4	Hours/day	
Frequency of exposure	≤ 240	Days/year	
Product characteristics (including package design affecting exposure)			
Physical state of the product	liquid		
Concentration of substance in product	60	%	
Vapour pressure of substance	228	hPa	
Amounts used			
			Not relevant in ECETOC TRA
Human factors not influenced by risk management			
Exposed body parts dermal	Palm of one hand (240cm ²)		Relevant for PROC 15
	Palm of both hands (480cm ²)		Relevant for PROC 14
Other given operational conditions affecting workers exposure			
Domain	Industrial		
Inside/outside	Inside		
Technical conditions and measures at process level (source) to prevent release			
None			

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Conditions and measures to control dispersion from source towards the worker			
Local exhaust ventilation required	Yes		PROC 14: Effectiveness: 90%
	No		Relevant for PROC 15
Organisational measures to prevent /limit releases, dispersion and exposure			
			Not relevant in ECETOC TRA
Conditions and measures related to personal protection, hygiene and health evaluation			
Respiratory protection required	No		
Use of suitable gloves	No		

¹LEV: The LEV exposure modifying factors for dermal exposure implemented in the ECETOC TRA v2.3 are not considered

Preparation: concentration of substance is considered following a linear approach; this applies for inhalative and dermal exposure values for liquids and solids

RCR combined: RCR combined is calculated following the recommendation in the ECHA guidance document "Guidance on information requirements and chemical safety assessment – Part E: Risk characterization"

Exposure Estimation

Table 35: Estimated exposure for workers – PROC 1

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	0.21	mg/kg bw/d	
Long-term exposure, systemic, inhalative	0.02	mg/m ³	
Short-term exposure, systemic, dermal	0.21	mg/kg bw/d	
Short-term exposure, systemic, inhalative	0.04	mg/m ³	See 9. general remarks

Table 36: Estimated exposure for workers – PROC 2

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	0.82	mg/kg bw/d	
Long-term exposure, systemic, inhalative	92.6	mg/m ³	
Short-term exposure, systemic, dermal	0.82	mg/kg bw/d	
Short-term exposure, systemic, inhalative	185.3	mg/m ³	See 9. general remarks

Table 37: Estimated exposure for workers – PROC 3

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	0.21	mg/kg bw/d	
Long-term exposure, systemic, inhalative	18.5	mg/m ³	
Short-term exposure, systemic, dermal	0.21	mg/kg bw/d	
Short-term exposure, systemic, inhalative	37.1	mg/m ³	See 9. general remarks

Table 38: Estimated exposure for workers – PROC 4

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	4.11	mg/kg bw/d	
Long-term exposure, systemic, inhalative	18.5	mg/m ³	
Short-term exposure, systemic, dermal	4.11	mg/kg bw/d	
Short-term exposure, systemic, inhalative	37.1	mg/m ³	See 9. general remarks

Table 39: Estimated exposure for workers – PROC 5

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	8.23	mg/kg bw/d	
Long-term exposure, systemic, inhalative	46.3	mg/m ³	
Short-term exposure, systemic, dermal	8.23	mg/kg bw/d	
Short-term exposure, systemic, inhalative	92.6	mg/m ³	See 9. general remarks

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Table 40: Estimated exposure for workers – PROC 7

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	25.7	mg/kg bw/d	
Long-term exposure, systemic, inhalative	46.3	mg/m ³	
Short-term exposure, systemic, dermal	25.7	mg/kg bw/d	
Short-term exposure, systemic, inhalative	92.6	mg/m ³	See 9. general remarks

Table 41: Estimated exposure for workers – PROC 8a

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	8.23	mg/kg bw/d	
Long-term exposure, systemic, inhalative	46.3	mg/m ³	
Short-term exposure, systemic, dermal	8.23	mg/kg bw/d	
Short-term exposure, systemic, inhalative	92.6	mg/m ³	See 9. general remarks

Table 42: Estimated exposure for workers – PROC 8b

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	4.11	mg/kg bw/d	
Long-term exposure, systemic, inhalative	8.34	mg/m ³	
Short-term exposure, systemic, dermal	4.11	mg/kg bw/d	
Short-term exposure, systemic, inhalative	16.7	mg/m ³	See 9. general remarks

Table 43: Estimated exposure for workers – PROC 9

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	4.11	mg/kg bw/d	
Long-term exposure, systemic, inhalative	37.1	mg/m ³	
Short-term exposure, systemic, dermal	4.11	mg/kg bw/d	
Short-term exposure, systemic, inhalative	74.1	mg/m ³	See 9. general remarks

Table 44: Estimated exposure for workers – PROC 10

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	16.5	mg/kg bw/d	
Long-term exposure, systemic, inhalative	46.3	mg/m ³	
Short-term exposure, systemic, dermal	16.5	mg/kg bw/d	
Short-term exposure, systemic, inhalative	92.6	mg/m ³	See 9. general remarks

Table 45: Estimated exposure for workers – PROC 13

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	8.23	mg/kg bw/d	
Long-term exposure, systemic, inhalative	46.3	mg/m ³	
Short-term exposure, systemic, dermal	8.23	mg/kg bw/d	
Short-term exposure, systemic, inhalative	92.6	mg/m ³	See 9. general remarks

Table 46: Estimated exposure for workers – PROC 14

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	2.06	mg/kg bw/d	
Long-term exposure, systemic, inhalative	46.3	mg/m ³	
Short-term exposure, systemic, dermal	2.06	mg/kg bw/d	
Short-term exposure, systemic, inhalative	92.6	mg/m ³	See 9. general remarks

Table 47: Estimated exposure for workers – PROC 15

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	0.21	mg/kg bw/d	

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Long-term exposure, systemic, inhalative	92.6	mg/m ³	
Short-term exposure, systemic, dermal	0.21	mg/kg bw/d	
Short-term exposure, systemic, inhalative	185.3	mg/m ³	See 9. general remarks

Exposure Scenario 6

Exposure Scenario

Table 48: Description of exposure scenario

1. Title			
Free short title	Professional uses in coatings		
Systematic title based on use descriptor	ERC 8a, 8c, 8d, 8f; PROC 1, 2, 3, 4, 5, 8a, 8b, 10, 11, 13, 14, 15 and 19; SU 22		
Processes, tasks activities covered	Covers the use in coatings (paints, inks, adhesives, etc) including exposures during use (including product transfer and preparation, application by brush, spray by hand or similar methods) and equipment cleaning.		
Exposure assessment methodology	Tool used: ECETOC TRA workers (v2.3) modified ¹		
2. Operational conditions and risk management measures			
2.1 Control of workers exposure for PROC 1, 2, 3, 4 and 5			
Frequency and duration of use			
Duration of exposure	> 4	Hours/day	
Frequency of exposure	≤ 240	Days/year	
Product characteristics			
Physical state of the product	liquid		
Concentration of substance in product	50	%	
Vapour pressure of substance	228	hPa	
Amounts used			
			Not relevant in ECETOC TRA
Human factors not influenced by risk management			
Exposed body parts dermal	Palm of one hand (240 cm ²)		Relevant for PROC 1 and 3
	Palm of both hands (480 cm ²)		Relevant for PROC 2, 4 and 5
Other given operational conditions affecting workers exposure			
Domain	Professional		
Inside/outside	Inside		
Technical conditions and measures at process level (source) to prevent release			
None			
Conditions and measures to control dispersion from source towards the worker			
Local exhaust ventilation required	No		Relevant for PROC 1 and 2
	Yes		PROC 3, 4 and 5: Effectiveness: 80%
Organisational measures to prevent /limit releases, dispersion and exposure			
			Not relevant in ECETOC TRA
Conditions and measures related to personal protection, hygiene and health evaluation			
Respiratory protection required	No		
Use of suitable gloves	No		
2.2 Control of workers exposure for PROC 8a and 8b			
Frequency and duration of use			
Duration of exposure	> 4	Hours/day	

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Frequency of exposure	≤ 240	Days/year	
Product characteristics (including package design affecting exposure)			
Physical state of the product	liquid		
Concentration of substance in product	50	%	
Vapour pressure of substance	228	hPa	
Amounts used			
			Not relevant in ECETOC TRA
Human factors not influenced by risk management			
Exposed body parts dermal	Palm of both hands (480 cm ²)		Relevant for PROC 8b
	Both hands (960 cm ²)		Relevant for PROC 8a
Other given operational conditions affecting workers exposure			
Domain	Professional		
Inside/outside	Inside		
Technical conditions and measures at process level (source) to prevent release			
none			
Conditions and measures to control dispersion from source towards the worker			
Local exhaust ventilation required	Yes		PROC 8a: Effectiveness: 80% PROC 8a: Effectiveness: 90%
Organisational measures to prevent /limit releases, dispersion and exposure			
			Not relevant in ECETOC TRA
Conditions and measures related to personal protection, hygiene and health evaluation			
Respiratory protection required	No		
Use of suitable gloves	No		
2.3 Control of workers exposure for PROC 10 and 13			
Frequency and duration of use			
Duration of exposure	> 4	Hours/day	
Frequency of exposure	≤ 240	Days/year	
Product characteristics (including package design affecting exposure)			
Physical state of the product	liquid		
Concentration of substance in product	50	%	
Vapour pressure of substance	228	hPa	
Amounts used			
			Not relevant in ECETOC TRA
Human factors not influenced by risk management			
Exposed body parts dermal	Both hands (960 cm ²)		Relevant for PROC 10
	Palm of both hands (480 cm ²)		Relevant for PROC 13
Other given operational conditions affecting workers exposure			
Domain	Professional		
Inside/outside	Inside		
Technical conditions and measures at process level (source) to prevent release			
none			
Conditions and measures to control dispersion from source towards the worker			
Local exhaust ventilation required	Yes		PROC 10 and 13: Effectiveness: 80%

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Organisational measures to prevent /limit releases, dispersion and exposure			
			Not relevant in ECETOC TRA
Conditions and measures related to personal protection, hygiene and health evaluation			
Respiratory protection required	No		
Use of suitable gloves	No		
2.4 Control of workers exposure for PROC 11			
Frequency and duration of use			
Duration of exposure	1 - 4	Hours/day	
Frequency of exposure	≤ 240	Days/year	
Product characteristics (including package design affecting exposure)			
Physical state of the product	liquid		
Concentration of substance in product	50	%	
Vapour pressure of substance	228	hPa	
Amounts used			
			Not relevant in ECETOC TRA
Human factors not influenced by risk management			
Exposed body parts dermal	Two hands and forearms (1500cm ²)		
Other given operational conditions affecting workers exposure			
Domain	Professional		
Inside/outside	Inside		
Technical conditions and measures at process level (source) to prevent release			
none			
Conditions and measures to control dispersion from source towards the worker			
Local exhaust ventilation required	Yes		Effectiveness: 80%
Organisational measures to prevent /limit releases, dispersion and exposure			
			Not relevant in ECETOC TRA
Conditions and measures related to personal protection, hygiene and health evaluation			
Respiratory protection required	No		
Use of suitable gloves	Yes		Effectiveness: 80%
2.5 Control of workers exposure for PROC 14, 15			
Frequency and duration of use			
Duration of exposure	> 4	Hours/day	
Frequency of exposure	≤ 240	Days/year	
Product characteristics (including package design affecting exposure)			
Physical state of the product	liquid		
Concentration of substance in product	50	%	
Vapour pressure of substance	228	hPa	
Amounts used			
			Not relevant in ECETOC TRA
Human factors not influenced by risk management			
Exposed body parts dermal	Palm of one hand (240cm ²)		Relevant for PROC 15
	Palm of both hands (480cm ²)		Relevant for PROC 14
Other given operational conditions affecting workers exposure			
Domain	Professional		
Inside/outside	Inside		
Technical conditions and measures at process level (source) to prevent release			

