































**Safety data sheet**  
**according to 1907/2006/EC, Article 31**

Printing date 14.02.2020

Version number 205

Revision: 09.01.2020

**Trade name: Isopropanol 99%**

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*For following contributing scenarios store substance within a closed system:*

*General exposures (closed systems): PROC1, PROC2, PROC3*

*For following contributing scenarios no other specific measures are identified:*

*General exposures (open systems): PROC4*

*Batch processes at elevated temperatures Operation is carried out at elevated temperature (> 20°C above ambient temperature): PROC3*

*Laboratory activities: PROC15*

*Mixing operations (open systems): PROC5*

*Manual Transfer from/pouring from containers: PROC8a*

*Drum/batch transfers: PROC8b*

*Production of preparations or articles by tableting, compression, extrusion, pelettisation: PROC14*

*For following contributing scenarios avoid sampling by immersion:*

*Process sampling: PROC3*

*Storage (closed system): PROC2*

*For the following contributing scenarios clean transfer lines before decoupling:*

*Bulk transfers: PROC8b*

*For the following contributing scenarios clear spills immediately:*

*Bulk transfers (open systems): PROC8b*

*For following contributing scenarios Store substance within a closed system:*

*Storage: PROC2*

*For the following contributing scenarios apply access method for containers, including compressed air supply:*

*Equipment cleaning and maintenance: PROC8a*

*For the following contributing scenarios reseal container after use:*

*Drum and small package filling: PROC9*

*For the following contributing scenarios vapors displaced remotely vent:*

*Mass Transfer: PROC 8b*

**- Worker protection**

**- Personal protective measures**

*For more information on "Personal protective equipment" see section 8 of the MSDS*

**- Disposal measures**

*Must not be disposed of together with household garbage. Do not allow product to reach sewage system.*

*If possible, send to be recycled, otherwise burn or deposit in a certified facility.*

**- Exposure estimation** The exposure estimation was carried out in accordance with ECETOC TRA.

**- Worker (dermal)**

.	Exposure estimation	RCR
PROC1:	0.34 mg/kg/d	0.00
PROC2:	1.37 mg/kg/d	0.00
PROC3:	0.34 mg/kg/d	0.00
PROC4:	6.86 mg/kg/d	0.01
PROC5:	13.71 mg/kg/d	0.02
PROC8a:	13.71 mg/kg/d	0.02
PROC8b:	6.86 mg/kg/d	0.01
PROC9:	6.86 mg/kg/d	0.01
PROC14:	3.43 mg/kg/d	0.00
PROC15:	0.34 mg/kg/d	0.00

**- Worker (inhalation)**

.	Exposure estimation	RCR
PROC1:	0,01 ppm	0,00
PROC2:	10 ppm	0,05
PROC3:	25 ppm	0,12
	100 ppm	0,49
PROC4:	5 ppm	0,50
	20 ppm	0,10
PROC5:	50 ppm	0,25

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PROC8a:	50	ppm	0,25
PROC8b:	50	ppm	0,25
PROC9:	50	ppm	0,25
PROC14:	50	ppm	0,25
PROC15:	10	ppm	0,05

**- Environment**

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

**- Guidance for downstream users**

**Health:**

The available data on hazards do not confirm the need for a DNEL value to other health effects.

Expected exposure does not exceed the DNEL / DMEL values when the risk management measures / operating conditions are observed.

Risk management measures are based on the qualitative risk description.

If further risk management measures / operating conditions are adopted, users should ensure that risks are limited to at least an equivalent level.

Detailed information on the exposure estimation can be found at <http://www.ecetoc.org/tra>.

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**Annex: Exposure scenario 3**

**- Short title of the exposure scenario**

Uses in Coatings

Industrial

**- Sector of Use** SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites

**- Process category**

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

PROC4 Chemical production where opportunity for exposure arises

PROC5 Mixing or blending in batch processes

PROC7 Industrial spraying

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)

PROC10 Roller application or brushing

PROC13 Treatment of articles by dipping and pouring

PROC14 Tableting, compression, extrusion, pelletisation, granulation

PROC15 Use as laboratory reagent

**- Environmental release category**

ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article)

**- Description of the activities / processes covered in the Exposure Scenario**

Covers the use in coatings (paints, inks, adhesives, etc.) including exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application by spray, roller, spreader, dip, flow, fluidized bed on production lines and film formation) and equipment cleaning, maintenance and associated laboratory activities.

**- Conditions of use**

**- Duration and frequency**

**- Worker**

Regular use with exposure up to 8 hrs. per workday.

(unless stated differently)

**- Environment**

As no environmental hazard was identified no environmental exposure assessment and risk characterization has been carried out.

**- Physical parameters**

**- Physical state**

Fluid

Vapour pressure: 5 -100 hPa (20 °C)

**- Concentration of the substance in the mixture** Includes concentrations up to: 100%

**- Other operational conditions**

The use assumes  $\leq 20$  °C above ambient temperature, if not indicated otherwise.

**- Other operational conditions affecting worker exposure**

Assumes a good basic standard of occupational hygiene is implemented

**- Risk management measures**

General measures (flammable liquid):

Risks of the physicochemical properties of substances, such as flammability or explosiveness, can be controlled by implementing risk management measures. It is recommended to follow the new ATEX Directive 2014/34 / EU. Based on the implementation of a selection of risk management measures for handling and storage for the identified uses, the risk can be viewed as controlled at an acceptable level. Use in closed systems. Avoid ignition sources - Do not smoke. Use in well-ventilated areas to avoid the

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formation of an explosive atmosphere. Devices and protective systems approved for inflammable substances. Limit the flow rate in the pipes during pumping to avoid electrostatic charging. Clean the tank and the plant to be filled. Use a spark-free tool. Observe relevant EU / national guidelines. Observe additional notes in the SDS.

For following contributing scenarios store substance within a closed system:

General exposures (closed systems): PROC1, PROC3

General exposure (closed systems) with sampling Use in closed systems: PROC2

Film formation - force drying, stoving and other technologies: PROC2

Mixing operations (closed systems): PROC3

For following contributing scenarios no other specific measures are identified:

Film formation - air drying: PROC4

Preparation of material for application Mixing operations (open systems): PROC5

Roller, spreader, flow application: PROC10

Laboratory activities: PROC15

Material transfers Drum / batch (filling and pouring from containers): PROC9

Production of preparations or articles by tableting, compression, extrusion, pelettisation: PROC14

For the following contributing scenarios clean transfer lines before decoupling:

Material transfers: PROC8a, PROC8b

For the following contributing scenarios avoid manual contact with wet work pieces:

dipping and pouring: PROC13

For following contributing scenarios, carry out in a vented booth provided with laminar airflow:

Spraying (automatic/robotic): PROC7

For the following contributing scenarios a sufficient measure of controlled ventilation must be ensured (10 to 15 air changes per hour):

Manual Spraying: PROC7

**- Worker protection**

**- Personal protective measures**

For more information on "Personal protective equipment" see section 8 of the MSDS

**- Disposal measures**

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

If possible, send to be recycled, otherwise burn or deposit in a certified facility.

**- Exposure estimation** The exposure estimation was carried out in accordance with ECETOC TRA.

**- Worker (dermal)**

	Exposure estimation	RCR
PROC1:	0,34 mg/kg/d	0,0
PROC2:	1,37 mg/kg/d	0,0
PROC3:	0,34 mg/kg/d	0,0
PROC4:	6,86 mg/kg/d	0,0
PROC5:	13,71 mg/kg/d	0,0
PROC7:	42,86 mg/kg/d	0,0
PROC8a:	13,71 mg/kg/d	0,0
PROC8b:	6,86 mg/kg/d	0,0
PROC9:	6,86 mg/kg/d	0,0
PROC10:	27,43 mg/kg/d	0,0
PROC13:	0,69 mg/kg/d	0,0
PROC14:	3,43 mg/kg/d	0,0
PROC15:	0,34 mg/kg/d	0,0

**- Worker (inhalation)**

	Exposure estimation	RCR
PROC1:	0,01 ppm	0,0
PROC2:	10 ppm	0,0
	50 ppm	0,2
PROC3:	25 ppm	0,1
PROC4:	20 ppm	0,1
PROC5:	50 ppm	0,2

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PROC7:	50	ppm	0,2
	75	ppm	0,4
PROC8a:	75	ppm	0,2
PROC8b:	50	ppm	0,2
PROC9:	50	ppm	0,2
PROC10:	50	ppm	0,2
PROC13:	50	ppm	0,2
PROC14:	50	ppm	0,2
PROC15:	10	ppm	0,0

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**- Environment**

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

**- Guidance for downstream users**

Health:

The available data on hazards do not confirm the need for a DNEL value to other health effects.

Expected exposure does not exceed the DNEL / DMEL values when the risk management measures / operating conditions are observed.

Risk management measures are based on the qualitative risk description.

If further risk management measures / operating conditions are adopted, users should ensure that risks are limited to at least an equivalent level.

Detailed information on the exposure estimation can be found at <http://www.ecetoc.org/tra>.

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**Annex: Exposure scenario 4**

**- Short title of the exposure scenario**

Use in cleaning agents

Industrial

**- Sector of Use** SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites

**- Process category**

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

PROC4 Chemical production where opportunity for exposure arises

PROC7 Industrial spraying

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

PROC10 Roller application or brushing

PROC13 Treatment of articles by dipping and pouring

**- Environmental release category**

ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article)

**- Description of the activities / processes covered in the Exposure Scenario**

Covers the use as a component of cleaning products including transfers from storage, pouring/unloading from drums or containers. Exposures during mixing/diluting in the preparatory phase and cleaning activities (including spraying, brushing, dipping, wiping, automated and by hand), related equipment cleaning and maintenance.

**- Conditions of use**

**- Duration and frequency**

**- Worker**

Regular use with exposure up to 8 hrs. per workday.

(unless stated differently)

**- Environment**

As no environmental hazard was identified no environmental exposure assessment and risk characterization has been carried out.

**- Physical parameters**

**- Physical state**

Fluid

Vapour pressure: 5 -100 hPa (20 °C)

**- Concentration of the substance in the mixture** Includes concentrations up to: 100%

**- Other operational conditions**

The use assumes  $\leq 20$  ° C above ambient temperature, if not indicated otherwise.

**- Other operational conditions affecting worker exposure**

Assumes a good basic standard of occupational hygiene is implemented

**- Risk management measures**

General measures (flammable liquid):

Risks of the physicochemical properties of substances, such as flammability or explosiveness, can be controlled by implementing risk management measures. It is recommended to follow the new ATEX Directive 2014/34 / EU. Based on the implementation of a selection of risk management measures for handling and storage for the identified uses, the risk can be viewed as controlled at an acceptable level. Use in closed systems. Avoid ignition sources - Do not smoke. Use in well-ventilated areas to avoid the formation of an explosive atmosphere. Devices and protective systems approved for inflammable substances. Limit the flow rate in the pipes during pumping to avoid electrostatic charging. Clean the tank and the plant to be filled. Use a spark-free tool. Observe relevant EU / national guidelines. Observe additional notes in the SDS.

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For following contributing scenarios no other specific measures are identified:

Automated process with (semi) closed systems. Use in contained systems: PROC2

Automated process with (semi) closed systems Drum/batch transfers Use in contained systems: PROC3

Application of cleaning products in closed systems: -

Use in closed batch processes: PROC4

Degreasing small objects in cleaning station: PROC13

Cleaning with low-pressure washers: PROC10

Manual surface cleaning: PROC10

For the following contributing scenarios clean transfer lines before decoupling:

Bulk transfers: PROC8a

Filling / preparation of equipment from drums or containers: PROC8b

For the following contributing scenarios a sufficient measure of controlled ventilation must be ensured (10 to 15 air changes per hour):

Cleaning with high pressure washers: PROC7

**- Worker protection**

**- Personal protective measures**

For more information on "Personal protective equipment" see section 8 of the MSDS

**- Disposal measures**

Must not be disposed of together with household garbage. Do not allow product to reach sewage system. If possible, send to be recycled, otherwise burn or deposit in a certified facility.

**- Exposure estimation** The exposure estimation was carried out in accordance with ECETOC TRA.

**- Worker (dermal)**

.	Exposure estimation	RCR
PROC2:	1,37 mg/kg/d	0,0
PROC3:	0,34 mg/kg/d	0,0
PROC4:	6,86 mg/kg/d	0,0
PROC7:	42,86 mg/kg/d	0,0
PROC8a:	13,71 mg/kg/d	0,0
PROC8b:	6,86 mg/kg/d	0,0
PROC10:	27,43 mg/kg/d	0,0
	13,71 mg/kg/d	0,0
PROC13:	13,71 mg/kg/d	0,0

**- Worker (inhalation)**

.	Exposure estimation	RCR
PROC2:	10 ppm	0,0
PROC3:	25 ppm	0,1
PROC4:	100 ppm	0,5
PROC7:	75 ppm	0,4
PROC8a:	50 ppm	0,2
PROC8b:	50 ppm	0,2
PROC10:	50 ppm	0,2
PROC13:	50 ppm	0,2

**- Environment**

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

**- Guidance for downstream users**

Health:

The available data on hazards do not confirm the need for a DNEL value to other health effects.

Expected exposure does not exceed the DNEL / DMEL values when the risk management measures / operating conditions are observed.