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None			
Conditions and measures to control dispersion from source towards the worker			
Local exhaust ventilation required	Yes		PROC 14: Effectiveness: 80%
	No		Relevant for PROC 15
Organisational measures to prevent /limit releases, dispersion and exposure			
			Not relevant in ECETOC TRA
Conditions and measures related to personal protection, hygiene and health evaluation			
Respiratory protection required	No		
Use of suitable gloves	No		
2.6 Control of workers exposure for PROC 19			
Frequency and duration of use			
Duration of exposure	> 4	Hours/day	
Frequency of exposure	≤ 240	Days/year	
Product characteristics (including package design affecting exposure)			
Physical state of the product	liquid		
Concentration of substance in product	50	%	
Vapour pressure of substance	228	hPa	
Amounts used			
			Not relevant in ECETOC TRA
Human factors not influenced by risk management			
Exposed body parts dermal	1980cm ²		
Other given operational conditions affecting workers exposure			
Domain	Professional		
Inside/outside	Inside		
Technical conditions and measures at process level (source) to prevent release			
None			
Conditions and measures to control dispersion from source towards the worker			
Local exhaust ventilation required	Yes		Effectiveness: 80%
Organisational measures to prevent /limit releases, dispersion and exposure			
			Not relevant in ECETOC TRA
Conditions and measures related to personal protection, hygiene and health evaluation			
Respiratory protection required	No		
Use of suitable gloves	Yes		Effectiveness: 80%

¹ LEV: The LEV exposure modifying factors for dermal exposure implemented in the ECETOC TRA v2.3 are not considered
Preparation: concentration of substance is considered following a linear approach; this applies for inhalative and dermal exposure values for liquids and solids
RCR combined: RCR combined is calculated following the recommendation in the ECHA guidance document "Guidance on information requirements and chemical safety assessment – Part E: Risk characterization"

Exposure Estimation

Table 49: Estimated exposure for workers – PROC 1

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	0.17	mg/kg bw/d	
Long-term exposure, systemic, inhalative	0.15	mg/m ³	
Short-term exposure, systemic, dermal	0.17	mg/kg bw/d	
Short-term exposure, systemic, inhalative	0.31	mg/m ³	See 9. general remarks

Table 50: Estimated exposure for workers – PROC 2

Route of exposure	Concentrations	Justification
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	Value	Unit	
Long-term exposure, systemic, dermal	0.69	mg/kg bw/d	
Long-term exposure, systemic, inhalative	77.2	mg/m ³	
Short-term exposure, systemic, dermal	0.69	mg/kg bw/d	
Short-term exposure, systemic, inhalative	154.4	mg/m ³	See 9. general remarks

Table 51: Estimated exposure for workers – PROC 3

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	0.17	mg/kg bw/d	
Long-term exposure, systemic, inhalative	30.9	mg/m ³	
Short-term exposure, systemic, dermal	0.17	mg/kg bw/d	
Short-term exposure, systemic, inhalative	61.8	mg/m ³	See 9. general remarks

Table 52: Estimated exposure for workers – PROC 4

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	3.4	mg/kg bw/d	
Long-term exposure, systemic, inhalative	77.2	mg/m ³	
Short-term exposure, systemic, dermal	3.43	mg/kg bw/d	
Short-term exposure, systemic, inhalative	154.4	mg/m ³	See 9. general remarks

Table 53: Estimated exposure for workers – PROC 5

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	6.86	mg/kg bw/d	
Long-term exposure, systemic, inhalative	154.4	mg/m ³	
Short-term exposure, systemic, dermal	6.86	mg/kg bw/d	
Short-term exposure, systemic, inhalative	308.8	mg/m ³	See 9. general remarks

Table 54: Estimated exposure for workers – PROC 8a

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	6.86	mg/kg bw/d	
Long-term exposure, systemic, inhalative	154.4	mg/m ³	
Short-term exposure, systemic, dermal	6.86	mg/kg bw/d	
Short-term exposure, systemic, inhalative	308.8	mg/m ³	See 9. general remarks

Table 55: Estimated exposure for workers – PROC 8b

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	3.43	mg/kg bw/d	
Long-term exposure, systemic, inhalative	38.6	mg/m ³	
Short-term exposure, systemic, dermal	3.42	mg/kg bw/d	
Short-term exposure, systemic, inhalative	77.2	mg/m ³	See 9. general remarks

Table 56: Estimated exposure for workers – PROC 10

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	13.7	mg/kg bw/d	
Long-term exposure, systemic, inhalative	154.4	mg/m ³	
Short-term exposure, systemic, dermal	13.7	mg/kg bw/d	
Short-term exposure, systemic, inhalative	308.8	mg/m ³	See 9. general remarks

Table 57: Estimated exposure for workers – PROC 11

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	10.7	mg/kg bw/d	
Long-term exposure, systemic, inhalative	185.3	mg/m ³	
Short-term exposure, systemic, dermal	10.7	mg/kg bw/d	

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Short-term exposure, systemic, inhalative	617.5	mg/m ³	See 9. general remarks
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Table 58: Estimated exposure for workers – PROC 13

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	6.86	mg/kg bw/d	
Long-term exposure, systemic, inhalative	77.2	mg/m ³	
Short-term exposure, systemic, dermal	6.86	mg/kg bw/d	
Short-term exposure, systemic, inhalative	154.4	mg/m ³	See 9. general remarks

Table 59: Estimated exposure for workers – PROC 14

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	1.71	mg/kg bw/d	
Long-term exposure, systemic, inhalative	154.4	mg/m ³	
Short-term exposure, systemic, dermal	1.71	mg/kg bw/d	
Short-term exposure, systemic, inhalative	308.8	mg/m ³	See 9. general remarks

Table 60: Estimated exposure for workers – PROC 15

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	0.17	mg/kg bw/d	
Long-term exposure, systemic, inhalative	77.2	mg/m ³	
Short-term exposure, systemic, dermal	0.17	mg/kg bw/d	
Short-term exposure, systemic, inhalative	154.4	mg/m ³	See 9. general remarks

Table 61: Estimated exposure for workers – PROC 19

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	14.1	mg/kg bw/d	
Long-term exposure, systemic, inhalative	154.4	mg/m ³	
Short-term exposure, systemic, dermal	14.1	mg/kg bw/d	
Short-term exposure, systemic, inhalative	308.8	mg/m ³	See 9. general remarks

Exposure Scenario 7

Exposure Scenario

Table 62: Description of exposure scenario

1. Title			
Free short title	Industrial uses in cleaning agents		
Systematic title based on use descriptor	ERC 4; PROC 1, 2, 3, 4, 7, 8a, 8b, 10 and 13; SU 3		
Processes, tasks activities covered	Covers the use as a component of cleaning products including transfer from storage, pouring/unloading from drums or containers. Exposures during mixing/diluting in the preparatory phase and cleaning activities (automated and by hand), related equipment cleaning and maintenance		
Exposure assessment methodology	Tool used: ECETOC TRA workers (v2.3) modified ¹		
2. Operational conditions and risk management measures			
2.1 Control of workers exposure for PROC 1, 2, 3 and 4			
Frequency and duration of use			
Duration of exposure	> 4	Hours/day	
Frequency of exposure	≤ 240	Days/year	
Product characteristics			
Physical state of the product	liquid		
Concentration of substance in	20	%	

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product			
Vapour pressure of substance	228	hPa	
Amounts used			
			Not relevant in ECETOC TRA
Human factors not influenced by risk management			
Exposed body parts dermal	Palm of one hand (240 cm ²)		Relevant for PROC 1 and 3
	Palm of both hands (480 cm ²)		Relevant for PROC 2 and 4
Other given operational conditions affecting workers exposure			
Domain	Industrial		
Inside/outside	Inside		
Technical conditions and measures at process level (source) to prevent release			
None			
Conditions and measures to control dispersion from source towards the worker			
Local exhaust ventilation required	No		
Organisational measures to prevent /limit releases, dispersion and exposure			
			Not relevant in ECETOC TRA
Conditions and measures related to personal protection, hygiene and health evaluation			
Respiratory protection required	No		
Use of suitable gloves	No		
2.2 Control of workers exposure for PROC 8a and 8b			
Frequency and duration of use			
Duration of exposure	> 4	Hours/day	
Frequency of exposure	≤ 240	Days/year	
Product characteristics (including package design affecting exposure)			
Physical state of the product	liquid		
Concentration of substance in product	20	%	
Vapour pressure of substance	228	hPa	
Amounts used			
			Not relevant in ECETOC TRA
Human factors not influenced by risk management			
Exposed body parts dermal	Palm of both hands (480 cm ²)		Relevant for PROC 8b
	Both hands (960 cm ²)		Relevant for PROC 8a
Other given operational conditions affecting workers exposure			
Domain	Industrial		
Inside/outside	Inside		
Technical conditions and measures at process level (source) to prevent release			
none			
Conditions and measures to control dispersion from source towards the worker			
Local exhaust ventilation required	No		
Organisational measures to prevent /limit releases, dispersion and exposure			
			Not relevant in ECETOC TRA
Conditions and measures related to personal protection, hygiene and health evaluation			
Respiratory protection required	No		
Use of suitable gloves	No		
2.3 Control of workers exposure for PROC 7, 10 and 13			
Frequency and duration of use			
Duration of exposure	> 4	Hours/day	

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Frequency of exposure	≤ 240	Days/year	
Product characteristics (including package design affecting exposure)			
Physical state of the product	liquid		
Concentration of substance in product	20	%	
Vapour pressure of substance	228	hPa	
Amounts used			
			Not relevant in ECETOC TRA
Human factors not influenced by risk management			
Exposed body parts dermal	Two hands and forearms (1500 cm ²)		Relevant for PROC 7
	Both hands (960 cm ²)		Relevant for PROC 10
	Palm of both hands (480 cm ²)		Relevant for PROC 13
Other given operational conditions affecting workers exposure			
Domain	Industrial		
Inside/outside	Inside		
Technical conditions and measures at process level (source) to prevent release			
none			
Conditions and measures to control dispersion from source towards the worker			
Local exhaust ventilation required	Yes		PROC 7: Effectiveness: 95%
	No		Relevant for PROC 10 and 13
Organisational measures to prevent /limit releases, dispersion and exposure			
			Not relevant in ECETOC TRA
Conditions and measures related to personal protection, hygiene and health evaluation			
Respiratory protection required	No		
Use of suitable gloves	No		

¹ LEV: The LEV exposure modifying factors for dermal exposure implemented in the ECETOC TRA v2.3 are not considered
Preparation: concentration of substance is considered following a linear approach; this applies for inhalative and dermal exposure values for liquids and solids
RCR combined: RCR combined is calculated following the recommendation in the ECHA guidance document "Guidance on information requirements and chemical safety assessment – Part E: Risk characterization"

Exposure Estimation

Table 63: Estimated exposure for workers – PROC 1

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	0.07	mg/kg bw/d	
Long-term exposure, systemic, inhalative	0.01	mg/m ³	
Short-term exposure, systemic, dermal	0.07	mg/kg bw/d	
Short-term exposure, systemic, inhalative	0.01	mg/m ³	See 9. general remarks

Table 64: Estimated exposure for workers – PROC 2

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	0.27	mg/kg bw/d	
Long-term exposure, systemic, inhalative	30.9	mg/m ³	
Short-term exposure, systemic, dermal	0.27	mg/kg bw/d	
Short-term exposure, systemic, inhalative	61.8	mg/m ³	See 9. general remarks

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Table 65: Estimated exposure for workers – PROC 3

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	0.07	mg/kg bw/d	
Long-term exposure, systemic, inhalative	61.8	mg/m ³	
Short-term exposure, systemic, dermal	0.17	mg/kg bw/d	
Short-term exposure, systemic, inhalative	61.8	mg/m ³	See 9. general remarks

Table 66: Estimated exposure for workers – PROC 4

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	1.37	mg/kg bw/d	
Long-term exposure, systemic, inhalative	61.8	mg/m ³	
Short-term exposure, systemic, dermal	3.43	mg/kg bw/d	
Short-term exposure, systemic, inhalative	154.4	mg/m ³	See 9. general remarks

Table 67: Estimated exposure for workers – PROC 7

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	8.57	mg/kg bw/d	
Long-term exposure, systemic, inhalative	15.4	mg/m ³	
Short-term exposure, systemic, dermal	8.57	mg/kg bw/d	
Short-term exposure, systemic, inhalative	30.9	mg/m ³	See 9. general remarks

Table 68: Estimated exposure for workers – PROC 8a

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	2.74	mg/kg bw/d	
Long-term exposure, systemic, inhalative	154.4	mg/m ³	
Short-term exposure, systemic, dermal	2.74	mg/kg bw/d	
Short-term exposure, systemic, inhalative	308.8	mg/m ³	See 9. general remarks

Table 69: Estimated exposure for workers – PROC 8b

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	1.37	mg/kg bw/d	
Long-term exposure, systemic, inhalative	92.6	mg/m ³	
Short-term exposure, systemic, dermal	1.37	mg/kg bw/d	
Short-term exposure, systemic, inhalative	185.3	mg/m ³	See 9. general remarks

Table 70: Estimated exposure for workers – PROC 10

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	5.49	mg/kg bw/d	
Long-term exposure, systemic, inhalative	154.4	mg/m ³	
Short-term exposure, systemic, dermal	5.49	mg/kg bw/d	
Short-term exposure, systemic, inhalative	308.8	mg/m ³	See 9. general remarks

Table 71: Estimated exposure for workers – PROC 13

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	2.74	mg/kg bw/d	
Long-term exposure, systemic, inhalative	154.4	mg/m ³	
Short-term exposure, systemic, dermal	2.74	mg/kg bw/d	
Short-term exposure, systemic, inhalative	308.8	mg/m ³	See 9. general remarks

Exposure Scenario 8

Exposure Scenario

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Table 72: Description of exposure scenario

1. Title			
Free short title	Professional uses in cleaning agents		
Systematic title based on use descriptor	ERC 8a, 8d; PROC 1, 2, 3, 4, 8a, 8b, 10, 11 and 13; SU 22		
Processes, tasks activities covered	Covers the use as a component of cleaning products including transfer from storage, pouring/unloading from drums or containers. Exposures during mixing/diluting in the preparatory phase and cleaning activities (automated and by hand)		
Exposure assessment methodology	Tool used: ECETOC TRA workers (v2.3) modified ¹		
2. Operational conditions and risk management measures			
2.1 Control of workers exposure for PROC 1, 2, 3 and 4			
Frequency and duration of use			
Duration of exposure	> 4	Hours/day	
Frequency of exposure	≤ 240	Days/year	
Product characteristics			
Physical state of the product	liquid		
Concentration of substance in product	50	%	
Vapour pressure of substance	228	hPa	
Amounts used			
			Not relevant in ECETOC TRA
Human factors not influenced by risk management			
Exposed body parts dermal	Palm of one hand (240 cm ²)		Relevant for PROC 1 and 3
	Palm of both hands (480 cm ²)		Relevant for PROC 2 and 4
Other given operational conditions affecting workers exposure			
Domain	Professional		
Inside/outside	Inside		
Technical conditions and measures at process level (source) to prevent release			
None			
Conditions and measures to control dispersion from source towards the worker			
Local exhaust ventilation required	No		Relevant for PROC 1, 2 and 3
	Yes		PROC 4: Effectiveness: 80%
Organisational measures to prevent /limit releases, dispersion and exposure			
			Not relevant in ECETOC TRA
Conditions and measures related to personal protection, hygiene and health evaluation			
Respiratory protection required	No		
Use of suitable gloves	No		
2.2 Control of workers exposure for PROC 8a and 8b			
Frequency and duration of use			
Duration of exposure	> 4	Hours/day	
Frequency of exposure	≤ 240	Days/year	
Product characteristics (including package design affecting exposure)			
Physical state of the product	liquid		
Concentration of substance in product	50	%	
Vapour pressure of substance	228	hPa	

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Amounts used			
			Not relevant in ECETOC TRA
Human factors not influenced by risk management			
Exposed body parts dermal	Palm of both hands (480 cm ²)		Relevant for PROC 8b
	Both hands (960 cm ²)		Relevant for PROC 8a
Other given operational conditions affecting workers exposure			
Domain	Professional		
Inside/outside	Inside		
Technical conditions and measures at process level (source) to prevent release			
none			
Conditions and measures to control dispersion from source towards the worker			
Local exhaust ventilation required	Yes		PROC 8a: Effectiveness: 80% PROC8b: Effectiveness: 90%
Organisational measures to prevent /limit releases, dispersion and exposure			
			Not relevant in ECETOC TRA
Conditions and measures related to personal protection, hygiene and health evaluation			
Respiratory protection required	No		
Use of suitable gloves	No		
2.3 Control of workers exposure for PROC 10 and 13			
Frequency and duration of use			
Duration of exposure	> 4	Hours/day	
Frequency of exposure	≤ 240	Days/year	
Product characteristics (including package design affecting exposure)			
Physical state of the product	liquid		
Concentration of substance in product	50	%	
Vapour pressure of substance	228	hPa	
Amounts used			
			Not relevant in ECETOC TRA
Human factors not influenced by risk management			
Exposed body parts dermal	Both hands (960 cm ²)		Relevant for PROC 10
	Palm of both hands (480 cm ²)		Relevant for PROC 13
Other given operational conditions affecting workers exposure			
Domain	Professional		
Inside/outside	Inside		
Technical conditions and measures at process level (source) to prevent release			
none			
Conditions and measures to control dispersion from source towards the worker			
Local exhaust ventilation required	Yes		Effectiveness: 80%
Organisational measures to prevent /limit releases, dispersion and exposure			
			Not relevant in ECETOC TRA
Conditions and measures related to personal protection, hygiene and health evaluation			
Respiratory protection required	No		
Use of suitable gloves	No		

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2.4 Control of workers exposure for PROC 11			
Frequency and duration of use			
Duration of exposure	1 - 4	Hours/day	
Frequency of exposure	≤ 240	Days/year	
Product characteristics (including package design affecting exposure)			
Physical state of the product	liquid		
Concentration of substance in product	50	%	
Vapour pressure of substance	228	hPa	
Amounts used			
			Not relevant in ECETOC TRA
Human factors not influenced by risk management			
Exposed body parts dermal	Two hands and forearms (1500cm ²)		
Other given operational conditions affecting workers exposure			
Domain	Professional		
Inside/outside	Inside		
Technical conditions and measures at process level (source) to prevent release			
none			
Conditions and measures to control dispersion from source towards the worker			
Local exhaust ventilation required	Yes		Effectiveness: 80%
Organisational measures to prevent /limit releases, dispersion and exposure			
			Not relevant in ECETOC TRA
Conditions and measures related to personal protection, hygiene and health evaluation			
Respiratory protection required	No		
Use of suitable gloves	Yes		Effectiveness: 80%

- ¹ LEV: The LEV exposure modifying factors for dermal exposure implemented in the ECETOC TRA v2.3 are not considered
- Preparation: concentration of substance is considered following a linear approach; this applies for inhalative and dermal exposure values for liquids and solids
- RCR combined: RCR combined is calculated following the recommendation in the ECHA guidance document "Guidance on information requirements and chemical safety assessment – Part E: Risk characterization"

Exposure Estimation

Table 73: Estimated exposure for workers – PROC 1

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	0.17	mg/kg bw/d	
Long-term exposure, systemic, inhalative	0.15	mg/m ³	
Short-term exposure, systemic, dermal	0.17	mg/kg bw/d	
Short-term exposure, systemic, inhalative	0.31	mg/m ³	See 9. general remarks

Table 74: Estimated exposure for workers – PROC 2

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	0.69	mg/kg bw/d	
Long-term exposure, systemic, inhalative	77.2	mg/m ³	
Short-term exposure, systemic, dermal	0.69	mg/kg bw/d	
Short-term exposure, systemic, inhalative	154.4	mg/m ³	See 9. general remarks

Table 75: Estimated exposure for workers – PROC 3

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Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	0.17	mg/kg bw/d	
Long-term exposure, systemic, inhalative	154.4	mg/m ³	
Short-term exposure, systemic, dermal	0.17	mg/kg bw/d	
Short-term exposure, systemic, inhalative	308.8	mg/m ³	See 9. general remarks

Table 76: Estimated exposure for workers – PROC 4

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	3.43	mg/kg bw/d	
Long-term exposure, systemic, inhalative	77.2	mg/m ³	
Short-term exposure, systemic, dermal	3.43	mg/kg bw/d	
Short-term exposure, systemic, inhalative	154.4	mg/m ³	See 9. general remarks

Table 77: Estimated exposure for workers – PROC 8a

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	6.86	mg/kg bw/d	
Long-term exposure, systemic, inhalative	154.4	mg/m ³	
Short-term exposure, systemic, dermal	6.86	mg/kg bw/d	
Short-term exposure, systemic, inhalative	308.8	mg/m ³	See 9. general remarks

Table 78: Estimated exposure for workers – PROC 8b

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	3.43	mg/kg bw/d	
Long-term exposure, systemic, inhalative	38.6	mg/m ³	
Short-term exposure, systemic, dermal	3.43	mg/kg bw/d	
Short-term exposure, systemic, inhalative	77.2	mg/m ³	See 9. general remarks

Table 79: Estimated exposure for workers – PROC 10

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	13.7	mg/kg bw/d	
Long-term exposure, systemic, inhalative	154.4	mg/m ³	
Short-term exposure, systemic, dermal	13.7	mg/kg bw/d	
Short-term exposure, systemic, inhalative	308.8	mg/m ³	See 9. general remarks

Table 80: Estimated exposure for workers – PROC 11

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	10.7	mg/kg bw/d	
Long-term exposure, systemic, inhalative	185.3	mg/m ³	
Short-term exposure, systemic, dermal	10.7	mg/kg bw/d	
Short-term exposure, systemic, inhalative	617.5	mg/m ³	See 9. general remarks

Table 81: Estimated exposure for workers – PROC 13

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	6.86	mg/kg bw/d	
Long-term exposure, systemic, inhalative	77.2	mg/m ³	
Short-term exposure, systemic, dermal	6.86	mg/kg bw/d	
Short-term exposure, systemic, inhalative	154.4	mg/m ³	See 9. general remarks