Risk management measures are based on the qualitative risk description.

If further risk management measures / operating conditions are adopted, users should ensure that risks are limited to at least an equivalent level.

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Detailed information on the exposure estimation can be found at <http://www.ecetoc.org/tra>.

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**Annex: Exposure scenario 5**

**- Short title of the exposure scenario**

Lubricants  
Industrial

**- Sector of Use** SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites

**- Process category**

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

PROC4 Chemical production where opportunity for exposure arises

PROC7 Industrial spraying

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)

PROC10 Roller application or brushing

PROC13 Treatment of articles by dipping and pouring

PROC17 Lubrication at high energy conditions in metal working operations

PROC18 General greasing /lubrication at high kinetic energy conditions

**- Environmental release category**

ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article)

ERC7 Use of functional fluid at industrial site

**- Description of the activities / processes covered in the Exposure Scenario**

Covers the use of formulated lubricants in closed and open systems including material transfers operations, operation of machinery/engines and similar articles, reworking on reject articles, equipment maintenance and disposal of wastes.

**- Conditions of use**

**- Duration and frequency**

**- Worker**

Regular use with exposure up to 8 hrs. per workday.  
(unless stated differently)

**- Environment**

As no environmental hazard was identified no environmental exposure assessment and risk characterization has been carried out.

**- Physical parameters**

**- Physical state**

Fluid

Vapour pressure: 62.2 hPa (20 °C)

**- Concentration of the substance in the mixture** Includes concentrations up to: 100%

**- Other operational conditions**

The use assumes  $\leq 20$  °C above ambient temperature, if not indicated otherwise.

**- Other operational conditions affecting worker exposure**

Assumes a good basic standard of occupational hygiene is implemented

**- Risk management measures**

General measures (flammable liquid):

Risks of the physicochemical properties of substances, such as flammability or explosiveness, can be controlled by implementing risk management measures. It is recommended to follow the new ATEX Directive 2014/34 / EU. Based on the implementation of a selection of risk management measures for handling and storage for the identified uses, the risk can be viewed as controlled at an acceptable level. Use in closed systems. Avoid ignition sources - Do not smoke. Use in well-ventilated areas to avoid the formation of an explosive atmosphere. Devices and protective systems approved for inflammable

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substances. Limit the flow rate in the pipes during pumping to avoid electrostatic charging. Clean the tank and the plant to be filled. Use a spark-free tool. Observe relevant EU / national guidelines. Observe additional notes in the SDS.

For following contributing scenarios store substance within a closed system:

General exposures (closed systems): PROC1, PROC2, PROC3

For following contributing scenarios Store substance within a closed system:

Storage: PROC1, PROC2

For following contributing scenarios avoid sampling by immersion:

Storage (closed system): PROC1, PROC2

For following contributing scenarios no other specific measures are identified:

General exposures (open systems): PROC4

Filling / preparation of equipment from drums or containers: PROC8a, PROC8b

Initially, factory fill of equipment: PROC9

Roller application or brushing: PROC10

Treatment by dipping and pouring: PROC13

Maintenance (of large systems) and machine set-up operation is carried out at elevated temperature (> 20 °C above ambient temperature): PROC8b

For the following contributing scenarios clean transfer lines before decoupling:

Bulk transfers (closed systems): PROC8b

Maintenance (of large systems) and machine set-up: PROC8b

For the following contributing scenarios avoid manual contact with wet work pieces:

Maintenance of small installations: PROC8a

For the following contributing scenarios clear spills immediately:

Bulk transfers: PROC8b

For the following contributing scenarios limit access area to the facilities:

Operation and lubrication of open equipment with high energy : PROC17, PROC18

For the following scenarios drain downs in sealed storage pending disposal or for subsequent recycle:

Recycling of rejects: PROC9

Equipment cleaning and maintenance: PROC8a

For the following contributing scenarios minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings (Effectiveness: -)

Spraying: PROC7

For the following scenarios deaerate displaced vapors remotely: (-)

Mass Transfer: PROC 8b

**- Worker protection**

**- Technical protective measures**

Replacing, where appropriate, manual processes by automated and/or closed processes. This would avoid irritating mists, sprayings and subsequent potential splashes:

- Use closed systems or covering of open containers (e.g. screens).

- Transport over pipes, technical barrel filling/emptying of barrel with automatic systems (suction pumps etc.).

- Use of pliers, grip arms with long handles with manual use to avoid direct contact and exposure by splashes (no working over one's head).

- Local exhaust ventilation and/or general ventilation is good practice.

**- Personal protective measures**

For more information on "Personal protective equipment" see section 8 of the MSDS

**- Disposal measures**

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

If possible, send to be recycled, otherwise burn or deposit in a certified facility.

**- Exposure estimation** The exposure estimation was carried out in accordance with ECETOC TRA.

**- Worker (dermal)**

	Exposure estimation	RCR
PROC1:	1,37 mg/kg/d	0,00
PROC2:	1,37 mg/kg/d	0,00
PROC3:	0,34 mg/kg/d	0,00

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PROC4:	0,69 mg/kg/d	0,00
PROC7:	2,14 mg/kg/d	0,00
PROC8a:	13,71 mg/kg/d	0,02
	6,86 mg/kg/d	0,01
PROC8b:	6,86 mg/kg/d	0,01
	0,69 mg/kg/d	0,00
PROC9:	6,86 mg/kg/d	0,01
	0,69 mg/kg/d	0,00
PROC10:	27,43 mg/kg/d	0,03
PROC13:	13,71 mg/kg/d	0,02
PROC17:	1,37 mg/kg/d	0,00
PROC18:	0,69 mg/kg/d	0,00

**- Worker (inhalation)**

	Exposure estimation	RCR
PROC1:	10 ppm	0,05
PROC2:	10 ppm	0,05
PROC3:	25 ppm	0,12
PROC4:	5 ppm	0,50
	20 ppm	0,10
PROC7:	1 ppm	0,10
	12,5 ppm	0,06
PROC8a:	50 ppm	0,25
PROC8b:	50 ppm	0,25
	150 ppm	0,74
PROC9:	50 ppm	0,25
PROC10:	50 ppm	0,25
PROC13:	50 ppm	0,25
PROC17:	50 ppm	0,25
	4 ppm	0,40
PROC18:	50 ppm	0,25
	4 ppm	0,40

**- Environment**

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

**- Guidance for downstream users**

**Health:**

The available data on hazards do not confirm the need for a DNEL value to other health effects.

Expected exposure does not exceed the DNEL / DMEL values when the risk management measures / operating conditions are observed.

Risk management measures are based on the qualitative risk description.

If further risk management measures / operating conditions are adopted, users should ensure that risks are limited to at least an equivalent level.

Detailed information on the exposure estimation can be found at <http://www.ecetoc.org/tra>.

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**Annex: Exposure scenario 6**

**- Short title of the exposure scenario**

Metal working fluids / rolling oils

Industrial

**- Sector of Use** SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites

**- Process category**

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

PROC4 Chemical production where opportunity for exposure arises

PROC5 Mixing or blending in batch processes

PROC7 Industrial spraying

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)

PROC10 Roller application or brushing

PROC13 Treatment of articles by dipping and pouring

PROC17 Lubrication at high energy conditions in metal working operations

**- Environmental release category**

ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article)

**- Description of the activities / processes covered in the Exposure Scenario**

Covers the use in formulated metal working fluids/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.

**- Conditions of use**

**- Duration and frequency**

**- Worker**

Regular use with exposure up to 8 hrs. per workday.

(unless stated differently)

**- Environment**

As no environmental hazard was identified no environmental exposure assessment and risk characterization has been carried out.

**- Physical parameters**

**- Physical state**

Fluid

Vapour pressure: 62.2 hPa (20 °C)

**- Concentration of the substance in the mixture** Includes concentrations up to: 100%

**- Other operational conditions**

The use assumes  $\leq 20$  °C above ambient temperature, if not indicated otherwise.

**- Other operational conditions affecting worker exposure**

Assumes a good basic standard of occupational hygiene is implemented

**- Risk management measures**

General measures (flammable liquid):

Risks of the physicochemical properties of substances, such as flammability or explosiveness, can be controlled by implementing risk management measures. It is recommended to follow the new ATEX Directive 2014/34 / EU. Based on the implementation of a selection of risk management measures for handling and storage for the identified uses, the risk can be viewed as controlled at an acceptable level. Use in closed systems. Avoid ignition sources - Do not smoke. Use in well-ventilated areas to avoid the

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formation of an explosive atmosphere. Devices and protective systems approved for inflammable substances. Limit the flow rate in the pipes during pumping to avoid electrostatic charging. Clean the tank and the plant to be filled. Use a spark-free tool. Observe relevant EU / national guidelines. Observe additional notes in the SDS.

For following contributing scenarios store substance within a closed system:

General exposures (closed systems): PROC1, PROC2, PROC3

For following contributing scenarios Store substance within a closed system:

Storage: PROC1, PROC2

For following contributing scenarios no other specific measures are identified:

General exposures (open systems): PROC4

Filling / preparation of equipment from drums or containers: PROC5, PROC8b, PROC9

Automated metal rolling and forming operation is carried out at elevated temperature (> 20 ° C above ambient temperature). Contained use: PROC2

For the following contributing scenarios clean transfer lines before decoupling:

Bulk transfers: PROC8b

For the following contributing scenarios using special equipment:

Process sampling: PROC8b

For the following contributing scenarios limit access area to the facilities:

Metalworking activities: PROC17

For the following contributing scenarios give the product time to drain from the workpiece:

dipping and pouring: PROC13

For the following contributing scenarios minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings (Effectiveness: -)

Spraying: PROC7

Semiautomatic metal rolling and metal forming operation is carried out at elevated temperature (> 20 ° C above ambient temperature): PROC17

For the following scenarios drain downs in sealed storage pending disposal or for subsequent recycle:

Equipment cleaning and maintenance: PROC8a, PROC8b

**- Worker protection**

**- Technical protective measures**

Replacing, where appropriate, manual processes by automated and/or closed processes. This would avoid irritating mists, sprayings and subsequent potential splashes:

- Use closed systems or covering of open containers (e.g. screens).

- Transport over pipes, technical barrel filling/emptying of barrel with automatic systems (suction pumps etc.).

- Use of pliers, grip arms with long handles with manual use to avoid direct contact and exposure by splashes (no working over one's head).

- Local exhaust ventilation and/or general ventilation is good practice.

Avoid splashes.

**- Personal protective measures**

For more information on "Personal protective equipment" see section 8 of the MSDS

**- Disposal measures**

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

If possible, send to be recycled, otherwise burn or deposit in a certified facility.

**- Exposure estimation** The exposure estimation was carried out in accordance with ECETOC TRA.

**- Worker (dermal)**

	Exposure estimation	RCR
PROC1:	1,37 mg/kg/d	0,00
PROC2:	1,37 mg/kg/d	0,00
	0,14 mg/kg/d	0,00
PROC3:	0,34 mg/kg/d	0,00
PROC4:	6,86 mg/kg/d	0,01
PROC5:	13,71 mg/kg/d	0,02
PROC7:	2,14 mg/kg/d	0,00
	42,86 mg/kg/d	0,00

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PROC8a:	13,71 mg/kg/d	0,02
PROC8b:	6,86 mg/kg/d	0,01
PROC9:	6,86 mg/kg/d	0,01
PROC10:	27,43 mg/kg/d	0,03
PROC13:	13,71 mg/kg/d	0,02
PROC17:	1,37 mg/kg/d	0,00
	27,43 mg/kg/d	0,00

**- Worker (inhalation)**

	Exposure estimation	RCR
PROC1:	10 ppm	0,05
	20 ppm	0,10
PROC2:	10 ppm	0,05
	20 ppm	0,10
	50 ppm	0,25
PROC3:	25 ppm	0,12
PROC4:	20 ppm	0,10
	100 ppm	0,49
PROC5:	50 ppm	0,25
PROC7:	4 ppm	0,40
	50 ppm	0,25
PROC8a:	50 ppm	0,25
PROC8b:	50 ppm	0,25
PROC9:	50 ppm	0,25
PROC10:	50 ppm	0,25
PROC13:	50 ppm	0,25
PROC17:	100 ppm	0,49
	50 ppm	0,25
	2 ppm	0,20

**- Environment**

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

**- Guidance for downstream users**

**Health:**

The available data on hazards do not confirm the need for a DNEL value to other health effects.

Expected exposure does not exceed the DNEL / DMEL values when the risk management measures / operating conditions are observed.

Risk management measures are based on the qualitative risk description.

If further risk management measures / operating conditions are adopted, users should ensure that risks are limited to at least an equivalent level.

Detailed information on the exposure estimation can be found at <http://www.ecetoc.org/tra>.

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**Trade name: Isopropanol 99%**

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**Annex: Exposure scenario 7**

**- Short title of the exposure scenario**

blowing agent  
Industrial

**- Sector of Use** SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites

**- Process category**

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

PROC4 Chemical production where opportunity for exposure arises

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)

PROC12 Use of blowing agents in manufacture of foam

**- Environmental release category**

ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article)

**- Description of the activities / processes covered in the Exposure Scenario**

Use as a blowing agent for hard and soft foams, including material transfer, mixing and spraying, hardening, cutting, storage and packaging.