Exposure Scenario 9

Exposure Scenario

Table 82: Description of exposure scenario

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1. Title			
Free short title	Industrial use of metal working fluids / rolling oils		
Systematic title based on use descriptor	ERC 4; PROC 1, 2, 3, 5, 7, 8a, 8b, 9, 10, 13 and 17; SU 3		
Processes, tasks activities covered	Covers the use in formulated MWFs/rolling oils including transfer operations, rolling and annealing activities, cutting/machining activities, automated and manual application of corrosion protections (including brushing, dipping and spraying), equipment maintenance, draining and disposal of waste oils.		
Exposure assessment methodology	Tool used: ECETOC TRA workers (v2.3) modified ¹		
2. Operational conditions and risk management measures			
2.1 Control of workers exposure for PROC 1, 2, 3 and 5			
Frequency and duration of use			
Duration of exposure	> 4	Hours/day	
Frequency of exposure	≤ 240	Days/year	
Product characteristics			
Physical state of the product	liquid		
Concentration of substance in product	20	%	
Vapour pressure of substance	228	hPa	
Amounts used			
			Not relevant in ECETOC TRA
Human factors not influenced by risk management			
Exposed body parts dermal	Palm of one hand (240 cm ²)		Relevant for PROC 1 and 3
	Palm of both hands (480 cm ²)		Relevant for PROC 2 and 5
Other given operational conditions affecting workers exposure			
Domain	Industrial		
Inside/outside	Inside		
Technical conditions and measures at process level (source) to prevent release			
None			
Conditions and measures to control dispersion from source towards the worker			
Local exhaust ventilation required	No		
Organisational measures to prevent /limit releases, dispersion and exposure			
			Not relevant in ECETOC TRA
Conditions and measures related to personal protection, hygiene and health evaluation			
Respiratory protection required	No		
Use of suitable gloves	No		
2.2 Control of workers exposure for PROC 8a, 8b and 9			
Frequency and duration of use			
Duration of exposure	> 4	Hours/day	
Frequency of exposure	≤ 240	Days/year	
Product characteristics (including package design affecting exposure)			
Physical state of the product	liquid		
Concentration of substance in product	20	%	
Vapour pressure of substance	228	hPa	
Amounts used			
			Not relevant in ECETOC TRA
Human factors not influenced by risk management			

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Exposed body parts dermal	Palm of both hands (480 cm ²)		Relevant for PROC 8b and 9
	Both hands (960 cm ²)		Relevant for PROC 8a
Other given operational conditions affecting workers exposure			
Domain	Industrial		
Inside/outside	Inside		
Technical conditions and measures at process level (source) to prevent release			
none			
Conditions and measures to control dispersion from source towards the worker			
Local exhaust ventilation required	No		
Organisational measures to prevent /limit releases, dispersion and exposure			
			Not relevant in ECETOC TRA
Conditions and measures related to personal protection, hygiene and health evaluation			
Respiratory protection required	No		
Use of suitable gloves	No		
2.3 Control of workers exposure for PROC 7, 10, 13 and 17			
Frequency and duration of use			
Duration of exposure	> 4	Hours/day	
Frequency of exposure	≤ 240	Days/year	
Product characteristics (including package design affecting exposure)			
Physical state of the product	liquid		
Concentration of substance in product	20	%	
Vapour pressure of substance	228	hPa	
Amounts used			
			Not relevant in ECETOC TRA
Human factors not influenced by risk management			
Exposed body parts dermal	Two hands and forearms (1500 cm ²)		Relevant for PROC 7
	Both hands (960 cm ²)		Relevant for PROC 10 and 17
	Palm of both hands (480 cm ²)		Relevant for PROC 13
Other given operational conditions affecting workers exposure			
Domain	Industrial		
Inside/outside	Inside		
Technical conditions and measures at process level (source) to prevent release			
none			
Conditions and measures to control dispersion from source towards the worker			
Local exhaust ventilation required	No		Relevant for PROC 10, 13 and 17
	Yes		PROC 7: Effectiveness: 95%
Organisational measures to prevent /limit releases, dispersion and exposure			
			Not relevant in ECETOC TRA
Conditions and measures related to personal protection, hygiene and health evaluation			
Respiratory protection required	No		
Use of suitable gloves	No		

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- ¹ LEV: The LEV exposure modifying factors for dermal exposure implemented in the ECETOC TRA v2.3 are not considered
- Preparation: concentration of substance is considered following a linear approach; this applies for inhalative and dermal exposure values for liquids and solids
- RCR combined: RCR combined is calculated following the recommendation in the ECHA guidance document "Guidance on information requirements and chemical safety assessment – Part E: Risk characterization"

Exposure Estimation

Table 83: Estimated exposure for workers – PROC 1

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	0.07	mg/kg bw/d	
Long-term exposure, systemic, inhalative	0.01	mg/m ³	
Short-term exposure, systemic, dermal	0.07	mg/kg bw/d	
Short-term exposure, systemic, inhalative	0.01	mg/m ³	See 9. general remarks

Table 84: Estimated exposure for workers – PROC 2

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	0.27	mg/kg bw/d	
Long-term exposure, systemic, inhalative	30.9	mg/m ³	
Short-term exposure, systemic, dermal	0.27	mg/kg bw/d	
Short-term exposure, systemic, inhalative	61.8	mg/m ³	See 9. general remarks

Table 85: Estimated exposure for workers – PROC 3

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	0.07	mg/kg bw/d	
Long-term exposure, systemic, inhalative	61.8	mg/m ³	
Short-term exposure, systemic, dermal	0.07	mg/kg bw/d	
Short-term exposure, systemic, inhalative	123.5	mg/m ³	See 9. general remarks

Table 86: Estimated exposure for workers – PROC 5

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	2.74	mg/kg bw/d	
Long-term exposure, systemic, inhalative	154.4	mg/m ³	
Short-term exposure, systemic, dermal	2.74	mg/kg bw/d	
Short-term exposure, systemic, inhalative	308.8	mg/m ³	See 9. general remarks

Table 87: Estimated exposure for workers – PROC 7

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	8.57	mg/kg bw/d	
Long-term exposure, systemic, inhalative	15.4	mg/m ³	
Short-term exposure, systemic, dermal	8.57	mg/kg bw/d	
Short-term exposure, systemic, inhalative	30.9	mg/m ³	See 9. general remarks

Table 88: Estimated exposure for workers – PROC 8a

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	2.74	mg/kg bw/d	
Long-term exposure, systemic, inhalative	154.4	mg/m ³	
Short-term exposure, systemic, dermal	2.74	mg/kg bw/d	
Short-term exposure, systemic, inhalative	308.8	mg/m ³	See 9. general remarks

Table 89: Estimated exposure for workers – PROC 8b

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Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	1.37	mg/kg bw/d	
Long-term exposure, systemic, inhalative	92.6	mg/m ³	
Short-term exposure, systemic, dermal	1.37	mg/kg bw/d	
Short-term exposure, systemic, inhalative	185.3	mg/m ³	See 9. general remarks

Table 90: Estimated exposure for workers – PROC 9

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	1.37	mg/kg bw/d	
Long-term exposure, systemic, inhalative	123.5	mg/m ³	
Short-term exposure, systemic, dermal	1.37	mg/kg bw/d	
Short-term exposure, systemic, inhalative	247	mg/m ³	See 9. general remarks

Table 91: Estimated exposure for workers – PROC 10

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	5.49	mg/kg bw/d	
Long-term exposure, systemic, inhalative	154.4	mg/m ³	
Short-term exposure, systemic, dermal	5.49	mg/kg bw/d	
Short-term exposure, systemic, inhalative	308.8	mg/m ³	See 9. general remarks

Table 92: Estimated exposure for workers – PROC 13

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	2.74	mg/kg bw/d	
Long-term exposure, systemic, inhalative	154.4	mg/m ³	
Short-term exposure, systemic, dermal	2.74	mg/kg bw/d	
Short-term exposure, systemic, inhalative	308.8	mg/m ³	See 9. general remarks

Table 93: Estimated exposure for workers – PROC 17

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	5.49	mg/kg bw/d	
Long-term exposure, systemic, inhalative	61.8	mg/m ³	
Short-term exposure, systemic, dermal	5.49	mg/kg bw/d	
Short-term exposure, systemic, inhalative	123.5	mg/m ³	See 9. general remarks

Exposure Scenario 10

Exposure Scenario

Table 94: Description of exposure scenario

1. Title			
Free short title	Professional use of metal working fluids / rolling oils		
Systematic title based on use descriptor	ERC 8a; PROC 1, 2, 3, 5, 8a, 8b, 10, 11, 13 and 17; SU 22		
Processes, tasks activities covered	Covers the use in formulated MWFs including transfer operations, open and contained cutting/machining activities, automated and manual application of corrosion protections, draining and working on contaminated/ reject articles, and disposal of waste oils.		
Exposure assessment methodology	Tool used: ECETOC TRA workers (v2.3) modified ¹		
2. Operational conditions and risk management measures			
2.1 Control of workers exposure for PROC 1, 2, 3 and 5			
Frequency and duration of use			
Duration of exposure	> 4	Hours/day	
Frequency of exposure	≤ 240	Days/year	

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Product characteristics			
Physical state of the product	liquid		
Concentration of substance in product	20	%	
Vapour pressure of substance	228	hPa	
Amounts used			
			Not relevant in ECETOC TRA
Human factors not influenced by risk management			
Exposed body parts dermal	Palm of one hand (240 cm ²)		Relevant for PROC 1 and 3
	Palm of both hands (480 cm ²)		Relevant for PROC 2 and 5
Other given operational conditions affecting workers exposure			
Domain	Professional		
Inside/outside	Inside		
Technical conditions and measures at process level (source) to prevent release			
None			
Conditions and measures to control dispersion from source towards the worker			
Local exhaust ventilation required	No		Relevant for PROC 1, 2 and 3
	Yes		PROC 5: Effectiveness: 80%
Organisational measures to prevent /limit releases, dispersion and exposure			
			Not relevant in ECETOC TRA
Conditions and measures related to personal protection, hygiene and health evaluation			
Respiratory protection required	No		
Use of suitable gloves	No		
2.2 Control of workers exposure for PROC 8a and 8b			
Frequency and duration of use			
Duration of exposure	> 4	Hours/day	
Frequency of exposure	≤ 240	Days/year	
Product characteristics (including package design affecting exposure)			
Physical state of the product	liquid		
Concentration of substance in product	20	%	
Vapour pressure of substance	228	hPa	
Amounts used			
			Not relevant in ECETOC TRA
Human factors not influenced by risk management			
Exposed body parts dermal	Palm of both hands (480 cm ²)		Relevant for PROC 8b
	Both hands (960 cm ²)		Relevant for PROC 8a
Other given operational conditions affecting workers exposure			
Domain	Professional		
Inside/outside	Inside		
Technical conditions and measures at process level (source) to prevent release			
none			
Conditions and measures to control dispersion from source towards the worker			

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Local exhaust ventilation required	No		Relevant for PROC 8b
	Yes		PROC 8a: Effectiveness: 80%
Organisational measures to prevent /limit releases, dispersion and exposure			
			Not relevant in ECETOC TRA
Conditions and measures related to personal protection, hygiene and health evaluation			
Respiratory protection required	No		
Use of suitable gloves	No		
2.3 Control of workers exposure for PROC 10, 11, 13 and 17			
Frequency and duration of use			
Duration of exposure	> 4	Hours/day	
Frequency of exposure	≤ 240	Days/year	
Product characteristics (including package design affecting exposure)			
Physical state of the product	liquid		
Concentration of substance in product	20	%	
Vapour pressure of substance	228	hPa	
Amounts used			
			Not relevant in ECETOC TRA
Human factors not influenced by risk management			
Exposed body parts dermal	Two hands and forearms (1500 cm ²)		Relevant for PROC 11
	Both hands (960 cm ²)		Relevant for PROC 10 and 17
	Palm of both hands (480 cm ²)		Relevant for PROC 13
Other given operational conditions affecting workers exposure			
Domain	Professional		
Inside/outside	Inside		
Technical conditions and measures at process level (source) to prevent release			
none			
Conditions and measures to control dispersion from source towards the worker			
Local exhaust ventilation required	No		Relevant for PROC 13
	Yes		PROC 10 and 11: Effectiveness: 80% PROC 17: Effectiveness: 90%
Organisational measures to prevent /limit releases, dispersion and exposure			
			Not relevant in ECETOC TRA
Conditions and measures related to personal protection, hygiene and health evaluation			
Respiratory protection required	No		
Use of suitable gloves	No		Relevant for PROC 10, 11 and 13
	Yes		PROC 17: Effectiveness: 80%

¹ LEV: The LEV exposure modifying factors for dermal exposure implemented in the ECETOC TRA v2.3 are not considered
Preparation: concentration of substance is considered following a linear

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approach; this applies for inhalative and dermal exposure values for liquids and solids

RCR combined: RCR combined is calculated following the recommendation in the ECHA guidance document "Guidance on information requirements and chemical safety assessment – Part E: Risk characterization"

Exposure Estimation

Table 95: Estimated exposure for workers – PROC 1

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	0.07	mg/kg bw/d	
Long-term exposure, systemic, inhalative	0.06	mg/m ³	
Short-term exposure, systemic, dermal	0.07	mg/kg bw/d	
Short-term exposure, systemic, inhalative	0.12	mg/m ³	See 9. general remarks

Table 96: Estimated exposure for workers – PROC 2

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	0.27	mg/kg bw/d	
Long-term exposure, systemic, inhalative	30.9	mg/m ³	
Short-term exposure, systemic, dermal	0.27	mg/kg bw/d	
Short-term exposure, systemic, inhalative	61.8	mg/m ³	See 9. general remarks

Table 97: Estimated exposure for workers – PROC 3

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	0.07	mg/kg bw/d	
Long-term exposure, systemic, inhalative	61.8	mg/m ³	
Short-term exposure, systemic, dermal	0.07	mg/kg bw/d	
Short-term exposure, systemic, inhalative	123.5	mg/m ³	See 9. general remarks

Table 98: Estimated exposure for workers – PROC 5

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	2.74	mg/kg bw/d	
Long-term exposure, systemic, inhalative	61.8	mg/m ³	
Short-term exposure, systemic, dermal	2.74	mg/kg bw/d	
Short-term exposure, systemic, inhalative	123.5	mg/m ³	See 9. general remarks

Table 99: Estimated exposure for workers – PROC 8a

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	2.74	mg/kg bw/d	
Long-term exposure, systemic, inhalative	61.8	mg/m ³	
Short-term exposure, systemic, dermal	2.74	mg/kg bw/d	
Short-term exposure, systemic, inhalative	123.5	mg/m ³	See 9. general remarks

Table 100: Estimated exposure for workers – PROC 8b

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	1.37	mg/kg bw/d	
Long-term exposure, systemic, inhalative	154.4	mg/m ³	
Short-term exposure, systemic, dermal	1.37	mg/kg bw/d	
Short-term exposure, systemic, inhalative	308.8	mg/m ³	See 9. general remarks

Table 101: Estimated exposure for workers – PROC 10

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	5.49	mg/kg bw/d	
Long-term exposure, systemic, inhalative	61.8	mg/m ³	

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Short-term exposure, systemic, dermal	1.37	mg/kg bw/d	
Short-term exposure, systemic, inhalative	123.5	mg/m ³	See 9. general remarks

Table 102: Estimated exposure for workers – PROC 11

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	21.4	mg/kg bw/d	
Long-term exposure, systemic, inhalative	123.5	mg/m ³	
Short-term exposure, systemic, dermal	21.4	mg/kg bw/d	
Short-term exposure, systemic, inhalative	247.0	mg/m ³	See 9. general remarks

Table 103: Estimated exposure for workers – PROC 13

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	2.74	mg/kg bw/d	
Long-term exposure, systemic, inhalative	154.4	mg/m ³	
Short-term exposure, systemic, dermal	2.74	mg/kg bw/d	
Short-term exposure, systemic, inhalative	308.8	mg/m ³	See 9. general remarks

Table 104: Estimated exposure for workers – PROC 17

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	1.10	mg/kg bw/d	
Long-term exposure, systemic, inhalative	30.9	mg/m ³	
Short-term exposure, systemic, dermal	1.10	mg/kg bw/d	
Short-term exposure, systemic, inhalative	61.8	mg/m ³	See 9. general remarks

Exposure Scenario 11

Exposure Scenario

Table 105: Description of exposure scenario

1. Title			
Free short title	Industrial use of blowing agents		
Systematic title based on use descriptor	ERC 4; PROC 1, 2, 3, 8b, 9 and 12; SU 3		
Processes, tasks activities covered	Covers the use in formulated MWFs including transfer. Use as a blowing agent for rigid and flexible foams, including material transfers, mixing and injection, curing, cutting, storage and packing		
Exposure assessment methodology	Tool used: ECETOC TRA workers (v2.3) modified ¹		
2. Operational conditions and risk management measures			
2.1 Control of workers exposure for PROC 1, 2, 3 and 12			
Frequency and duration of use			
Duration of exposure	> 4	Hours/day	
Frequency of exposure	≤ 240	Days/year	
Product characteristics			
Physical state of the product	liquid		
Concentration of substance in product	60	%	
Vapour pressure of substance	228	hPa	
Amounts used			
			Not relevant in ECETOC TRA
Human factors not influenced by risk management			
Exposed body parts dermal	Palm of one hand (240 cm ²)		Relevant for PROC 1, 3 and 12

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	Palm of both hands (480 cm ²)		Relevant for PROC 2
Other given operational conditions affecting workers exposure			
Domain	Industrial		
Inside/outside	Inside		
Technical conditions and measures at process level (source) to prevent release			
None			
Conditions and measures to control dispersion from source towards the worker			
Local exhaust ventilation required	No		
Organisational measures to prevent /limit releases, dispersion and exposure			
			Not relevant in ECETOC TRA
Conditions and measures related to personal protection, hygiene and health evaluation			
Respiratory protection required	No		
Use of suitable gloves	No		
2.2 Control of workers exposure for PROC 8b and 9			
Frequency and duration of use			
Duration of exposure	> 4	Hours/day	
Frequency of exposure	≤ 240	Days/year	
Product characteristics (including package design affecting exposure)			
Physical state of the product	liquid		
Concentration of substance in product	60	%	
Vapour pressure of substance	228	hPa	
Amounts used			
			Not relevant in ECETOC TRA
Human factors not influenced by risk management			
Exposed body parts dermal	Palm of both hands (480 cm ²)		
Other given operational conditions affecting workers exposure			
Domain	Industrial		
Inside/outside	Inside		
Technical conditions and measures at process level (source) to prevent release			
none			
Conditions and measures to control dispersion from source towards the worker			
Local exhaust ventilation required	Yes		PROC 8b: Effectiveness: 97% PROC 9: Effectiveness: 90%
Organisational measures to prevent /limit releases, dispersion and exposure			
			Not relevant in ECETOC TRA
Conditions and measures related to personal protection, hygiene and health evaluation			
Respiratory protection required	No		
Use of suitable gloves	No		

¹ LEV: The LEV exposure modifying factors for dermal exposure implemented in the ECETOC TRA v2.3 are not considered
Preparation: concentration of substance is considered following a linear approach; this applies for inhalative and dermal exposure values for liquids and solids

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RCR combined: RCR combined is calculated following the recommendation in the ECHA guidance document "Guidance on information requirements and chemical safety assessment – Part E: Risk characterization"

Exposure Estimation

Table 106: Estimated exposure for workers – PROC 1

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	0.21	mg/kg bw/d	
Long-term exposure, systemic, inhalative	0.02	mg/m ³	
Short-term exposure, systemic, dermal	0.21	mg/kg bw/d	
Short-term exposure, systemic, inhalative	0.04	mg/m ³	See 9. general remarks

Table 107: Estimated exposure for workers – PROC 2

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	0.82	mg/kg bw/d	
Long-term exposure, systemic, inhalative	92.6	mg/m ³	
Short-term exposure, systemic, dermal	0.82	mg/kg bw/d	
Short-term exposure, systemic, inhalative	185.3	mg/m ³	See 9. general remarks

Table 108: Estimated exposure for workers – PROC 3

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	0.21	mg/kg bw/d	
Long-term exposure, systemic, inhalative	185.3	mg/m ³	
Short-term exposure, systemic, dermal	0.21	mg/kg bw/d	
Short-term exposure, systemic, inhalative	370.5	mg/m ³	See 9. general remarks

Table 109: Estimated exposure for workers – PROC 8b

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	4.11	mg/kg bw/d	
Long-term exposure, systemic, inhalative	8.33	mg/m ³	
Short-term exposure, systemic, dermal	4.11	mg/kg bw/d	
Short-term exposure, systemic, inhalative	16.7	mg/m ³	See 9. general remarks

Table 110: Estimated exposure for workers – PROC 9

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	4.11	mg/kg bw/d	
Long-term exposure, systemic, inhalative	37.1	mg/m ³	
Short-term exposure, systemic, dermal	4.11	mg/kg bw/d	
Short-term exposure, systemic, inhalative	74.1	mg/m ³	See 9. general remarks

Table 111: Estimated exposure for workers – PROC 12

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	0.21	mg/kg bw/d	
Long-term exposure, systemic, inhalative	185.3	mg/m ³	
Short-term exposure, systemic, dermal	0.21	mg/kg bw/d	
Short-term exposure, systemic, inhalative	370.5	mg/m ³	See 9. general remarks

Exposure Scenario 12

Exposure Scenario

Table 112: Description of exposure scenario

1. Title

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Free short title	Industrial use as binders and release agents		
Systematic title based on use descriptor	ERC 5; PROC 1, 2, 3, 4, 6, 7, 8b, 10, 13 and 14; SU 3		
Processes, tasks activities covered	Covers the use as binders and release agents including material transfers, mixing, application (including spraying and brushing), mould forming and casting, and handling of waste.		
Exposure assessment methodology	Tool used: ECETOC TRA workers (v2.3) modified ¹		
2. Operational conditions and risk management measures			
2.1 Control of workers exposure for PROC 1, 2, 3, 4 and 8b			
Frequency and duration of use			
Duration of exposure	> 4	Hours/day	
Frequency of exposure	≤ 240	Days/year	
Product characteristics			
Physical state of the product	liquid		
Concentration of substance in product	100	%	
Vapour pressure of substance	228	hPa	
Amounts used			
			Not relevant in ECETOC TRA
Human factors not influenced by risk management			
Exposed body parts dermal	Palm of one hand (240 cm ²)		Relevant for PROC 1 and 3
	Palm of both hands (480 cm ²)		Relevant for PROC 2, 4 and 8b
Other given operational conditions affecting workers exposure			
Domain	Industrial		
Inside/outside	Inside		
Technical conditions and measures at process level (source) to prevent release			
None			
Conditions and measures to control dispersion from source towards the worker			
Local exhaust ventilation required	No		Relevant for PROC 1 and 2
	Yes		PROC 3 and 4: Effectiveness: 90% PROC 8b: Effectiveness: 97%
Organisational measures to prevent /limit releases, dispersion and exposure			
			Not relevant in ECETOC TRA
Conditions and measures related to personal protection, hygiene and health evaluation			
Respiratory protection required	No		
Use of suitable gloves	No		
2.2 Control of workers exposure for PROC 6, 7, 10, 13 and 14			
Frequency and duration of use			
Duration of exposure	> 4	Hours/day	
Frequency of exposure	≤ 240	Days/year	
Product characteristics (including package design affecting exposure)			
Physical state of the product	liquid		
Concentration of substance in product	100	%	
Vapour pressure of substance	228	hPa	
Amounts used			
			Not relevant in ECETOC TRA

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Human factors not influenced by risk management			
Exposed body parts dermal	Palm of both hands (480 cm ²)		Relevant for PROC 13 and 14
	Both hands (960 cm ²)		Relevant for PROC 6 and 10
	Two hands and forearms (1500 cm ²)		Relevant for PROC 7
Other given operational conditions affecting workers exposure			
Domain	Industrial		
Inside/outside	Inside		
Technical conditions and measures at process level (source) to prevent release			
none			
Conditions and measures to control dispersion from source towards the worker			
Local exhaust ventilation re- quired	Yes		PROC 6, 10, 13 and 14: Effectiveness: 90% PROC 7: Effectiveness: 95%
Organisational measures to prevent /limit releases, dispersion and exposure			
			Not relevant in ECETOC TRA
Conditions and measures related to personal protection, hygiene and health evaluation			
Respiratory protection required	No		Relevant for PROC 6, 10, 13 and 14
Use of suitable gloves	Yes		PROC 7: Effectiveness: 80%