**- Conditions of use**

**- Duration and frequency**

**- Worker**

Regular use with exposure up to 8 hrs. per workday.  
(unless stated differently)

**- Environment**

As no environmental hazard was identified no environmental exposure assessment and risk characterization has been carried out.

**- Physical parameters**

**- Physical state**

Fluid

Vapour pressure: 62.2 hPa (20 °C)

**- Concentration of the substance in the mixture** Includes concentrations up to: 100%

**- Other operational conditions**

The use assumes  $\leq 20$  °C above ambient temperature, if not indicated otherwise.

**- Other operational conditions affecting worker exposure**

Assumes a good basic standard of occupational hygiene is implemented

**- Risk management measures**

General measures (flammable liquid):

Risks of the physicochemical properties of substances, such as flammability or explosiveness, can be controlled by implementing risk management measures. It is recommended to follow the new ATEX Directive 2014/34 / EU. Based on the implementation of a selection of risk management measures for handling and storage for the identified uses, the risk can be viewed as controlled at an acceptable level.

Use in closed systems. Avoid ignition sources - Do not smoke. Use in well-ventilated areas to avoid the formation of an explosive atmosphere. Devices and protective systems approved for inflammable substances. Limit the flow rate in the pipes during pumping to avoid electrostatic charging. Clean the tank and the plant to be filled. Use a spark-free tool. Observe relevant EU / national guidelines. Observe additional notes in the SDS.

For following contributing scenarios no other specific measures are identified:

Mixing operations (closed systems): PROC1

Storage: PROC12

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**Trade name: Isopropanol 99%**

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Extrusion and expansion of the polymer composition: PROC12

Cutting and planing: PROC12

Collection and recycling of shavings, pieces of wood, etc.: PROC12

Product packaging: PROC12

Mixing operations (closed systems) operation is carried out at elevated temperature (> 20 ° C above ambient temperature): PROC3

Storage of polymer intermediates operation is carried out at elevated temperature (> 20 ° C above ambient temperature): PROC3

Centrifugation including emptying operation is carried out at elevated temperature (> 20 ° C above ambient temperature): PROC3

Drying and storage: PROC12

packing medium-sized amounts: PROC8b

Behandlung durch Erhitzen Betrieb erfolgt bei erhöhter Temperatur (>20°C über Umgebungstemperatur): PROC12

Cast product operation is carried out at elevated temperature (> 20 ° C below ambient temperature): PROC12

Cutting with hot wire Manual: PROC12

For the following contributing scenarios clean transfer lines before decoupling:

Bulk transfers: PROC8b

If, possible use vapor recovery systems.

**- Worker protection**

**- Personal protective measures**

For more information on "Personal protective equipment" see section 8 of the MSDS

**- Disposal measures**

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

If possible, send to be recycled, otherwise burn or deposit in a certified facility.

**- Exposure estimation** The exposure estimation was carried out in accordance with ECETOC TRA.

**- Worker (dermal)**

	Exposure estimation	RCR
PROC1:	0,34 mg/kg/d	0,00
PROC3:	0,34 mg/kg/d	0,00
PROC8b:	6,86 mg/kg/d	0,01
PROC12:	0,34 mg/kg/d	0,00

**- Worker (inhalation)**

	Exposure estimation	RCR
PROC1:	0,01 ppm	0,00
PROC3:	50 ppm	0,25
PROC8b:	150 ppm	0,74
PROC12:	100 ppm	0,49

**- Environment**

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

**- Guidance for downstream users**

Health:

The available data on hazards do not confirm the need for a DNEL value to other health effects.

Expected exposure does not exceed the DNEL / DMEL values when the risk management measures / operating conditions are observed.

Risk management measures are based on the qualitative risk description.

If further risk management measures / operating conditions are adopted, users should ensure that risks are limited to at least an equivalent level.

Detailed information on the exposure estimation can be found at <http://www.ecetoc.org/tra>.

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**Trade name: Isopropanol 99%**

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**Annex: Exposure scenario 8**

**- Short title of the exposure scenario**

Use as binders and release agents  
Industrial

**- Sector of Use** SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites

**- Process category**

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

PROC4 Chemical production where opportunity for exposure arises

PROC6 Calendering operations

PROC7 Industrial spraying

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

PROC10 Roller application or brushing

PROC13 Treatment of articles by dipping and pouring

PROC14 Tableting, compression, extrusion, pelletisation, granulation

**- Environmental release category**

ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article)

**- Description of the activities / processes covered in the Exposure Scenario**

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.

**- Conditions of use**

**- Duration and frequency**

**- Worker**

Regular use with exposure up to 8 hrs. per workday.  
(unless stated differently)

**- Environment**

As no environmental hazard was identified no environmental exposure assessment and risk characterization has been carried out.

**- Physical parameters**

**- Physical state**

Fluid

Vapour pressure: 62.2 hPa (20 °C)

**- Concentration of the substance in the mixture** Includes concentrations up to: 100%

**- Other operational conditions**

The use assumes  $\leq 20$  °C above ambient temperature, if not indicated otherwise.

**- Other operational conditions affecting worker exposure**

Assumes a good basic standard of occupational hygiene is implemented

**- Risk management measures**

General measures (flammable liquid):

Risks of the physicochemical properties of substances, such as flammability or explosiveness, can be controlled by implementing risk management measures. It is recommended to follow the new ATEX Directive 2014/34 / EU. Based on the implementation of a selection of risk management measures for handling and storage for the identified uses, the risk can be viewed as controlled at an acceptable level. Use in closed systems. Avoid ignition sources - Do not smoke. Use in well-ventilated areas to avoid the formation of an explosive atmosphere. Devices and protective systems approved for inflammable substances. Limit the flow rate in the pipes during pumping to avoid electrostatic charging. Clean the tank and the plant to be filled. Use a spark-free tool. Observe relevant EU / national guidelines. Observe additional notes in the SDS.

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**Trade name: Isopropanol 99%**

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For following contributing scenarios no other specific measures are identified:

Mixing operations (closed systems): PROC3

Mixing operations (open systems): PROC4

Drum/batch transfers: PROC8b

Mould forming: PROC14

Roller application or brushing: PROC10

For the following contributing scenarios clean transfer lines before decoupling:

Material transfers: PROC1, PROC2, PROC3

For following contributing scenarios Store substance within a closed system:

Storage: PROC1, PROC2

For following contributing scenarios carry out in a vented booth or extracted housing :

Manual Spraying: PROC7

For following contributing scenarios provide extract ventilation to points where emissions occur:

Casting method (open system) operation is carried out at elevated temperature (> 20 ° C above ambient temperature). Aerosol generation through increased processing temperature: PROC6

For the following contributing scenarios minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings (Effectiveness: -)

Spraying Machine: PROC7

If possible, automate activities.

**- Worker protection**

**- Personal protective measures**

For more information on "Personal protective equipment" see section 8 of the MSDS

**- Disposal measures**

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

If possible, send to be recycled, otherwise burn or deposit in a certified facility.

**- Exposure estimation** The exposure estimation was carried out in accordance with ECETOC TRA.

**- Worker (dermal)**

	Exposure estimation	RCR
PROC1:	0,14 mg/kg/d	0,00
	1,37 mg/kg/d	0,00
PROC2:	0,14 mg/kg/d	0,00
	1,37 mg/kg/d	0,00
PROC3:	0,14 mg/kg/d	0,00
	0,34 mg/kg/d	0,00
PROC4:	6,86 mg/kg/d	0,01
PROC6:	1,37 mg/kg/d	0,00
	27,43 mg/kg/d	0,03
PROC7:	42,86 mg/kg/d	0,05
	2,14 mg/kg/d	0,00
PROC8b:	6,86 mg/kg/d	0,01
PROC10:	27,43 mg/kg/d	0,03
PROC14:	3,43 mg/kg/d	0,00

**- Worker (inhalation)**

	Exposure estimation	RCR
PROC1:	10 ppm	0,05
	25 ppm	0,12
PROC2:	10 ppm	0,05
	25 ppm	0,12
PROC3:	25 ppm	0,12
PROC4:	20 ppm	0,10
PROC6:	2,5 ppm	0,25
	25 ppm	0,12
PROC7:	175 ppm	0,86
	5 ppm	0,50
	25 ppm	0,12

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**Trade name: Isopropanol 99%**

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PROC8b: 50 ppm 0,25  
PROC10: 50 ppm 0,25  
PROC14: 50 ppm 0,25

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**- Environment**

*As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.*

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**- Guidance for downstream users**

**Health:**

*The available data on hazards do not confirm the need for a DNEL value to other health effects.*

*Expected exposure does not exceed the DNEL / DMEL values when the risk management measures / operating conditions are observed.*

*Risk management measures are based on the qualitative risk description.*

*If further risk management measures / operating conditions are adopted, users should ensure that risks are limited to at least an equivalent level.*

*Detailed information on the exposure estimation can be found at <http://www.ecetoc.org/tra>.*

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**Trade name: Isopropanol 99%**

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**Annex: Exposure scenario 9**

**- Short title of the exposure scenario**

Use as a fuel

Industrial

- **Sector of Use** SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites

**- Process category**

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

PROC16 Use of fuels

- **Environmental release category** ERC7 Use of functional fluid at industrial site

- **Notes** Specific Environmental Release Category: ESVOC 7.12a.v1

**- Description of the activities / processes covered in the Exposure Scenario**

Covers the use as a fuel (or fuel additive and additive components) and includes activities associated with its transfer, use, equipment maintenance and handling of waste.

**- Conditions of use**

**- Duration and frequency**

**- Worker**

Regular use with exposure up to 8 hrs. per workday.

(unless stated differently)

**- Environment**

As no environmental hazard was identified no environmental exposure assessment and risk characterization has been carried out.

**- Physical parameters**

**- Physical state**

Fluid

Vapour pressure: 62.2 hPa (20 °C)

- **Concentration of the substance in the mixture** Includes concentrations up to: 100%

**- Other operational conditions**

The use assumes ≤ 20 °C above ambient temperature, if not indicated otherwise.

**- Other operational conditions affecting worker exposure**

Assumes a good basic standard of occupational hygiene is implemented

**- Risk management measures**

General measures (flammable liquid):

Risks of the physicochemical properties of substances, such as flammability or explosiveness, can be controlled by implementing risk management measures. It is recommended to follow the new ATEX Directive 2014/34 / EU. Based on the implementation of a selection of risk management measures for handling and storage for the identified uses, the risk can be viewed as controlled at an acceptable level.

Use in closed systems. Avoid ignition sources - Do not smoke. Use in well-ventilated areas to avoid the formation of an explosive atmosphere. Devices and protective systems approved for inflammable substances. Limit the flow rate in the pipes during pumping to avoid electrostatic charging. Clean the tank and the plant to be filled. Use a spark-free tool. Observe relevant EU / national guidelines. Observe additional notes in the SDS.

For following contributing scenarios store substance within a closed system:

Bulk transfers (closed systems): PROC8b

General exposures (closed systems): PROC1, PROC2

Use as a fuel: PROC3

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For the following contributing scenarios clean transfer lines before decoupling:

Bulk transfers: PROC8b

For the following contributing scenarios clear spills immediately:

Drum/batch transfers: PROC8b

For the following contributing scenarios apply access method for containers, including compressed air supply:

Equipment cleaning and maintenance: PROC8a

Container cleaning: PROC8a

For following contributing scenarios Store substance within a closed system:

Storage: PROC1, PROC2

For following contributing scenarios avoid sampling by immersion:

Storage (closed system): PROC1, PROC2

For following contributing scenarios no other specific measures are identified:

Use as a fuel, general exposures (closed systems): PROC1, PROC2, PROC3, PROC16

**- Worker protection**

**- Personal protective measures**

For more information on "Personal protective equipment" see section 8 of the MSDS

**- Disposal measures**

Must not be disposed of together with household garbage. Do not allow product to reach sewage system. If possible, send to be recycled, otherwise burn or deposit in a certified facility.

**- Exposure estimation** The exposure estimation was carried out in accordance with ECETOC TRA.

**- Worker (dermal)**

.	Exposure estimation	RCR
PROC1:	1,37 mg/kg/d	0,00
PROC2:	1,37 mg/kg/d	0,00
PROC3:	0,34 mg/kg/d	0,00
PROC8a:	13.71 mg/kg/d	0,02
PROC8b:	6,86 mg/kg/d	0,01
PROC16:	0,34 mg/kg/d	0,00

**- Worker (inhalation)**

.	Exposure estimation	RCR
PROC1:	10 ppm	0,05
PROC2:	10 ppm	0,05
PROC3:	25 ppm	0,12
PROC8a:	50 ppm	0,25
PROC8b:	50 ppm	0,25
PROC16:	5 ppm	0,02

**- Environment**

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

**- Guidance for downstream users**

Health:

The available data on hazards do not confirm the need for a DNEL value to other health effects.

Expected exposure does not exceed the DNEL / DMEL values when the risk management measures / operating conditions are observed.

Risk management measures are based on the qualitative risk description.

If further risk management measures / operating conditions are adopted, users should ensure that risks are limited to at least an equivalent level.

Detailed information on the exposure estimation can be found at <http://www.ecetoc.org/tra>.