- ¹ LEV: The LEV exposure modifying factors for dermal exposure implemented in the ECETOC TRA v2.3 are not considered
- Preparation: concentration of substance is considered following a linear approach; this applies for inhalative and dermal exposure values for liquids and solids
- RCR combined: RCR combined is calculated following the recommendation in the ECHA guidance document "Guidance on information requirements and chemical safety assessment – Part E: Risk characterization"

Exposure Estimation

Table 113: Estimated exposure for workers – PROC 1

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	0.34	mg/kg bw/d	
Long-term exposure, systemic, inhalative	0.03	mg/m ³	
Short-term exposure, systemic, dermal	0.34	mg/kg bw/d	
Short-term exposure, systemic, inhalative	0.06	mg/m ³	See 9. general remarks

Table 114: Estimated exposure for workers – PROC 2

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	1.37	mg/kg bw/d	
Long-term exposure, systemic, inhalative	154.4	mg/m ³	
Short-term exposure, systemic, dermal	1.37	mg/kg bw/d	
Short-term exposure, systemic, inhalative	308.8	mg/m ³	See 9. general remarks

Table 115: Estimated exposure for workers – PROC 3

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	0.34	mg/kg bw/d	
Long-term exposure, systemic, inhalative	30.9	mg/m ³	
Short-term exposure, systemic, dermal	0.34	mg/kg bw/d	

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Short-term exposure, systemic, inhalative	123.5	mg/m ³	See 9. general remarks
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Table 116: Estimated exposure for workers – PROC 4

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	6.86	mg/kg bw/d	
Long-term exposure, systemic, inhalative	154.4	mg/m ³	
Short-term exposure, systemic, dermal	6.86	mg/kg bw/d	
Short-term exposure, systemic, inhalative	61.8	mg/m ³	See 9. general remarks

Table 117: Estimated exposure for workers – PROC 6

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	27.4	mg/kg bw/d	
Long-term exposure, systemic, inhalative	77.2	mg/m ³	
Short-term exposure, systemic, dermal	27.4	mg/kg bw/d	
Short-term exposure, systemic, inhalative	154.4	mg/m ³	See 9. general remarks

Table 118: Estimated exposure for workers – PROC 7

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	8.57	mg/kg bw/d	
Long-term exposure, systemic, inhalative	77.2	mg/m ³	
Short-term exposure, systemic, dermal	8.57	mg/kg bw/d	
Short-term exposure, systemic, inhalative	154.4	mg/m ³	See 9. general remarks

Table 119: Estimated exposure for workers – PROC 8b

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	6.86	mg/kg bw/d	
Long-term exposure, systemic, inhalative	13.9	mg/m ³	
Short-term exposure, systemic, dermal	6.86	mg/kg bw/d	
Short-term exposure, systemic, inhalative	154.4	mg/m ³	See 9. general remarks

Table 120: Estimated exposure for workers – PROC 10

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	27.4	mg/kg bw/d	
Long-term exposure, systemic, inhalative	77.2	mg/m ³	
Short-term exposure, systemic, dermal	27.4	mg/kg bw/d	
Short-term exposure, systemic, inhalative	154.4	mg/m ³	See 9. general remarks

Table 121: Estimated exposure for workers – PROC 13

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	13.7	mg/kg bw/d	
Long-term exposure, systemic, inhalative	77.2	mg/m ³	
Short-term exposure, systemic, dermal	13.7	mg/kg bw/d	
Short-term exposure, systemic, inhalative	154.4	mg/m ³	See 9. general remarks

Table 122: Estimated exposure for workers – PROC 14

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	3.43	mg/kg bw/d	
Long-term exposure, systemic, inhalative	77.2	mg/m ³	
Short-term exposure, systemic, dermal	3.43	mg/kg bw/d	
Short-term exposure, systemic, inhalative	154.4	mg/m ³	See 9. general remarks

Exposure Scenario 13

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Exposure Scenario

Table 123: Description of exposure scenario

1. Title			
Free short title	Professional use as binders and release agents		
Systematic title based on use descriptor	ERC 8a, 8b, 8c, 8d, 8e, 8f; PROC 1, 2, 3, 4, 6, 8a, 8b, 10, 11 and 14; SU 22		
Processes, tasks activities covered	Covers the use as binders and release agents including material transfers, mixing, application by spraying, brushing, and handling of waste.		
Exposure assessment methodology	Tool used: ECETOC TRA workers (v2.3) modified ¹		
2. Operational conditions and risk management measures			
2.1 Control of workers exposure for PROC 1, 2, 3, 4 and 8b			
Frequency and duration of use			
Duration of exposure	> 4	Hours/day	
Frequency of exposure	≤ 240	Days/year	
Product characteristics			
Physical state of the product	liquid		
Concentration of substance in product	100	%	
Vapour pressure of substance	228	hPa	
Amounts used			
			Not relevant in ECETOC TRA
Human factors not influenced by risk management			
Exposed body parts dermal	Palm of one hand (240 cm ²)		Relevant for PROC 1 and 3
	Palm of both hands (480 cm ²)		Relevant for PROC 2, 4 and 8b
Other given operational conditions affecting workers exposure			
Domain	Professional		
Inside/outside	Inside		
Technical conditions and measures at process level (source) to prevent release			
None			
Conditions and measures to control dispersion from source towards the worker			
Local exhaust ventilation required	No		Relevant for PROC 1 and 2
	Yes		PROC 3 and 4: Effectiveness: 80% PROC 8b: 90%
Organisational measures to prevent /limit releases, dispersion and exposure			
			Not relevant in ECETOC TRA
Conditions and measures related to personal protection, hygiene and health evaluation			
Respiratory protection required	No		
Use of suitable gloves	No		
2.2 Control of workers exposure for PROC 6, 8a, 10 and 14			
Frequency and duration of use			
Duration of exposure	1-4	Hours/day	
Frequency of exposure	≤ 240	Days/year	
Product characteristics (including package design affecting exposure)			
Physical state of the product	liquid		
Concentration of substance in product	100	%	
Vapour pressure of substance	228	hPa	

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Amounts used			
			Not relevant in ECETOC TRA
Human factors not influenced by risk management			
Exposed body parts dermal	Palm of both hands (480 cm ²)		Relevant for PROC 14
	Both hands (960 cm ²)		Relevant for PROC 6, 8a and 10
Other given operational conditions affecting workers exposure			
Domain	Professional		
Inside/outside	Inside		
Technical conditions and measures at process level (source) to prevent release			
none			
Conditions and measures to control dispersion from source towards the worker			
Local exhaust ventilation required	Yes		Effectiveness: 80%
Organisational measures to prevent /limit releases, dispersion and exposure			
			Not relevant in ECETOC TRA
Conditions and measures related to personal protection, hygiene and health evaluation			
Respiratory protection required	No		
Use of suitable gloves	Yes		Effectiveness: 80%
2.3 Control of workers exposure for PROC 11			
Frequency and duration of use			
Duration of exposure	0.25-1	Hours/day	
Frequency of exposure	≤ 240	Days/year	
Product characteristics (including package design affecting exposure)			
Physical state of the product	liquid		
Concentration of substance in product	100	%	
Vapour pressure of substance	228	hPa	
Amounts used			
			Not relevant in ECETOC TRA
Human factors not influenced by risk management			
Exposed body parts dermal	Two hands and forearms (1500 cm ²)		
Other given operational conditions affecting workers exposure			
Domain	Professional		
Inside/outside	Inside		
Technical conditions and measures at process level (source) to prevent release			
none			
Conditions and measures to control dispersion from source towards the worker			
Local exhaust ventilation required	Yes		Effectiveness: 80%
Organisational measures to prevent /limit releases, dispersion and exposure			
			Not relevant in ECETOC TRA
Conditions and measures related to personal protection, hygiene and health evaluation			
Respiratory protection required	No		
Use of suitable gloves	Yes		Effectiveness: 80%

- ¹ LEV: The LEV exposure modifying factors for dermal exposure implemented in the ECETOC TRA v2.3 are not considered
- Preparation: concentration of substance is considered following a linear approach; this applies for inhalative and dermal exposure values for liquids and solids
- RCR combined: RCR combined is calculated following the recommendation

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in the ECHA guidance document "Guidance on information requirements and chemical safety assessment – Part E: Risk characterization"

Exposure Estimation

Table 124: Estimated exposure for workers – PROC 1

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	0.34	mg/kg bw/d	
Long-term exposure, systemic, inhalative	0.31	mg/m ³	
Short-term exposure, systemic, dermal	0.34	mg/kg bw/d	
Short-term exposure, systemic, inhalative	0.62	mg/m ³	See 9. general remarks

Table 125: Estimated exposure for workers – PROC 2

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	1.37	mg/kg bw/d	
Long-term exposure, systemic, inhalative	154.4	mg/m ³	
Short-term exposure, systemic, dermal	1.37	mg/kg bw/d	
Short-term exposure, systemic, inhalative	308.8	mg/m ³	See 9. general remarks

Table 126: Estimated exposure for workers – PROC 3

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	0.34	mg/kg bw/d	
Long-term exposure, systemic, inhalative	61.8	mg/m ³	
Short-term exposure, systemic, dermal	0.34	mg/kg bw/d	
Short-term exposure, systemic, inhalative	123.5	mg/m ³	See 9. general remarks

Table 127: Estimated exposure for workers – PROC 4

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	6.86	mg/kg bw/d	
Long-term exposure, systemic, inhalative	154.4	mg/m ³	
Short-term exposure, systemic, dermal	6.86	mg/kg bw/d	
Short-term exposure, systemic, inhalative	308.8	mg/m ³	See 9. general remarks

Table 128: Estimated exposure for workers – PROC 6

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	5.49	mg/kg bw/d	
Long-term exposure, systemic, inhalative	185.3	mg/m ³	
Short-term exposure, systemic, dermal	5.49	mg/kg bw/d	
Short-term exposure, systemic, inhalative	617.5	mg/m ³	See 9. general remarks

Table 129: Estimated exposure for workers – PROC 8a

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	2.74	mg/kg bw/d	
Long-term exposure, systemic, inhalative	185.3	mg/m ³	
Short-term exposure, systemic, dermal	2.74	mg/kg bw/d	
Short-term exposure, systemic, inhalative	617.5	mg/m ³	See 9. general remarks

Table 130: Estimated exposure for workers – PROC 8b

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	6.86	mg/kg bw/d	
Long-term exposure, systemic, inhalative	13.9	mg/m ³	
Short-term exposure, systemic, dermal	6.86	mg/kg bw/d	
Short-term exposure, systemic, inhalative	154.4	mg/m ³	See 9. general remarks

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Table 131: Estimated exposure for workers – PROC 10

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	5.49	mg/kg bw/d	
Long-term exposure, systemic, inhalative	185.3	mg/m ³	
Short-term exposure, systemic, dermal	5.49	mg/kg bw/d	
Short-term exposure, systemic, inhalative	617.5	mg/m ³	See 9. general remarks

Table 132: Estimated exposure for workers – PROC 11

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	21.4	mg/kg bw/d	
Long-term exposure, systemic, inhalative	123.5	mg/m ³	
Short-term exposure, systemic, dermal	21.4	mg/kg bw/d	
Short-term exposure, systemic, inhalative	617.5	mg/m ³	See 9. general remarks

Table 133: Estimated exposure for workers – PROC 14

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	0.69	mg/kg bw/d	
Long-term exposure, systemic, inhalative	185.3	mg/m ³	
Short-term exposure, systemic, dermal	0.69	mg/kg bw/d	
Short-term exposure, systemic, inhalative	617.5	mg/m ³	See 9. general remarks

Exposure Scenario 14

Exposure Scenario

Table 134: Description of exposure scenario

1. Title			
Free short title	Industrial use in laboratories		
Systematic title based on use descriptor	ERC 4; PROC 10 and 15; SU 3		
Processes, tasks activities covered	Use of the substance within laboratory settings, including material transfers and equipment cleaning		
Exposure assessment methodology	Tool used: ECETOC TRA workers (v2.3) modified ¹		
2. Operational conditions and risk management measures			
2.1 Control of workers exposure for PROC 10 and 15			
Frequency and duration of use			
Duration of exposure	> 4	Hours/day	
Frequency of exposure	≤ 240	Days/year	
Product characteristics			
Physical state of the product	liquid		
Concentration of substance in product	100	%	
Vapour pressure of substance	228	hPa	
Amounts used			
			Not relevant in ECETOC TRA
Human factors not influenced by risk management			
Exposed body parts dermal	Both hands (960 cm ²)		Relevant for PROC 10
	Palm of one hand (240 cm ²)		Relevant for PROC 15
Other given operational conditions affecting workers exposure			
Domain	Industrial		
Inside/outside	Inside		

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Technical conditions and measures at process level (source) to prevent release			
None			
Conditions and measures to control dispersion from source towards the worker			
Local exhaust ventilation required	No		Relevant for PROC 15
	Yes		PROC 10: Effectiveness: 90%
Organisational measures to prevent /limit releases, dispersion and exposure			
			Not relevant in ECETOC TRA
Conditions and measures related to personal protection, hygiene and health evaluation			
Respiratory protection required	No		
Use of suitable gloves	No		

- ¹ LEV: The LEV exposure modifying factors for dermal exposure implemented in the ECETOC TRA v2.3 are not considered
- Preparation: concentration of substance is considered following a linear approach; this applies for inhalative and dermal exposure values for liquids and solids
- RCR combined: RCR combined is calculated following the recommendation in the ECHA guidance document "Guidance on information requirements and chemical safety assessment – Part E: Risk characterization"

Exposure Estimation

Table 135: Estimated exposure for workers – PROC 10

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	27.4	mg/kg bw/d	
Long-term exposure, systemic, inhalative	77.2	mg/m ³	
Short-term exposure, systemic, dermal	27.4	mg/kg bw/d	
Short-term exposure, systemic, inhalative	154.4	mg/m ³	See 9. general remarks

Table 136: Estimated exposure for workers – PROC 15

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	0.34	mg/kg bw/d	
Long-term exposure, systemic, inhalative	154.4	mg/m ³	
Short-term exposure, systemic, dermal	0.34	mg/kg bw/d	
Short-term exposure, systemic, inhalative	308.8	mg/m ³	See 9. general remarks

Exposure Scenario 15

Exposure Scenario

Table 137: Description of exposure scenario

1. Title			
Free short title	Professional use in laboratories		
Systematic title based on use descriptor	ERC 8a; PROC 10 and 15; SU 22		
Processes, tasks activities covered	Use of small quantities within laboratory settings, including material transfers and equipment cleaning		
Exposure assessment methodology	Tool used: ECETOC TRA workers (v2.3) modified ¹		
2. Operational conditions and risk management measures			
2.1 Control of workers exposure for PROC 10 and 15			
Frequency and duration of use			
Duration of exposure	1-4	Hours/day	Relevant for PROC 10

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	> 4	Hours/day	Relevant for PROC 15
Frequency of exposure	≤ 240	Days/year	
Product characteristics			
Physical state of the product	liquid		
Concentration of substance in product	100	%	
Vapour pressure of substance	228	hPa	
Amounts used			
			Not relevant in ECETOC TRA
Human factors not influenced by risk management			
Exposed body parts dermal	Both hands (960 cm ²)		Relevant for PROC 10
	Palm of one hand (240 cm ²)		Relevant for PROC 15
Other given operational conditions affecting workers exposure			
Domain	Professional		
Inside/outside	Inside		
Technical conditions and measures at process level (source) to prevent release			
None			
Conditions and measures to control dispersion from source towards the worker			
Local exhaust ventilation required	No		Relevant for PROC 15
	Yes		PROC 10: Effectiveness: 80%
Organisational measures to prevent /limit releases, dispersion and exposure			
			Not relevant in ECETOC TRA
Conditions and measures related to personal protection, hygiene and health evaluation			
Respiratory protection required	No		
Use of suitable gloves	Yes		PROC 10: Effectiveness: 80%

- ¹ LEV: The LEV exposure modifying factors for dermal exposure implemented in the ECETOC TRA v2.3 are not considered
- Preparation: concentration of substance is considered following a linear approach; this applies for inhalative and dermal exposure values for liquids and solids
- RCR combined: RCR combined is calculated following the recommendation in the ECHA guidance document "Guidance on information requirements and chemical safety assessment – Part E: Risk characterization"

Exposure Estimation

Table 138: Estimated exposure for workers – PROC 10

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	5.49	mg/kg bw/d	
Long-term exposure, systemic, inhalative	185.3	mg/m ³	
Short-term exposure, systemic, dermal	5.49	mg/kg bw/d	
Short-term exposure, systemic, inhalative	617.5	mg/m ³	See 9. general remarks

Table 139: Estimated exposure for workers – PROC 15

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	0.34	mg/kg bw/d	
Long-term exposure, systemic, inhalative	154.4	mg/m ³	
Short-term exposure, systemic, dermal	0.34	mg/kg bw/d	
Short-term exposure, systemic, inhalative	308.8	mg/m ³	See 9. general remarks

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Exposure Scenario 16

Exposure Scenario

Table 140: Description of exposure scenario

1. Title			
Free short title	Industrial polymer processing		
Systematic title based on use descriptor	ERC 6d; PROC 1, 2, 3, 4, 5, 6, 8a, 8b, 9, 13 and 14; SU 3 and 10		
Processes, tasks activities covered	Processing of formulated polymers including material transfers, additives handling, moulding, curing and forming activities, material re-works, storage and associated maintenance		
Exposure assessment methodology	Tool used: ECETOC TRA workers (v2.3) modified ¹		
2. Operational conditions and risk management measures			
2.1 Control of workers exposure for PROC 1, 2, 3 and 4			
Frequency and duration of use			
Duration of exposure	> 4	Hours/day	
Frequency of exposure	≤ 240	Days/year	
Product characteristics			
Physical state of the product	liquid		
Concentration of substance in product	60	%	
Vapour pressure of substance	228	hPa	
Amounts used			
			Not relevant in ECETOC TRA
Human factors not influenced by risk management			
Exposed body parts dermal	Palm of one hand (240 cm ²)		Relevant for PROC 1 and 3
	Palm of both hands (480 cm ²)		Relevant for PROC 2 and 4
Other given operational conditions affecting workers exposure			
Domain	Industrial		
Inside/outside	Inside		
Technical conditions and measures at process level (source) to prevent release			
None			
Conditions and measures to control dispersion from source towards the worker			
Local exhaust ventilation required	No		
Organisational measures to prevent /limit releases, dispersion and exposure			
			Not relevant in ECETOC TRA
Conditions and measures related to personal protection, hygiene and health evaluation			
Respiratory protection required	No		
Use of suitable gloves	No		
2.2 Control of workers exposure for PROC 5, 6, 8a, 8b, 9, 13 and 14			
Frequency and duration of use			
Duration of exposure	> 4	Hours/day	
Frequency of exposure	≤ 240	Days/year	
Product characteristics (including package design affecting exposure)			
Physical state of the product	liquid		
Concentration of substance in product	60	%	
Vapour pressure of substance	228	hPa	
Amounts used			
			Not relevant in ECETOC TRA

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Human factors not influenced by risk management			
Exposed body parts dermal	Palm of both hands (480 cm ²)		Relevant for PROC 5, 8b, 9, 13 and 14
	Both hands (960 cm ²)		Relevant for PROC 6, 8a
Other given operational conditions affecting workers exposure			
Domain	Industrial		
Inside/outside	Inside		
Technical conditions and measures at process level (source) to prevent release			
none			
Conditions and measures to control dispersion from source towards the worker			
Local exhaust ventilation required	Yes		PROC 5, 6, 8a, 9, 13 and 14: Effectiveness: 90% PROC 8b: Effectiveness: 97%
Organisational measures to prevent /limit releases, dispersion and exposure			
			Not relevant in ECETOC TRA
Conditions and measures related to personal protection, hygiene and health evaluation			
Respiratory protection required	No		
Use of suitable gloves	No		

- ¹ LEV: The LEV exposure modifying factors for dermal exposure implemented in the ECETOC TRA v2.3 are not considered
- Preparation: concentration of substance is considered following a linear approach; this applies for inhalative and dermal exposure values for liquids and solids
- RCR combined: RCR combined is calculated following the recommendation in the ECHA guidance document "Guidance on information requirements and chemical safety assessment – Part E: Risk characterization"

Exposure Estimation

Table 141: Estimated exposure for workers – PROC 1

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	0.21	mg/kg bw/d	
Long-term exposure, systemic, inhalative	0.02	mg/m ³	
Short-term exposure, systemic, dermal	0.21	mg/kg bw/d	
Short-term exposure, systemic, inhalative	0.04	mg/m ³	See 9. general remarks

Table 142: Estimated exposure for workers – PROC 2

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	0.82	mg/kg bw/d	
Long-term exposure, systemic, inhalative	92.6	mg/m ³	
Short-term exposure, systemic, dermal	0.82	mg/kg bw/d	
Short-term exposure, systemic, inhalative	185.3	mg/m ³	See 9. general remarks

Table 143: Estimated exposure for workers – PROC 3

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	0.21	mg/kg bw/d	
Long-term exposure, systemic, inhalative	185.3	mg/m ³	
Short-term exposure, systemic, dermal	0.21	mg/kg bw/d	
Short-term exposure, systemic, inhalative	370.5	mg/m ³	See 9. general remarks

Table 144: Estimated exposure for workers – PROC 4

Route of exposure	Concentrations	Justification

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	Value	Unit	
Long-term exposure, systemic, dermal	4.11	mg/kg bw/d	
Long-term exposure, systemic, inhalative	185.3	mg/m ³	
Short-term exposure, systemic, dermal	4.11	mg/kg bw/d	
Short-term exposure, systemic, inhalative	370.5	mg/m ³	See 9. general remarks

Table 145: Estimated exposure for workers – PROC 5

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	8.23	mg/kg bw/d	
Long-term exposure, systemic, inhalative	46.3	mg/m ³	
Short-term exposure, systemic, dermal	8.23	mg/kg bw/d	
Short-term exposure, systemic, inhalative	92.6	mg/m ³	See 9. general remarks

Table 146: Estimated exposure for workers – PROC 6

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	16.5	mg/kg bw/d	
Long-term exposure, systemic, inhalative	46.3	mg/m ³	
Short-term exposure, systemic, dermal	16.5	mg/kg bw/d	
Short-term exposure, systemic, inhalative	92.6	mg/m ³	See 9. general remarks

Table 147: Estimated exposure for workers – PROC 8a

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	8.23	mg/kg bw/d	
Long-term exposure, systemic, inhalative	46.3	mg/m ³	
Short-term exposure, systemic, dermal	8.23	mg/kg bw/d	
Short-term exposure, systemic, inhalative	92.6	mg/m ³	See 9. general remarks

Table 148: Estimated exposure for workers – PROC 8b

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	4.11	mg/kg bw/d	
Long-term exposure, systemic, inhalative	8.34	mg/m ³	
Short-term exposure, systemic, dermal	4.11	mg/kg bw/d	
Short-term exposure, systemic, inhalative	16.7	mg/m ³	See 9. general remarks