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**Trade name: Isopropanol 99%**

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**Annex: Exposure scenario 10**

**- Short title of the exposure scenario**

functional Fluids

Industrial

**- Sector of Use** SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites

**- Process category**

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

PROC4 Chemical production where opportunity for exposure arises

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)

**- Environmental release category** ERC7 Use of functional fluid at industrial site

**- Description of the activities / processes covered in the Exposure Scenario**

Use as functional fluids e.g. cable oils, transfer oils, coolants, insulators, refrigerants, hydraulic fluids in industrial equipment including maintenance and related material transfers.

**- Conditions of use**

**- Duration and frequency**

**- Worker**

Regular use with exposure up to 8 hrs. per workday.

(unless stated differently)

**- Environment**

As no environmental hazard was identified no environmental exposure assessment and risk characterization has been carried out.

**- Physical parameters**

**- Physical state**

Fluid

Vapour pressure: 62.2 hPa (20 °C)

**- Concentration of the substance in the mixture** Includes concentrations up to: 100%

**- Other operational conditions**

The use assumes ≤ 20 °C above ambient temperature, if not indicated otherwise.

**- Other operational conditions affecting worker exposure**

Assumes a good basic standard of occupational hygiene is implemented

**- Risk management measures**

General measures (flammable liquid):

Risks of the physicochemical properties of substances, such as flammability or explosiveness, can be controlled by implementing risk management measures. It is recommended to follow the new ATEX Directive 2014/34 / EU. Based on the implementation of a selection of risk management measures for handling and storage for the identified uses, the risk can be viewed as controlled at an acceptable level. Use in closed systems. Avoid ignition sources - Do not smoke. Use in well-ventilated areas to avoid the formation of an explosive atmosphere. Devices and protective systems approved for inflammable substances. Limit the flow rate in the pipes during pumping to avoid electrostatic charging. Clean the tank and the plant to be filled. Use a spark-free tool. Observe relevant EU / national guidelines. Observe additional notes in the SDS.

For the following contributing scenarios Transfer via enclosed lines:

Bulk transfers: PROC1, PROC2

For the following contributing scenarios clean transfer lines before decoupling:

Bulk transfers (closed systems): PROC1, PROC2

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For following contributing scenarios no other specific measures are identified:

Drum/batch transfers: PROC8b

Filling of articles / equipment (closed systems): PROC9

General exposures (closed systems): PROC2

General exposures (open systems): PROC4

General exposures (open systems) Operation is carried out at elevated temperature (> 20°C above ambient temperature): PROC4

For following contributing scenarios use drum pumps or carefully pour out container:

General exposures (closed systems) with occasional controlled exposure: Proc2

For the following scenarios drain downs in sealed storage pending disposal or for subsequent recycle:

Recycling of rejects: PROC9

Equipment maintenance: PROC8a

For following contributing scenarios Store substance within a closed system:

Storage: PROC1, PROC2

**- Worker protection**

**- Personal protective measures**

For more information on "Personal protective equipment" see section 8 of the MSDS

**- Disposal measures**

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

If possible, send to be recycled, otherwise burn or deposit in a certified facility.

**- Exposure estimation** The exposure estimation was carried out in accordance with ECETOC TRA.

**- Worker (dermal)**

	Exposure estimation	RCR
PROC1:	1,37 mg/kg/d	0,00
PROC2:	1,37 mg/kg/d	0,00
PROC4:	6,86 mg/kg/d	0,01
PROC8a:	13.71 mg/kg/d	0,02
PROC8b:	6,86 mg/kg/d	0,01
PROC9:	6,86 mg/kg/d	0,01

**- Worker (inhalation)**

	Exposure estimation	RCR
PROC1:	10 ppm	0,05
PROC2:	10 ppm	0,05
PROC4:	20 ppm	0,10
	25 ppm	0,12
	100 ppm	0,49
PROC8a:	50 ppm	0,25
PROC8b:	50 ppm	0,25
PROC9:	50 ppm	0,25

**- Environment**

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

**- Guidance for downstream users**

Health:

The available data on hazards do not confirm the need for a DNEL value to other health effects.

Expected exposure does not exceed the DNEL / DMEL values when the risk management measures / operating conditions are observed.

Risk management measures are based on the qualitative risk description.

If further risk management measures / operating conditions are adopted, users should ensure that risks are limited to at least an equivalent level.

Detailed information on the exposure estimation can be found at <http://www.ecetoc.org/tra>.

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**Trade name: Isopropanol 99%**

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**Annex: Exposure scenario 11**

**- Short title of the exposure scenario**

Rubber production and processing  
Industrial

**- Sector of Use** SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites

**- Process category**

- PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.  
PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions  
PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition  
PROC4 Chemical production where opportunity for exposure arises  
PROC5 Mixing or blending in batch processes  
PROC6 Calendering operations  
PROC7 Industrial spraying  
PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities  
PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities  
PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)  
PROC13 Treatment of articles by dipping and pouring  
PROC14 Tableting, compression, extrusion, pelletisation, granulation  
PROC15 Use as laboratory reagent  
PROC21 Low energy manipulation and handling of substances bound in/on materials or articles

**- Environmental release category**

- ERC1 Manufacture of the substance  
ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article)  
ERC6d Use of reactive process regulators in polymerisation processes at industrial site (inclusion or not into/onto article)

**- Notes** Specific Environmental Release Category: ESVOC 4.19.v1

**- Description of the activities / processes covered in the Exposure Scenario**

Manufacture of tyres and general rubber articles, including processing of raw (uncured) rubber, handling and mixing of rubber additives, vulcanising, cooling and finishing.

**- Conditions of use**

**- Duration and frequency**

**- Worker**

Regular use with exposure up to 8 hrs. per workday.  
(unless stated differently)

**- Environment**

As no environmental hazard was identified no environmental exposure assessment and risk characterization has been carried out.

**- Physical parameters**

**- Physical state**

Fluid  
Vapour pressure: 62.2 hPa (20 °C)

**- Concentration of the substance in the mixture** Includes concentrations up to: 100%

**- Other operational conditions**

The use assumes  $\leq 20$  °C above ambient temperature, if not indicated otherwise.

**- Other operational conditions affecting worker exposure**

Assumes a good basic standard of occupational hygiene is implemented

**- Risk management measures**

General measures (flammable liquid):

Risks of the physicochemical properties of substances, such as flammability or explosiveness, can be controlled by implementing risk management measures. It is recommended to follow the new ATEX

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Directive 2014/34 / EU. Based on the implementation of a selection of risk management measures for handling and storage for the identified uses, the risk can be viewed as controlled at an acceptable level. Use in closed systems. Avoid ignition sources - Do not smoke. Use in well-ventilated areas to avoid the formation of an explosive atmosphere. Devices and protective systems approved for inflammable substances. Limit the flow rate in the pipes during pumping to avoid electrostatic charging. Clean the tank and the plant to be filled. Use a spark-free tool. Observe relevant EU / national guidelines. Observe additional notes in the SDS.

For following contributing scenarios no other specific measures are identified:

Material transfers (closed systems): PROC1, PROC2

Masses weighing: PROC1, PROC2

Small scale weighing: PROC9

Additive premix: PROC3, PROC4, PROC5

Material transfers: PROC8b, PROC9

Pressing uncured rubber blanks: PROC14

Production of products by dipping and pouring: PROC13

Equipment operations: PROC21

Equipment maintenance: PROC8a

For following contributing scenarios Store substance within a closed system:

Storage: PROC1, PROC2

For the following contributing scenarios minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings (Effectiveness: -)

Tire building: PROC7

For the following exposure scenarios by deducting with full enclosure of the operation or equipment minimize:

Calendering (including Banburys), elevated temperature: PROC6

Vulcanization operation is carried out at elevated temperature (> 20 ° C below ambient temperature): PROC6

Cooling cured products operation is carried out at elevated temperature (> 20 ° C above ambient temperature): PROC6

For the following scenarios ensure additional ventilation at transportation points and other openings:

Vulcanization operation is carried out at elevated temperature (> 20 ° C below ambient temperature).

Manual: PROC6

For the following scenarios substance in a closed system:

Material transfers: PROC8b

**- Worker protection**

**- Personal protective measures**

For more information on "Personal protective equipment" see section 8 of the MSDS

**- Disposal measures**

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

If possible, send to be recycled, otherwise burn or deposit in a certified facility.

**- Exposure estimation** The exposure estimation was carried out in accordance with ECETOC TRA.

**- Worker (dermal)**

	Exposure estimation	RCR
PROC1:	1,37 mg/kg/d	0,00
	0,14 mg/kg/d	0,00
PROC2:	1,37 mg/kg/d	0,00
	0,14 mg/kg/d	0,00
PROC3:	0,34 mg/kg/d	0,00
PROC4:	0,34 mg/kg/d	0,00
PROC5:	13,71 mg/kg/d	0,02
PROC6:	27,43 mg/kg/d	0,03
PROC7:	42,86 mg/kg/d	0,05
PROC8a:	13,71 mg/kg/d	0,02
PROC8b:	6,86 mg/kg/d	0,01
PROC9:	6,86 mg/kg/d	0,01

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PROC13:	13.71 mg/kg/d	0,02
PROC14:	3.43 mg/kg/d	0,00
PROC21:	2,83 mg/kg/d	0,00

**- Worker (inhalation)**

.	Exposure estimation		RCR
PROC1:	10	ppm	0,05
PROC2:	10	ppm	0,05
PROC3:	25	ppm	0,12
PROC4:	25	ppm	0,12
PROC5:	50	ppm	0,25
PROC6:	25	ppm	0,12
PROC7:	25	ppm	0,12
PROC8a:	50	ppm	0,25
PROC8b:	25	ppm	0,12
	50	ppm	0,25
PROC9:	50	ppm	0,25
PROC13:	50	ppm	0,25
PROC14:	50	ppm	0,25
PROC21:	0	ppm	0,00

**- Environment**

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

**- Guidance for downstream users**

**Health:**

The available data on hazards do not confirm the need for a DNEL value to other health effects.

Expected exposure does not exceed the DNEL / DMEL values when the risk management measures / operating conditions are observed.

Risk management measures are based on the qualitative risk description.

If further risk management measures / operating conditions are adopted, users should ensure that risks are limited to at least an equivalent level.

Detailed information on the exposure estimation can be found at <http://www.ecetoc.org/tra>.

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**Annex: Exposure scenario 12**

**- Short title of the exposure scenario**

Polymer processing  
Industrial

**- Sector of Use**

SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites  
SU10 Formulation [mixing] of preparations and/or re-packaging (excluding alloys)

**- Process category**

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.  
PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions  
PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition  
PROC4 Chemical production where opportunity for exposure arises  
PROC5 Mixing or blending in batch processes  
PROC6 Calendering operations  
PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities  
PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities  
PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)  
PROC13 Treatment of articles by dipping and pouring  
PROC14 Tableting, compression, extrusion, pelletisation, granulation  
PROC21 Low energy manipulation and handling of substances bound in/on materials or articles

**- Environmental release category**

ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article)

**- Description of the activities / processes covered in the Exposure Scenario**

Processing of formulated polymers including material transfers, additives handling (e.g. pigments, stabilisers, fillers, plasticisers, etc.), moulding, curing, and forming activities, material re-works, storage and associated maintenance.

**- Conditions of use**

**- Duration and frequency**

**- Worker**

Regular use with exposure up to 8 hrs. per workday.  
(unless stated differently)

**- Environment**

As no environmental hazard was identified no environmental exposure assessment and risk characterization has been carried out.

**- Physical parameters**

**- Physical state**

Fluid

Vapour pressure: 62.2 hPa (20 °C)

**- Concentration of the substance in the mixture** Includes concentrations up to: 100%

**- Other operational conditions**

The use assumes  $\leq 20$  ° C above ambient temperature, if not indicated otherwise.

**- Other operational conditions affecting worker exposure**

Assumes a good basic standard of occupational hygiene is implemented

**- Risk management measures**

General measures (flammable liquid):

Risks of the physicochemical properties of substances, such as flammability or explosiveness, can be controlled by implementing risk management measures. It is recommended to follow the new ATEX Directive 2014/34 / EU. Based on the implementation of a selection of risk management measures for handling and storage for the identified uses, the risk can be viewed as controlled at an acceptable level.

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Use in closed systems. Avoid ignition sources - Do not smoke. Use in well-ventilated areas to avoid the formation of an explosive atmosphere. Devices and protective systems approved for inflammable substances. Limit the flow rate in the pipes during pumping to avoid electrostatic charging. Clean the tank and the plant to be filled. Use a spark-free tool. Observe relevant EU / national guidelines. Observe additional notes in the SDS.

For following contributing scenarios no other specific measures are identified:

Material transfers (closed systems): PROC1, PROC2

Calendering (including Banburys), elevated temperature: PROC6

Production of products by dipping and pouring: PROC13

Extrusion and granulation: PROC14

Injection molding of products: PROC14

Equipment operations: PROC21

For following contributing scenarios Store substance within a closed system:

Storage: PROC1, PROC2

For following contributing scenarios store substance within a closed system:

Bulk transfers (closed systems): PROC8b

Masses weighing: PROC1, PROC2

For the following scenarios careful handling of the substance to minimize releases:

Small scale weighing: PROC9

Additive premix: PROC3, PROC4

Additive premix avoid activities involving exposure for more than 4 hours: PROC5

For the following contributing scenarios clear spills immediately:

Equipment maintenance: PROC8a

For the following scenarios use dry break couplings for material transfer:

Bulk transfers: PROC8b, PROC9

**- Worker protection**

**- Personal protective measures**

For more information on "Personal protective equipment" see section 8 of the MSDS

**- Disposal measures**

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

If possible, send to be recycled, otherwise burn or deposit in a certified facility.

**- Exposure estimation** The exposure estimation was carried out in accordance with ECETOC TRA.

**- Worker (dermal)**

	Exposure estimation	RCR
PROC1:	1,37 mg/kg/d	0,00
PROC2:	1,37 mg/kg/d	0,00
PROC3:	6,86 mg/kg/d	0,01
PROC4:	6,86 mg/kg/d	0,01
PROC5:	13,71 mg/kg/d	0,02
PROC6:	27,43 mg/kg/d	0,03
PROC8a:	13,71 mg/kg/d	0,02
PROC8b:	6,86 mg/kg/d	0,01
PROC9:	6,86 mg/kg/d	0,01
PROC13:	13,71 mg/kg/d	0,02
PROC14:	3,43 mg/kg/d	0,00
PROC21:	2,83 mg/kg/d	0,00

**- Worker (inhalation)**

	Exposure estimation	RCR
PROC1:	10 ppm	0,05
PROC2:	10 ppm	0,05
PROC3:	25 ppm	0,12
PROC4:	25 ppm	0,12
PROC5:	50 ppm	0,25
PROC6:	25 ppm	0,12
	50 ppm	0,25

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**Trade name: Isopropanol 99%**

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PROC8a:	50	ppm	0,25
PROC8b:	25	ppm	0,12
	50	ppm	0,25
PROC9:	50	ppm	0,25
PROC13:	50	ppm	0,25
PROC14:	50	ppm	0,25
PROC21:	0	ppm	0,00

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**- Environment**

*As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.*

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**- Guidance for downstream users**

**Health:**

*The available data on hazards do not confirm the need for a DNEL value to other health effects.*

*Expected exposure does not exceed the DNEL / DMEL values when the risk management measures / operating conditions are observed.*

*Risk management measures are based on the qualitative risk description.*

*If further risk management measures / operating conditions are adopted, users should ensure that risks are limited to at least an equivalent level.*

*Detailed information on the exposure estimation can be found at <http://www.ecetoc.org/tra>.*

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**Trade name: Isopropanol 99%**

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**Annex: Exposure scenario 13**

**- Short title of the exposure scenario**

Use for water treatment

Industrial

**- Sector of Use** SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites

**- Process category**

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

PROC4 Chemical production where opportunity for exposure arises

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

PROC13 Treatment of articles by dipping and pouring

**- Environmental release category**

ERC3 Formulation into solid matrix

ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article)

**- Description of the activities / processes covered in the Exposure Scenario**

Covers use of the substance for water treatment in industrial environments in open and closed systems.

**- Conditions of use**

**- Duration and frequency**

**- Worker**

Regular use with exposure up to 8 hrs. per workday.

(unless stated differently)

**- Environment**

As no environmental hazard was identified no environmental exposure assessment and risk characterization has been carried out.

**- Physical parameters**

**- Physical state**

Fluid

Vapour pressure: 62.2 hPa (20 °C)

**- Concentration of the substance in the mixture** Includes concentrations up to: 100%

**- Other operational conditions**

The use assumes  $\leq 20$  °C above ambient temperature, if not indicated otherwise.

**- Other operational conditions affecting worker exposure**

Assumes a good basic standard of occupational hygiene is implemented

**- Risk management measures**

General measures (flammable liquid):

Risks of the physicochemical properties of substances, such as flammability or explosiveness, can be controlled by implementing risk management measures. It is recommended to follow the new ATEX Directive 2014/34 / EU. Based on the implementation of a selection of risk management measures for handling and storage for the identified uses, the risk can be viewed as controlled at an acceptable level.

Use in closed systems. Avoid ignition sources - Do not smoke. Use in well-ventilated areas to avoid the formation of an explosive atmosphere. Devices and protective systems approved for inflammable substances. Limit the flow rate in the pipes during pumping to avoid electrostatic charging. Clean the tank and the plant to be filled. Use a spark-free tool. Observe relevant EU / national guidelines. Observe additional notes in the SDS.

For following contributing scenarios store substance within a closed system:

Mass transfer Special plant: PROC2

For following contributing scenarios Store substance within a closed system:

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Storage: PROC1

For following contributing scenarios use drum pumps or carefully pour out container:

Pouring from small containers: PROC13

For the following scenarios drain downs in sealed storage pending disposal or for subsequent recycle:

Equipment maintenance: PROC8a

For the following contributing scenarios limit access area to the facilities:

General exposures (open systems): PROC4

For the following scenarios avoid spillages when removing the pump:

Drum/batch transfers: PROC8b

For the following contributing scenarios clean transfer lines before decoupling:

Bulk transfers: PROC2

For following contributing scenarios no other specific measures are identified:

General exposures (closed systems): PROC3

**- Worker protection**

**- Personal protective measures**

For more information on "Personal protective equipment" see section 8 of the MSDS

**- Disposal measures**

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

If possible, send to be recycled, otherwise burn or deposit in a certified facility.

**- Exposure estimation** The exposure estimation was carried out in accordance with ECETOC TRA.

**- Worker (dermal)**

	Exposure estimation	RCR
PROC1:	0,34 mg/kg/d	0,00
PROC2:	1,37 mg/kg/d	0,00
PROC3:	0,34 mg/kg/d	0,00
PROC4:	6,86 mg/kg/d	0,01
PROC8a:	6,86 mg/kg/d	0,01
PROC8b:	6,86 mg/kg/d	0,01
PROC13:	13.71 mg/kg/d	0,02

**- Worker (inhalation)**

	Exposure estimation	RCR
PROC1:	0,01 ppm	0,00
PROC2:	10 ppm	0,05
PROC3:	25 ppm	0,12
PROC4:	20 ppm	0,10
PROC8a:	50 ppm	0,25
PROC8b:	50 ppm	0,25
PROC13:	50 ppm	0,25

**- Environment**

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

**- Guidance for downstream users**

Health:

The available data on hazards do not confirm the need for a DNEL value to other health effects.

Expected exposure does not exceed the DNEL / DMEL values when the risk management measures / operating conditions are observed.

Risk management measures are based on the qualitative risk description.

If further risk management measures / operating conditions are adopted, users should ensure that risks are limited to at least an equivalent level.

Detailed information on the exposure estimation can be found at <http://www.ecetoc.org/tra>.

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**Annex: Exposure scenario 14**

**- Short title of the exposure scenario**

Uses in Coatings

Professional

**- Sector of Use**

SU22 Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

**- Process category**

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

PROC4 Chemical production where opportunity for exposure arises

PROC5 Mixing or blending in batch processes

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

PROC10 Roller application or brushing

PROC11 Non industrial spraying

PROC13 Treatment of articles by dipping and pouring

PROC15 Use as laboratory reagent

PROC19 Manual activities involving hand contact

**- Environmental release category**

ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)

ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)

ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article)

**- Conditions of use**

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.

**- Duration and frequency**

**- Worker**

Regular use with exposure up to 8 hrs. per workday.

(unless stated differently)

**- Environment**

As no environmental hazard was identified no environmental exposure assessment and risk characterization has been carried out.

**- Physical parameters**

**- Physical state**

Fluid

Vapour pressure: 5 -100 hPa (20 °C)

**- Concentration of the substance in the mixture** Includes concentrations up to: 100%

**- Other operational conditions**

The use assumes  $\leq 20$  ° C above ambient temperature, if not indicated otherwise.

**- Other operational conditions affecting worker exposure**

Assumes a good basic standard of occupational hygiene is implemented

**- Risk management measures**

General measures (flammable liquid):

Risks of the physicochemical properties of substances, such as flammability or explosiveness, can be controlled by implementing risk management measures. It is recommended to follow the new ATEX Directive 2014/34 / EU. Based on the implementation of a selection of risk management measures for handling and storage for the identified uses, the risk can be viewed as controlled at an acceptable level.

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Use in closed systems. Avoid ignition sources - Do not smoke. Use in well-ventilated areas to avoid the formation of an explosive atmosphere. Devices and protective systems approved for inflammable substances. Limit the flow rate in the pipes during pumping to avoid electrostatic charging. Clean the tank and the plant to be filled. Use a spark-free tool. Observe relevant EU / national guidelines. Observe additional notes in the SDS.

For following contributing scenarios store substance within a closed system:

General exposures (closed systems): PROC1, PROC2

Filling / preparation of equipment from drums or containers: PROC2

Film formation - air drying: PROC4

Preparation of material for the application: PROC3, PROC5

Material transfers Drum / batch (filling and pouring from containers): PROC8a, PROC8b

Roller, spreader, flow application: PROC10

Laboratory activities: PROC15

Application by hand - finger paints, crayons, glue, Outdoor: PROC19

For following contributing scenarios carry out in a vented booth or extracted housing :

Manual Spraying, Indoor: PROC11

For following contributing scenarios ensure operation is undertaken outdoors:

Manual Spraying, Outdoor: PROC11

For the following contributing scenarios avoid manual contact with wet work pieces:

dipping and pouring: PROC13

For the following contributing scenarios clear spills immediately:

dipping and pouring, Indoor: PROC13

dipping and pouring, Outdoor: PROC13

For following contributing scenarios a good standard of general ventilation must be ensured (3 to 5 air changes per hour):

Application by hand - finger paints, crayons, glue, Indoor: PROC19

**- Worker protection**

**- Personal protective measures**

For more information on "Personal protective equipment" see section 8 of the MSDS

**- Disposal measures**

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

If possible, send to be recycled, otherwise burn or deposit in a certified facility.

**- Exposure estimation** The exposure estimation was carried out in accordance with ECETOC TRA.

**- Worker (dermal)**

	Exposure estimation	RCR
PROC1:	0,34 mg/kg/d	0,0
PROC2:	1,37 mg/kg/d	0,0
PROC3:	0,34 mg/kg/d	0,0
PROC4:	6,86 mg/kg/d	0,0
	0,69 mg/kg/d	0,0
PROC5:	13,71 mg/kg/d	0,0
PROC8a:	13,71 mg/kg/d	0,0
PROC8b:	6,86 mg/kg/d	0,0
PROC10:	27,43 mg/kg/d	0,0
PROC11:	107,14 mg/kg/d	0,1
PROC13:	13,71 mg/kg/d	0,0
PROC15:	0,34 mg/kg/d	0,0
PROC19:	141,43 mg/kg/d	0,2

**- Worker (inhalation)**

	Exposure estimation	RCR
PROC1:	0,01 ppm	0,0
PROC2:	20 ppm	0,1
PROC3:	25 ppm	0,1
PROC4:	50 ppm	0,2
PROC5:	100 ppm	0,5

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PROC8a:	100	ppm	0,5
PROC8b:	50	ppm	0,2
PROC10:	100	ppm	0,5
PROC11:	100	ppm	0,5
	150	ppm	0,7
PROC13:	100	ppm	0,5
PROC15:	10	ppm	0,0
PROC19:	100	ppm	0,5

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**- Environment**

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

**- Guidance for downstream users**

Health:

The available data on hazards do not confirm the need for a DNEL value to other health effects.

Expected exposure does not exceed the DNEL / DMEL values when the risk management measures / operating conditions are observed.

Risk management measures are based on the qualitative risk description.

If further risk management measures / operating conditions are adopted, users should ensure that risks are limited to at least an equivalent level.

Detailed information on the exposure estimation can be found at <http://www.ecetoc.org/tra>.

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**Annex: Exposure scenario 15**

**- Short title of the exposure scenario**

Use in cleaning agents

Professional

**- Sector of Use**

SU22 Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

**- Process category**

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

PROC4 Chemical production where opportunity for exposure arises

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

PROC10 Roller application or brushing

PROC11 Non industrial spraying

PROC13 Treatment of articles by dipping and pouring

PROC19 Manual activities involving hand contact

**- Environmental release category**

ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)

ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)

**- Description of the activities / processes covered in the Exposure Scenario**

Covers the use as a component of cleaning products including pouring/unloading from drums or containers; and exposures during mixing/diluting in the preparatory phase and cleaning activities (including spraying, brushing, dipping, wiping, automated and by hand).

**- Conditions of use**

**- Duration and frequency**

**- Worker**

Regular use with exposure up to 8 hrs. per workday.

(unless stated differently)

**- Environment**

As no environmental hazard was identified no environmental exposure assessment and risk characterization has been carried out.

**- Physical parameters**

**- Physical state**

Fluid

Vapour pressure: 5 -100 hPa (20 °C)

**- Concentration of the substance in the mixture** Includes concentrations up to: 100%

**- Other operational conditions**

The use assumes  $\leq 20$  °C above ambient temperature, if not indicated otherwise.