Table 149: Estimated exposure for workers – PROC 9

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	4.11	mg/kg bw/d	
Long-term exposure, systemic, inhalative	37.1	mg/m ³	
Short-term exposure, systemic, dermal	4.11	mg/kg bw/d	
Short-term exposure, systemic, inhalative	74.1	mg/m ³	See 9. general remarks

Table 150: Estimated exposure for workers – PROC 13

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	8.23	mg/kg bw/d	
Long-term exposure, systemic, inhalative	46.3	mg/m ³	
Short-term exposure, systemic, dermal	8.23	mg/kg bw/d	
Short-term exposure, systemic, inhalative	92.6	mg/m ³	See 9. general remarks

Table 151: Estimated exposure for workers – PROC 14

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	2.06	mg/kg bw/d	
Long-term exposure, systemic, inhalative	46.3	mg/m ³	
Short-term exposure, systemic, dermal	2.06	mg/kg bw/d	
Short-term exposure, systemic, inhalative	92.6	mg/m ³	See 9. general remarks

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Exposure Scenario 17

Exposure Scenario

Table 152: Description of exposure scenario

1. Title			
Free short title	Professional polymer processing		
Systematic title based on use descriptor	ERC 8a, 8c, 8d, 8f; PROC 1, 2, 8a, 8b and 14; SU 10 and 22		
Processes, tasks activities covered	Processing of formulated polymers including material transfers, moulding and forming activities, material re-works and associated maintenance		
Exposure assessment methodology	Tool used: ECETOC TRA workers (v2.3) modified ¹		
2. Operational conditions and risk management measures			
2.1 Control of workers exposure for PROC 1 and 2			
Frequency and duration of use			
Duration of exposure	> 4	Hours/day	
Frequency of exposure	≤ 240	Days/year	
Product characteristics			
Physical state of the product	liquid		
Concentration of substance in product	60	%	
Vapour pressure of substance	228	hPa	
Amounts used			
			Not relevant in ECETOC TRA
Human factors not influenced by risk management			
Exposed body parts dermal	Palm of one hand (240 cm ²)		Relevant for PROC 1
	Palm of both hands (480 cm ²)		Relevant for PROC 2
Other given operational conditions affecting workers exposure			
Domain	Professional		
Inside/outside	Inside		
Technical conditions and measures at process level (source) to prevent release			
None			
Conditions and measures to control dispersion from source towards the worker			
Local exhaust ventilation required	No		
Organisational measures to prevent /limit releases, dispersion and exposure			
			Not relevant in ECETOC TRA
Conditions and measures related to personal protection, hygiene and health evaluation			
Respiratory protection required	No		
Use of suitable gloves	No		
2.2 Control of workers exposure for PROC 8a, 8b and 14			
Frequency and duration of use			
Duration of exposure	> 4	Hours/day	
Frequency of exposure	≤ 240	Days/year	
Product characteristics (including package design affecting exposure)			
Physical state of the product	liquid		
Concentration of substance in product	60	%	
Vapour pressure of substance	228	hPa	
Amounts used			
			Not relevant in ECETOC TRA

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Human factors not influenced by risk management			
Exposed body parts dermal	Palm of both hands (480 cm ²)		Relevant for PROC 8b and 14
	Both hands (960 cm ²)		Relevant for PROC 8a
Other given operational conditions affecting workers exposure			
Domain	Industrial		
Inside/outside	Inside		
Technical conditions and measures at process level (source) to prevent release			
none			
Conditions and measures to control dispersion from source towards the worker			
Local exhaust ventilation required	Yes		PROC 8a and 14: Effectiveness: 80% PROC 8b: Effectiveness: 90%
Organisational measures to prevent /limit releases, dispersion and exposure			
			Not relevant in ECETOC TRA
Conditions and measures related to personal protection, hygiene and health evaluation			
Respiratory protection required	No		
Use of suitable gloves	No		

- ¹ LEV: The LEV exposure modifying factors for dermal exposure implemented in the ECETOC TRA v2.3 are not considered
- Preparation: concentration of substance is considered following a linear approach; this applies for inhalative and dermal exposure values for liquids and solids
- RCR combined: RCR combined is calculated following the recommendation in the ECHA guidance document "Guidance on information requirements and chemical safety assessment – Part E: Risk characterization"

Exposure Estimation

Table 153: Estimated exposure for workers – PROC 1

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	0.21	mg/kg bw/d	
Long-term exposure, systemic, inhalative	0.18	mg/m ³	
Short-term exposure, systemic, dermal	0.21	mg/kg bw/d	
Short-term exposure, systemic, inhalative	0.37	mg/m ³	See 9. general remarks

Table 154: Estimated exposure for workers – PROC 2

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	0.82	mg/kg bw/d	
Long-term exposure, systemic, inhalative	92.6	mg/m ³	
Short-term exposure, systemic, dermal	0.82	mg/kg bw/d	
Short-term exposure, systemic, inhalative	185.3	mg/m ³	See 9. general remarks

Table 155: Estimated exposure for workers – PROC 8a

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	8.23	mg/kg bw/d	
Long-term exposure, systemic, inhalative	185.3	mg/m ³	
Short-term exposure, systemic, dermal	8.23	mg/kg bw/d	
Short-term exposure, systemic, inhalative	370.5	mg/m ³	See 9. general remarks

Table 156: Estimated exposure for workers – PROC 8b

Route of exposure	Concentrations	Justification

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	Value	Unit	
Long-term exposure, systemic, dermal	4.11	mg/kg bw/d	
Long-term exposure, systemic, inhalative	46.3	mg/m ³	
Short-term exposure, systemic, dermal	4.11	mg/kg bw/d	
Short-term exposure, systemic, inhalative	92.6	mg/m ³	See 9. general remarks

Table 157: Estimated exposure for workers – PROC 14

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	2.06	mg/kg bw/d	
Long-term exposure, systemic, inhalative	185.3	mg/m ³	
Short-term exposure, systemic, dermal	2.06	mg/kg bw/d	
Short-term exposure, systemic, inhalative	370.5	mg/m ³	See 9. general remarks

Exposure Scenario 18

Exposure Scenario

Table 158: Description of exposure scenario

1. Title			
Free short title	Consumer use of all purpose adhesives		
Systematic title based on use descriptor	ERC 8a, 8c, 8d, 8f, SU 21		
Processes, tasks activities covered	-		
Assessment Method	Tool used: ConsExpo (v4.1) (Inhalation model: Exposure to vapour – constant rate; Dermal model: Direct dermal contact with product: instant application; Dermal uptake model: Fraction)		
2. Operational conditions and risk management measures			
2.1 Control of consumers exposure			
General Exposure Data			
Physical state of the product	Liquid		
Vapour pressure of substance	228	hPa	
Frequency of exposure	1	1/day	
Body weight	70	kg	
Inhalation Model			
Weight fraction compound	0.6	fraction	
Exposure duration	60	min	
Room volume	30	m ³	
Ventilation rate	1	1/hr	
Applied amount	10	gram	
Release duration	60	min	
Uptake fraction	100	%	
Inhalation rate	36.4	m ³ /day	Light exercise
Dermal Model			
Weight fraction compound	0.6	fraction	
Exposed area	3	cm ²	
Applied amount	2	g	
Uptake fraction	100	%	
Conditions and measures related to information and behavioural advice to consumers			
None			
Conditions and measures related to personal protection and hygiene			
None			

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Table 159: Estimated exposure for consumers

Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	17.1	mg/kg bw/d	
Long-term exposure, systemic, inhalative	3.1	mg/m ³	
Long-term exposure, systemic, oral	NA	mg/kg bw/d	This route of exposure is regarded to be not relevant.
Short-term exposure, systemic, dermal	17.1	mg/kg bw	
Short-term exposure, systemic, inhalative	73.4	mg/m ³	
Short-term exposure, systemic, oral	NA	mg/kg bw/d	This route of exposure is regarded to be not relevant.

NA = Not applicable

Exposure Scenario 19

Exposure Scenario

Table 160: Description of exposure scenario

1. Title			
Free short title	Consumer use of nail varnish removers		
Systematic title based on use descriptor	ERC 8a, 8d; SU 21		
Processes, tasks activities covered	-		
Assessment Method	Tool used: ConsExpo (v4.1) (Inhalation model: Exposure to vapour – constant rate; Dermal model: Direct dermal contact with product: instant application; Dermal uptake model: Fraction)		
2. Operational conditions and risk management measures			
2.1 Control of consumers exposure			
General Exposure Data			
Physical state of the product	Liquid		
Vapour pressure of substance	228	hPa	
Frequency of exposure	1	1/day	
Body weight	70	kg	
Inhalation Model			
Weight fraction compound	0.15	fraction	
Exposure duration	60	min	
Room volume	30	m ³	
Ventilation rate	1	1/hr	
Applied amount	1	gram	
Release duration	60	min	
Uptake fraction	100	%	
Inhalation rate	36.4	m ³ /day	Light exercise
Dermal Model			
Weight fraction compound	0.15	fraction	
Exposed area	10	cm ²	
Applied amount	1	g	
Uptake fraction	100	%	
Conditions and measures related to information and behavioural advice to consumers			
None			
Conditions and measures related to personal protection and hygiene			
None			

Exposure Estimation

Table 161: Estimated exposure for consumers

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Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	2.1	mg/kg bw/d	
Long-term exposure, systemic, inhalative	0.08	mg/m ³	
Long-term exposure, systemic, oral	NA	mg/kg bw/d	This route of exposure is regarded to be not relevant.
Short-term exposure, systemic, dermal	2.1	mg/kg bw	
Short-term exposure, systemic, inhalative	1.8	mg/m ³	
Short-term exposure, systemic, oral	NA	mg/kg bw/d	This route of exposure is regarded to be not relevant.

NA = Not applicable

Exposure Scenario 20

Exposure Scenario

Table 162: Description of exposure scenario

1. Title			
Free short title	Consumer use of paint remover (from a brush)		
Systematic title based on use descriptor	ERC 8a, 8d; SU 21		
Processes, tasks activities covered	-		
Assessment Method	Tool used: ConsExpo (v4.1) (Inhalation model: Exposure to vapour – constant rate; Dermal model: Direct dermal contact with product: instant application; Dermal uptake model: Fraction)		
2. Operational conditions and risk management measures			
2.1 Control of consumers exposure			
General Exposure Data			
Physical state of the product	Liquid		
Vapour pressure of substance	288.2	hPa	
Frequency of exposure	1	1/month	
Body weight	60	kg	
Inhalation Model			
Weight fraction compound	1	fraction	
Exposure duration	30	min	
Room volume	30	m ³	
Ventilation rate	0,6	1/hr	
Applied amount	200	gram	Amount used
Release duration	30	min	
Uptake fraction	100	%	
Inhalation rate	36.4	m ³ /day	Light exercise
Dermal Model			
Weight fraction compound	1	fraction	
Exposed area	430	cm ²	
Applied amount	0,5	g	Cons expo default
Uptake fraction	100	%	
Conditions and measures related to information and behavioural advice to consumers			
None			
Conditions and measures related to personal protection and hygiene			
no			

Exposure Estimation

Table 162: Estimated exposure for consumers

Route of exposure	Concentrations		Justification
	Value	Unit	

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Long-term exposure, systemic, dermal	0,25	mg/kg bw/d	
Long-term exposure, systemic, inhalative	2,54	mg/m ³	
Long-term exposure, systemic, oral	NA	mg/kg bw/d	This route of exposure is regarded to be not relevant.
Short-term exposure, systemic, dermal	7,69	mg/kg bw	
Short-term exposure, systemic, inhalative	77,3	mg/m ³	
Short-term exposure, systemic, oral	NA	mg/kg bw/d	This route of exposure is regarded to be not relevant.

NA = Not applicable