**- Other operational conditions affecting worker exposure**

Assumes a good basic standard of occupational hygiene is implemented

**- Risk management measures**

General measures (flammable liquid):

Risks of the physicochemical properties of substances, such as flammability or explosiveness, can be controlled by implementing risk management measures. It is recommended to follow the new ATEX Directive 2014/34 / EU. Based on the implementation of a selection of risk management measures for handling and storage for the identified uses, the risk can be viewed as controlled at an acceptable level. Use in closed systems. Avoid ignition sources - Do not smoke. Use in well-ventilated areas to avoid the formation of an explosive atmosphere. Devices and protective systems approved for inflammable substances. Limit the flow rate in the pipes during pumping to avoid electrostatic charging. Clean the tank

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and the plant to be filled. Use a spark-free tool. Observe relevant EU / national guidelines. Observe additional notes in the SDS.

For following contributing scenarios no other specific measures are identified:

Automated process with (semi) closed systems. Use in contained systems: PROC2

Automated process with (semi) closed systems Drum/batch transfers Use in contained systems: PROC3

Semi Automated process. (e.g.: Semi automatic application of floor care and maintenance products): PROC4

Filling / preparation of equipment from drums or containers: PROC8a, PROC8b

Manual Surfaces Cleaning (Dipping, immersion and pouring): PROC13

Cleaning with low-pressure washers (Rolling, Brushing - no spraying): PROC10

Manual Surfaces Cleaning, Spraying: PROC10

Ad hoc manual application via trigger sprays, dipping, rolling, brushing, etc.: PROC10

Application of cleaning products in closed systems: outdoor

Cleaning of medical devices: PROC4

For following contributing scenarios a good standard of general ventilation must be ensured (3 to 5 air changes per hour):

Cleaning with high pressure washers, Spraying. Indoor: PROC11

For following contributing scenarios ensure operation is undertaken outdoors:

Cleaning with high pressure washers, Spraying, Outdoor: PROC11

Material amount restrict to 5%

**- Worker protection**

**- Personal protective measures**

For more information on "Personal protective equipment" see section 8 of the MSDS

**- Disposal measures**

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

If possible, send to be recycled, otherwise burn or deposit in a certified facility.

**- Exposure estimation** The exposure estimation was carried out in accordance with ECETOC TRA.

**- Worker (dermal)**

	Exposure estimation	RCR
PROC2:	1,37 mg/kg/d	0,0
PROC3:	0,34 mg/kg/d	0,0
PROC4:	6,86 mg/kg/d	0,0
PROC8a:	13,71 mg/kg/d	0,0
PROC8b:	13,71 mg/kg/d	0,0
PROC10:	27,43 mg/kg/d	0,0
PROC11:	107,14 mg/kg/d	0 1
PROC13:	13,71 mg/kg/d	0,0

**- Worker (inhalation)**

	Exposure estimation	RCR
PROC2:	20 ppm	0,1
PROC3:	25 ppm	0,1
PROC4:	50 ppm	0,2
PROC8a:	100 ppm	0,5
PROC8b:	50 ppm	0,2
PROC10:	100 ppm	0,5
PROC11:	150 ppm	0,7
PROC11:	35 ppm	0,2
PROC13:	100 ppm	0,5

**- Environment**

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

**- Guidance for downstream users**

Health:

The available data on hazards do not confirm the need for a DNEL value to other health effects.

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**Trade name: Isopropanol 99%**

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*Expected exposure does not exceed the DNEL / DMEL values when the risk management measures / operating conditions are observed.*

*Risk management measures are based on the qualitative risk description.*

*If further risk management measures / operating conditions are adopted, users should ensure that risks are limited to at least an equivalent level.*

*Detailed information on the exposure estimation can be found at <http://www.ecetoc.org/tra>.*

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**Trade name: Isopropanol 99%**

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**Annex: Exposure scenario 16**

**- Short title of the exposure scenario**

Lubricants  
Professional

**- Sector of Use**

SU22 Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

**- Process category**

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.  
PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions  
PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition  
PROC4 Chemical production where opportunity for exposure arises  
PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities  
PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities  
PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)  
PROC10 Roller application or brushing  
PROC11 Non industrial spraying  
PROC13 Treatment of articles by dipping and pouring  
PROC17 Lubrication at high energy conditions in metal working operations  
PROC18 General greasing /lubrication at high kinetic energy conditions  
PROC20 Use of functional fluids in small devices

**- Environmental release category**

ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)  
ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)  
ERC9a Widespread use of functional fluid (indoor)  
ERC9b Widespread use of functional fluid (outdoor)

**- Description of the activities / processes covered in the Exposure Scenario**

Covers the use of formulated lubricants in closed and open systems including material transfers operations, operation of machinery/engines and similar articles, reworking on reject articles, equipment maintenance and disposal of wastes.

**- Conditions of use**

**- Duration and frequency**

**- Worker**

Regular use with exposure up to 8 hrs. per workday.  
(unless stated differently)

**- Environment**

As no environmental hazard was identified no environmental exposure assessment and risk characterization has been carried out.

**- Physical parameters**

**- Physical state**

Fluid  
Vapour pressure: 5 - 100 hPa (20 °C)

**- Concentration of the substance in the mixture** Includes concentrations up to: 100%

**- Other operational conditions**

The use assumes  $\leq 20$  °C above ambient temperature, if not indicated otherwise.

**- Other operational conditions affecting worker exposure**

Assumes a good basic standard of occupational hygiene is implemented

**- Risk management measures**

General measures (flammable liquid):

Risks of the physicochemical properties of substances, such as flammability or explosiveness, can be controlled by implementing risk management measures. It is recommended to follow the new ATEX

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**Trade name: Isopropanol 99%**

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Directive 2014/34 / EU. Based on the implementation of a selection of risk management measures for handling and storage for the identified uses, the risk can be viewed as controlled at an acceptable level. Use in closed systems. Avoid ignition sources - Do not smoke. Use in well-ventilated areas to avoid the formation of an explosive atmosphere. Devices and protective systems approved for inflammable substances. Limit the flow rate in the pipes during pumping to avoid electrostatic charging. Clean the tank and the plant to be filled. Use a spark-free tool. Observe relevant EU / national guidelines. Observe additional notes in the SDS.

For following contributing scenarios store substance within a closed system:

General exposures (closed systems): PROC1, PROC2, PROC3

For following contributing scenarios no other specific measures are identified:

General exposures (closed systems): PROC1, PROC2, PROC3

Use of equipment which engine oil or oil included: PROC20

General exposures (open systems): PROC4

Bulk transfers: PROC8b

Filling / preparation of equipment from drums or containers: PROC8a, PROC8b

Maintenance (of large systems) and machine set-up: PROC8b

Engine lubricant service: PROC9

Roller application or brushing: PROC10

For the following contributing scenarios limit access area to the facilities:

Operation and lubrication of open equipment with high energy : PROC17, PROC18

For following contributing scenarios Store substance within a closed system:

Use in closed batch processes: PROC1, PROC2

For the following scenarios drain downs in sealed storage pending disposal or for subsequent recycle:

Maintenance of small installations operating at elevated temperature (> 20 ° C above ambient temperature): PROC8a

For the following contributing scenarios give the product time to drain from the workpiece:

Treatment by dipping and pouring: PROC13

For following contributing scenarios provide extract ventilation to points where emissions occur:

Operation and lubrication of high energy open equipment with: PROC17, PROC18

For the following contributing scenarios ensure additional ventilation at emission point if contact with hot lubricants (> 50 ° C) is likely:

Maintenance (of large systems) and machine set-up operation is carried out at elevated temperature (> 20 ° C above ambient temperature). PROC8b

For the following contributing scenarios respirator conforming to EN140 with filter Type A/P2 or better wear:

Maintenance of small installations operating at elevated temperature (> 20 ° C above ambient temperature). PROC8a

For the following contributing scenarios Minimise exposure by deduction with partial enclosure of the operation or equipment and air extraction at openings. OR respiratory protection in accordance with EN 140 with filter type A/P2 or better wear. Avoid the execution of the operation for more than 4 hours: spraying PROC11

For the following contributing scenarios minimise exposure by deduction with partial enclosure of the operation or equipment and air extraction at openings. OR ensure a good standard of general ventilation. Respirator conforming to EN140 with filter Type A/P2 or better wear:

Treatment by dipping and pouring PROC13

**- Worker protection**

**- Technical protective measures**

Ensure a good standard of general ventilation. Natural ventilation is from doors, windows etc.. Controlled ventilation means the supply or exhaust air by a powered fan.

**- Personal protective measures**

For more information on "Personal protective equipment" see section 8 of the MSDS

**- Disposal measures**

Must not be disposed of together with household garbage. Do not allow product to reach sewage system. If possible, send to be recycled, otherwise burn or deposit in a certified facility.

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**Trade name: Isopropanol 99%**

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- **Exposure estimation** The exposure estimation was carried out in accordance with ECETOC TRA.

- **Worker (dermal)**

	Exposure estimation	RCR
PROC1:	1,37 mg/kg/d	0,00
PROC2:	1,37 mg/kg/d	0,00
PROC3:	0,34 mg/kg/d	0,00
PROC4:	0,69 mg/kg/d	0,00
PROC8a:	13,71 mg/kg/d	0,02
PROC8b:	6,86 mg/kg/d	0,01
	0,69 mg/kg/d	0,00
PROC9:	6,86 mg/kg/d	0,01
PROC10:	27,43 mg/kg/d	0,03
	1,37 mg/kg/d	0,00
PROC11:	107,14 mg/kg/d	0,12
	2,14 mg/kg/d	0,00
PROC13:	13,71 mg/kg/d	0,02
	0,34 mg/kg/d	0,00
PROC17:	27,43 mg/kg/d	0,03
	1,37 mg/kg/d	0,00
PROC18:	1,37 mg/kg/d	0,00
	0,69 mg/kg/d	0,00
PROC20:	1,71 mg/kg/d	0,00

- **Worker (inhalation)**

PROC1:	20 ppm	0,10
PROC2:	20 ppm	0,10
PROC3:	25 ppm	0,12
PROC4:	5 ppm	0,50
	50 ppm	0,25
PROC8a:	50 ppm	0,25
	100 ppm	0,49
PROC8b:	50 ppm	0,25
	25 ppm	0,12
PROC9:	100 ppm	0,49
PROC10:	5 ppm	0,02
	100 ppm	0,49
PROC11:	2 ppm	0,2
	4 ppm	0,4
	50 ppm	0,25
	100 ppm	0,49
PROC13:	3 ppm	0,3
	1 ppm	0,1
PROC17:	140 ppm	0,69
	4,2 ppm	0,42
	5 ppm	0,50
	40 ppm	0,20
PROC18:	60 ppm	0,30
	5 ppm	0,50
PROC20:	20 ppm	0,10

- **Environment**

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

- **Guidance for downstream users**

Health:

The available data on hazards do not confirm the need for a DNEL value to other health effects.

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**Trade name: Isopropanol 99%**

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*Expected exposure does not exceed the DNEL / DMEL values when the risk management measures / operating conditions are observed.*

*Risk management measures are based on the qualitative risk description.*

*If further risk management measures / operating conditions are adopted, users should ensure that risks are limited to at least an equivalent level.*

*Detailed information on the exposure estimation can be found at <http://www.ecetoc.org/tra>.*

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**Trade name: Isopropanol 99%**

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**Annex: Exposure scenario 17**

**- Short title of the exposure scenario**

Metal working fluids / rolling oils

Professional

**- Sector of Use**

SU22 Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

**- Process category**

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

PROC5 Mixing or blending in batch processes

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)

PROC10 Roller application or brushing

PROC11 Non industrial spraying

PROC13 Treatment of articles by dipping and pouring

PROC17 Lubrication at high energy conditions in metal working operations

**- Environmental release category**

ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)

ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)

**- Description of the activities / processes covered in the Exposure Scenario**

Covers the use in formulated MWFs (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.

**- Conditions of use**

**- Duration and frequency**

**- Worker**

Regular use with exposure up to 8 hrs. per workday.

(unless stated differently)

**- Environment**

As no environmental hazard was identified no environmental exposure assessment and risk characterization has been carried out.

**- Physical parameters**

**- Physical state**

Fluid

Vapour pressure: 23.2 hPa (20 °C)

**- Concentration of the substance in the mixture** Includes concentrations up to: 100%

**- Other operational conditions**

The use assumes  $\leq 20$  °C above ambient temperature, if not indicated otherwise.

**- Other operational conditions affecting worker exposure**

Assumes a good basic standard of occupational hygiene is implemented

**- Risk management measures**

General measures (flammable liquid):

Risks of the physicochemical properties of substances, such as flammability or explosiveness, can be controlled by implementing risk management measures. It is recommended to follow the new ATEX Directive 2014/34 / EU. Based on the implementation of a selection of risk management measures for handling and storage for the identified uses, the risk can be viewed as controlled at an acceptable level. Use in closed systems. Avoid ignition sources - Do not smoke. Use in well-ventilated areas to avoid the formation of an explosive atmosphere. Devices and protective systems approved for inflammable

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**Trade name: Isopropanol 99%**

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substances. Limit the flow rate in the pipes during pumping to avoid electrostatic charging. Clean the tank and the plant to be filled. Use a spark-free tool. Observe relevant EU / national guidelines. Observe additional notes in the SDS.

For following contributing scenarios store substance within a closed system:

General exposures (closed systems): PROC1, PROC2, PROC3

For following contributing scenarios Store substance within a closed system:

Storage: PROC1, PROC2

For following contributing scenarios no other specific measures are identified:

General exposures (closed systems): PROC1, PROC2, PROC3

Storage (closed system): PROC1, PROC2

Process sampling: PROC8b

Filling and preparation of equipment from drums or containers Special plant: PROC9

Roller application or brushing: PROC10

For the following scenarios drain downs in sealed storage pending disposal or for subsequent recycle:

Equipment cleaning and maintenance: PROC8a

For the following contributing scenarios give the product time to drain from the workpiece:

Treatment by dipping and pouring: PROC13

For the following contributing scenarios ensure enhanced general ventilation by mechanical means:

Spraying: PROC11

Metalworking activities: PROC17

For the following contributing scenarios avoid activities involving exposure of more than 1 hour (s):

Filling / preparation of equipment from drums or containers: PROC8a

For the following contributing scenarios clean transfer lines before decoupling:

Bulk transfers: PROC8b

Equipment cleaning and maintenance Special plant: PROC8b

Filling and preparation of equipment from drums or containers Special plant: PROC8b

**- Worker protection**

**- Personal protective measures**

For more information on "Personal protective equipment" see section 8 of the MSDS

**- Disposal measures**

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

If possible, send to be recycled, otherwise burn or deposit in a certified facility.

**- Exposure estimation** The exposure estimation was carried out in accordance with ECETOC TRA.

**- Worker (dermal)**

	Exposure estimation	RCR
PROC1:	1,37 mg/kg/d	0,00
	0,14 mg/kg/d	0,00
PROC2:	1,37 mg/kg/d	0,00
	0,14 mg/kg/d	0,00
PROC3:	0,34 mg/kg/d	0,00
PROC8a:	13,71 mg/kg/d	0,02
PROC8b:	6,86 mg/kg/d	0,01
	13,71 mg/kg/d	0,02
PROC9:	6,86 mg/kg/d	0,01
PROC10:	27,43 mg/kg/d	0,03
PROC11:	107,14 mg/kg/d	0,12
	2,14 mg/kg/d	0,0
PROC13:	13,71 mg/kg/d	0,02
PROC17:	27,43 mg/kg/d	0,00

**- Worker (inhalation)**

	Exposure estimation	RCR
PROC1:	20 ppm	0,10
PROC2:	20 ppm	0,10
PROC3:	25 ppm	0,12
PROC8a:	20 ppm	0,10

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**Trade name: Isopropanol 99%**

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	100	ppm	0,49
PROC8b:	50	ppm	0,25
	10	ppm	0,05
PROC9:	50	ppm	0,25
PROC10:	100	ppm	0,49
PROC11:	4	ppm	0,40
	6	ppm	0,60
	100	ppm	0,49
PROC13:	10	ppm	0,05
	100	ppm	0,49
PROC17:	4	ppm	0,40
	40	ppm	0,20

**- Environment**

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

**- Guidance for downstream users**

**Health:**

The available data on hazards do not confirm the need for a DNEL value to other health effects.

Expected exposure does not exceed the DNEL / DMEL values when the risk management measures / operating conditions are observed.

Risk management measures are based on the qualitative risk description.

If further risk management measures / operating conditions are adopted, users should ensure that risks are limited to at least an equivalent level.

Detailed information on the exposure estimation can be found at <http://www.ecetoc.org/tra>.

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**Trade name: Isopropanol 99%**

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**Annex: Exposure scenario 18**

**- Short title of the exposure scenario**

Use as binders and release agents

Professional

**- Sector of Use**

SU22 Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

**- Process category**

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

PROC4 Chemical production where opportunity for exposure arises

PROC6 Calendering operations

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

PROC10 Roller application or brushing

PROC11 Non industrial spraying

PROC14 Tableting, compression, extrusion, pelletisation, granulation

**- Environmental release category**

ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)

ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)

**- Description of the activities / processes covered in the Exposure Scenario**

Covers the use as binders and release agents including material transfers, mixing, application by spraying, brushing, and handling of waste.

**- Conditions of use**

**- Duration and frequency**

**- Worker**

Regular use with exposure up to 8 hrs. per workday.

(unless stated differently)

**- Environment**

As no environmental hazard was identified no environmental exposure assessment and risk characterization has been carried out.

**- Physical parameters**

**- Physical state**

Fluid

Vapour pressure: 62.2 hPa (20 °C)

**- Concentration of the substance in the mixture** Includes concentrations up to: 100%

**- Other operational conditions**

The use assumes  $\leq 20$  °C above ambient temperature, if not indicated otherwise.

**- Other operational conditions affecting worker exposure**

Assumes a good basic standard of occupational hygiene is implemented

**- Risk management measures**

General measures (flammable liquid):

Risks of the physicochemical properties of substances, such as flammability or explosiveness, can be controlled by implementing risk management measures. It is recommended to follow the new ATEX Directive 2014/34 / EU. Based on the implementation of a selection of risk management measures for handling and storage for the identified uses, the risk can be viewed as controlled at an acceptable level.

Use in closed systems. Avoid ignition sources - Do not smoke. Use in well-ventilated areas to avoid the formation of an explosive atmosphere. Devices and protective systems approved for inflammable substances. Limit the flow rate in the pipes during pumping to avoid electrostatic charging. Clean the tank and the plant to be filled. Use a spark-free tool. Observe relevant EU / national guidelines. Observe

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**Trade name: Isopropanol 99%**

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additional notes in the SDS.

For following contributing scenarios no other specific measures are identified:

Mixing operations (open systems): PROC4

Drum/batch transfers: PROC8b

Mould forming: PROC14

Roller application or brushing: PROC10

For following contributing scenarios Store substance within a closed system:

Material transfers Batch process (closed systems): PROC1, PROC2

For the following scenarios drain downs in sealed storage pending disposal or for subsequent recycle:

Material transfers (closed systems): PROC1, PROC2, PROC3

For following contributing scenarios carry out in a vented booth or extracted housing :

Manual Spraying: PROC11

For the following exposure scenarios by deducting with full enclosure of the operation or equipment minimize:

Spraying Machine: PROC11

For following contributing scenarios provide extract ventilation to points where emissions occur:

Casting method (open system) operation is carried out at elevated temperature (> 20 ° C above ambient temperature). Aerosol generation through increased processing temperature: PROC6

Substance content limit on the product to 25%.

For spray applications: separate activity from other activities.

**- Worker protection**

**- Personal protective measures**

For more information on "Personal protective equipment" see section 8 of the MSDS

**- Disposal measures**

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

If possible, send to be recycled, otherwise burn or deposit in a certified facility.

**- Exposure estimation** The exposure estimation was carried out in accordance with ECETOC TRA.

**- Worker (dermal)**

.	Exposure estimation	RCR
PROC1:	1,37 mg/kg/d	0,00
PROC2:	1,37 mg/kg/d	0,00
PROC3:	1,37 mg/kg/d	0,00
	0,34 mg/kg/d	0,00
PROC4:	6,86 mg/kg/d	0,01
PROC6:	1,37 mg/kg/d	0,00
PROC8b:	6,86 mg/kg/d	0,01
PROC10:	27,43 mg/kg/d	0,03
PROC11:	2,14 mg/kg/d	0,00
PROC14:	3,43 mg/kg/d	0,00

**- Worker (inhalation)**

.	Exposure estimation	RCR
PROC1:	20 ppm	0,10
	25 ppm	0,12
PROC2:	20 ppm	0,10
	25 ppm	0,12
PROC3:	25 ppm	0,12
PROC4:	50 ppm	0,25
PROC6:	6 ppm	0,60
	100 ppm	0,49
PROC8b:	100 ppm	0,49
PROC10:	50 ppm	0,25
PROC11:	3 ppm	0,30
	20 ppm	0,10
	25 ppm	0,12
	50 ppm	0,25

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**Trade name: Isopropanol 99%**

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PROC14: 100 ppm 0,49

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**- Environment**

*As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.*

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**- Guidance for downstream users**

*Health:*

*The available data on hazards do not confirm the need for a DNEL value to other health effects.*

*Expected exposure does not exceed the DNEL / DMEL values when the risk management measures / operating conditions are observed.*

*Risk management measures are based on the qualitative risk description.*

*If further risk management measures / operating conditions are adopted, users should ensure that risks are limited to at least an equivalent level.*

*Detailed information on the exposure estimation can be found at <http://www.ecetoc.org/tra>.*

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**Trade name: Isopropanol 99%**

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**Annex: Exposure scenario 19**

**- Short title of the exposure scenario**

Use in Agrochemicals  
Professional

**- Sector of Use**

SU22 Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

**- Process category**

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

PROC4 Chemical production where opportunity for exposure arises

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

PROC11 Non industrial spraying

PROC13 Treatment of articles by dipping and pouring

**- Environmental release category**

ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)

ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)

**- Description of the activities / processes covered in the Exposure Scenario**

Use as an agrochemical excipient for application by manual or machine spraying, smokes and fogging; including equipment clean-downs and disposal.

**- Conditions of use**

**- Duration and frequency**

**- Worker**

Regular use with exposure up to 8 hrs. per workday.  
(unless stated differently)

**- Environment**

As no environmental hazard was identified no environmental exposure assessment and risk characterization has been carried out.

**- Physical parameters**

**- Physical state**

Fluid

Vapour pressure: 62.2 hPa (20 °C)

**- Concentration of the substance in the mixture** Includes concentrations up to: 100%

**- Other operational conditions**

The use assumes  $\leq 20$  °C above ambient temperature, if not indicated otherwise.

**- Other operational conditions affecting worker exposure**

Assumes a good basic standard of occupational hygiene is implemented

**- Risk management measures**

General measures (flammable liquid):

Risks of the physicochemical properties of substances, such as flammability or explosiveness, can be controlled by implementing risk management measures. It is recommended to follow the new ATEX Directive 2014/34 / EU. Based on the implementation of a selection of risk management measures for handling and storage for the identified uses, the risk can be viewed as controlled at an acceptable level. Use in closed systems. Avoid ignition sources - Do not smoke. Use in well-ventilated areas to avoid the formation of an explosive atmosphere. Devices and protective systems approved for inflammable substances. Limit the flow rate in the pipes during pumping to avoid electrostatic charging. Clean the tank and the plant to be filled. Use a spark-free tool. Observe relevant EU / national guidelines. Observe additional notes in the SDS.

For following contributing scenarios no other specific measures are identified:

Material transfers Drum / batch (filling and pouring from containers): PROC8b

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**Trade name: Isopropanol 99%**

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Mixing operations (open systems): PROC4

Ad hoc manual application via trigger sprays, dipping, rolling, brushing, etc.: PROC13

For following contributing scenarios Store substance within a closed system:

Storage: PROC1, PROC2

For the following scenarios drain downs in sealed storage pending disposal or for subsequent recycle:

Equipment cleaning and maintenance: PROC8a

For following contributing scenarios avoid carrying out activities involving exposure for more than 4 hours:

Manual Spraying: PROC11

Substance content limit on the product to 25%.

OR Application in ventilated cage, the filtered pressurized air is supplied with a protection factor of > 20.

**- Worker protection**

**- Personal protective measures**

For more information on "Personal protective equipment" see section 8 of the MSDS

**- Disposal measures**

Disposal must be made according to official regulations.

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

If possible, send to be recycled, otherwise burn or deposit in a certified facility.

**- Exposure estimation** The exposure estimation was carried out in accordance with ECETOC TRA.

**- Worker (dermal)**

.	Exposure estimation	RCR
PROC1:	0,14 mg/kg/d	0,00
PROC2:	0,14 mg/kg/d	0,00
PROC4:	6,86 mg/kg/d	0,01
PROC8a:	13,71 mg/kg/d	0,02
PROC8b:	6,86 mg/kg/d	0,01
PROC11:	2,14 mg/kg/d	0,00
	107,14 mg/kg/d	0,12
PROC13:	13,71 mg/kg/d	0,02

**- Worker (inhalation)**

.	Exposure estimation	RCR
PROC1:	20 ppm	0,10
PROC2:	20 ppm	0,10
PROC4:	50 ppm	0,25
PROC8a:	100 ppm	0,49
PROC8b:	50 ppm	0,25
PROC11:	100 ppm	0,49
	180 ppm	0,89
PROC13	100 ppm	0,49

**- Environment**

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

**- Guidance for downstream users**

Health:

The available data on hazards do not confirm the need for a DNEL value to other health effects.

Expected exposure does not exceed the DNEL / DMEL values when the risk management measures / operating conditions are observed.

Risk management measures are based on the qualitative risk description.

If further risk management measures / operating conditions are adopted, users should ensure that risks are limited to at least an equivalent level.

Detailed information on the exposure estimation can be found at <http://www.ecetoc.org/tra>.

GB

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**Trade name: Isopropanol 99%**

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**Annex: Exposure scenario 20**

**- Short title of the exposure scenario**

Use as a fuel

Professional

**- Sector of Use**

SU22 Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

**- Process category**

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

PROC16 Use of fuels

**- Environmental release category**

ERC9a Widespread use of functional fluid (indoor)

ERC9b Widespread use of functional fluid (outdoor)

**- Notes** Specific Environmental Release Category: ESVOC 9.12b.v1

**- Description of the activities / processes covered in the Exposure Scenario**

Covers the use as a fuel (or fuel additive and additive components) and includes activities associated with its transfer, use, equipment maintenance and handling of waste.

**- Conditions of use**

**- Duration and frequency**

**- Worker**

Regular use with exposure up to 8 hrs. per workday.

(unless stated differently)

**- Environment**

As no environmental hazard was identified no environmental exposure assessment and risk characterization has been carried out.

**- Physical parameters**

**- Physical state**

Fluid

Vapour pressure: 62.2 hPa (20 °C)

**- Concentration of the substance in the mixture** Includes concentrations up to: 100%

**- Other operational conditions**

The use assumes  $\leq 20$  °C above ambient temperature, if not indicated otherwise.

**- Other operational conditions affecting worker exposure**

Assumes a good basic standard of occupational hygiene is implemented

**- Risk management measures**

General measures (flammable liquid):

Risks of the physicochemical properties of substances, such as flammability or explosiveness, can be controlled by implementing risk management measures. It is recommended to follow the new ATEX Directive 2014/34 / EU. Based on the implementation of a selection of risk management measures for handling and storage for the identified uses, the risk can be viewed as controlled at an acceptable level. Use in closed systems. Avoid ignition sources - Do not smoke. Use in well-ventilated areas to avoid the formation of an explosive atmosphere. Devices and protective systems approved for inflammable substances. Limit the flow rate in the pipes during pumping to avoid electrostatic charging. Clean the tank and the plant to be filled. Use a spark-free tool. Observe relevant EU / national guidelines. Observe additional notes in the SDS.

For following contributing scenarios store substance within a closed system:

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Bulk transfers (closed systems): PROC8b

Use as a fuel: PROC1, PROC2, PROC3, PROC16

For the following contributing scenarios clean transfer lines before decoupling:

Bulk transfers: PROC8b

For the following scenarios drain downs in sealed storage pending disposal or for subsequent recycle:

Equipment cleaning and maintenance: PROC8a

Container cleaning: PROC8a

For following contributing scenarios Store substance within a closed system:

Storage: PROC1

For following contributing scenarios no other specific measures are identified:

Use as a fuel, general exposures (closed systems): PROC1, PROC2, PROC3, PROC16

For the following scenarios avoid spillages when removing the pump:

Refuelling: PROC8b

Drum/batch transfers: PROC8b

For the following contributing scenarios apply access method for containers, including compressed air supply:

Container cleaning: PROC8a

**- Worker protection**

**- Personal protective measures**

For more information on "Personal protective equipment" see section 8 of the MSDS

**- Disposal measures**

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

If possible, send to be recycled, otherwise burn or deposit in a certified facility.

**- Exposure estimation** The exposure estimation was carried out in accordance with ECETOC TRA.

**- Worker (dermal)**

	Exposure estimation	RCR
PROC1:	0,34 mg/kg/d	0,00
	1,37 mg/kg/d	0,00
PROC2:	1,37 mg/kg/d	0,00
PROC3:	0,34 mg/kg/d	0,00
PROC8a:	13.71 mg/kg/d	0,02
PROC8b:	6,86 mg/kg/d	0,01
PROC16:	0,34 mg/kg/d	0,00

**- Worker (inhalation)**

	Exposure estimation	RCR
PROC1:	0,01 ppm	0,00
	20 ppm	0,10
PROC2:	20 ppm	0,10
PROC3:	25 ppm	0,12
PROC8a:	100 ppm	0,49
PROC8b:	50 ppm	0,25
PROC16:	10 ppm	0,05

**- Environment**

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

**- Guidance for downstream users**

Health:

The available data on hazards do not confirm the need for a DNEL value to other health effects.

Expected exposure does not exceed the DNEL / DMEL values when the risk management measures / operating conditions are observed.

Risk management measures are based on the qualitative risk description.

If further risk management measures / operating conditions are adopted, users should ensure that risks are limited to at least an equivalent level.

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**Trade name: Isopropanol 99%**

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Detailed information on the exposure estimation can be found at <http://www.ecetoc.org/tra>.

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**Trade name: Isopropanol 99%**

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**Annex: Exposure scenario 21**

**- Short title of the exposure scenario**

functional Fluids

Professional

**- Sector of Use**

SU22 Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

**- Process category**

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)

PROC20 Use of functional fluids in small devices

**- Environmental release category**

ERC9a Widespread use of functional fluid (indoor)

ERC9b Widespread use of functional fluid (outdoor)

**- Description of the activities / processes covered in the Exposure Scenario**

Use as functional fluids e.g. cable oils, transfer oils, insulators, refrigerants, hydraulic fluids in closed professional equipment including incidental exposures during maintenance and related material transfers.

**- Conditions of use**

**- Duration and frequency**

**- Worker**

Regular use with exposure up to 8 hrs. per workday.  
(unless stated differently)

**- Environment**

As no environmental hazard was identified no environmental exposure assessment and risk characterization has been carried out.

**- Physical parameters**

**- Physical state**

Fluid

Vapour pressure: 62.2 hPa (20 °C)

**- Concentration of the substance in the mixture** Includes concentrations up to: 100%

**- Other operational conditions**

The use assumes  $\leq 20$  °C above ambient temperature, if not indicated otherwise.

**- Other operational conditions affecting worker exposure**

Assumes a good basic standard of occupational hygiene is implemented

**- Risk management measures**

General measures (flammable liquid):

Risks of the physicochemical properties of substances, such as flammability or explosiveness, can be controlled by implementing risk management measures. It is recommended to follow the new ATEX Directive 2014/34 / EU. Based on the implementation of a selection of risk management measures for handling and storage for the identified uses, the risk can be viewed as controlled at an acceptable level. Use in closed systems. Avoid ignition sources - Do not smoke. Use in well-ventilated areas to avoid the formation of an explosive atmosphere. Devices and protective systems approved for inflammable substances. Limit the flow rate in the pipes during pumping to avoid electrostatic charging. Clean the tank and the plant to be filled. Use a spark-free tool. Observe relevant EU / national guidelines. Observe additional notes in the SDS.

For following contributing scenarios no other specific measures are identified:

Drum/batch transfers: PROC8a

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**Trade name: Isopropanol 99%**

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Filling / preparation of equipment from drums or containers: PROC9  
 General exposures (closed systems): PROC1, PROC2, PROC3  
 General exposures (open systems): PROC20  
 General exposures (open systems) Operation is carried out at elevated temperature (> 20°C above ambient temperature): PROC20

For the following scenarios drain downs in sealed storage pending disposal or for subsequent recycle:

Recycling of rejects: PROC9

Equipment maintenance: PROC8a

For following contributing scenarios Store substance within a closed system:

Storage: PROC1, PROC2

For the following scenarios avoid spillages when removing the pump:

Material transfers Drum / batch (filling and pouring from containers): PROC9

**- Worker protection**

**- Personal protective measures**

For more information on "Personal protective equipment" see section 8 of the MSDS

**- Disposal measures**

Must not be disposed of together with household garbage. Do not allow product to reach sewage system. If possible, send to be recycled, otherwise burn or deposit in a certified facility.

**- Exposure estimation** The exposure estimation was carried out in accordance with ECETOC TRA.

**- Worker (dermal)**

	Exposure estimation	RCR
	Exposure level	RCR
PROC1:	1,37 mg/kg/d	0,00
PROC2:	1,37 mg/kg/d	0,00
PROC3:	1,37 mg/kg/d	0,00
PROC8a:	13.71 mg/kg/d	0,02
PROC9:	6,86 mg/kg/d	0,01
PROC20:	1,71 mg/kg/d	0,00

**- Worker (inhalation)**

	Exposure estimation	RCR
	Exposure level	RCR
PROC1:	20 ppm	0,10
	25 ppm	0,12
PROC2:	20 ppm	0,10
	25 ppm	0,12
PROC3:	25 ppm	0,12
PROC8a:	100 ppm	0,49
PROC9:	100 ppm	0,49
PROC20:	20 ppm	0,10
	50 ppm	0,25

**- Environment**

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

**- Guidance for downstream users**

Health:

The available data on hazards do not confirm the need for a DNEL value to other health effects.

Expected exposure does not exceed the DNEL / DMEL values when the risk management measures / operating conditions are observed.

Risk management measures are based on the qualitative risk description.

If further risk management measures / operating conditions are adopted, users should ensure that risks are limited to at least an equivalent level.

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**Trade name: Isopropanol 99%**

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Detailed information on the exposure estimation can be found at <http://www.ecetoc.org/tra>.

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**Trade name: Isopropanol 99%**

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**Annex: Exposure scenario 22**

**- Short title of the exposure scenario**

Use in antifreeze agents

Professional

auch Verwendung als Enteisungsmittel

**- Sector of Use**

SU22 Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

**- Process category**

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

PROC10 Roller application or brushing

PROC11 Non industrial spraying

**- Environmental release category**

ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)

**- Description of the activities / processes covered in the Exposure Scenario**

Ice prevention and de-icing of vehicles, aircraft and other equipment by spraying.

**- Conditions of use**

**- Duration and frequency**

**- Worker**

Regular use with exposure up to 8 hrs. per workday.

(unless stated differently)

**- Environment**

As no environmental hazard was identified no environmental exposure assessment and risk characterization has been carried out.

**- Physical parameters**

**- Physical state**

Fluid

Vapour pressure: 62.2 hPa (20 °C)

**- Concentration of the substance in the mixture** Includes concentrations up to: 100%

**- Other operational conditions**

The use assumes ≤ 20 °C above ambient temperature, if not indicated otherwise.

**- Other operational conditions affecting worker exposure**

Assumes a good basic standard of occupational hygiene is implemented

**- Risk management measures**

General measures (flammable liquid):

Risks of the physicochemical properties of substances, such as flammability or explosiveness, can be controlled by implementing risk management measures. It is recommended to follow the new ATEX Directive 2014/34 / EU. Based on the implementation of a selection of risk management measures for handling and storage for the identified uses, the risk can be viewed as controlled at an acceptable level.

Use in closed systems. Avoid ignition sources - Do not smoke. Use in well-ventilated areas to avoid the formation of an explosive atmosphere. Devices and protective systems approved for inflammable substances. Limit the flow rate in the pipes during pumping to avoid electrostatic charging. Clean the tank and the plant to be filled. Use a spark-free tool. Observe relevant EU / national guidelines. Observe additional notes in the SDS.

For following contributing scenarios no other specific measures are identified:

Equipment cleaning and maintenance: PROC10

For the following contributing scenarios clean transfer lines before decoupling:

Bulk transfers: PROC8b

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**Trade name: Isopropanol 99%**

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Material transfers: PROC8b

For following contributing scenarios ensure operation is undertaken outdoors and to avoid activities involving exposure for more than 1 hour:

Manual Spraying: PROC11

On upwind / keep distance from source.

Operation also takes place at elevated temperature (> 20 °C above ambient temperature).

**- Worker protection**

**- Personal protective measures**

For more information on "Personal protective equipment" see section 8 of the MSDS

**- Disposal measures**

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

If possible, send to be recycled, otherwise burn or deposit in a certified facility.

**- Exposure estimation** The exposure estimation was carried out in accordance with ECETOC TRA.

**- Worker (dermal)**

	Exposure estimation	RCR
PROC8b:	6,86 mg/kg/d	0,0
PROC10:	27,43 mg/kg/d	0,0
PROC11:	107,14 mg/kg/d	0,1

**- Worker (inhalation)**

	Exposure estimation	RCR
PROC8b:	50 ppm	0,2
PROC10:	25 ppm	0,1
PROC11:	70 ppm	0,3
	100 ppm	0,5

**- Environment**

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

**- Guidance for downstream users**

Health:

The available data on hazards do not confirm the need for a DNEL value to other health effects.

Expected exposure does not exceed the DNEL / DMEL values when the risk management measures / operating conditions are observed.

Risk management measures are based on the qualitative risk description.

If further risk management measures / operating conditions are adopted, users should ensure that risks are limited to at least an equivalent level.

Detailed information on the exposure estimation can be found at <http://www.ecetoc.org/tra>.

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**Trade name: Isopropanol 99%**

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**Annex: Exposure scenario 23**

**- Short title of the exposure scenario**

*Polymer processing*

*Professional*

**- Sector of Use**

*SU22 Professional uses: Public domain (administration, education, entertainment, services, craftsmen)*

**- Process category**

*PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.*

*PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions*

*PROC6 Calendaring operations*

*PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities*

*PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities*

*PROC14 Tableting, compression, extrusion, pelletisation, granulation*

*PROC21 Low energy manipulation and handling of substances bound in/on materials or articles*

**- Environmental release category**

*ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)*

*ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)*

**- Description of the activities / processes covered in the Exposure Scenario**

*Processing of formulated polymers including material transfers, moulding and forming activities, material re-works and associated maintenance.*

**- Conditions of use**

**- Duration and frequency**

**- Worker**

*Regular use with exposure up to 8 hrs. per workday.  
(unless stated differently)*

**- Environment**

*As no environmental hazard was identified no environmental exposure assessment and risk characterization has been carried out.*

**- Physical parameters**

**- Physical state**

*Fluid*

*Vapour pressure: 62.2 hPa (20 °C)*

**- Concentration of the substance in the mixture** *Includes concentrations up to: 100%*

**- Other operational conditions**

*The use assumes  $\leq 20$  °C above ambient temperature, if not indicated otherwise.*

**- Other operational conditions affecting worker exposure**

*Assumes a good basic standard of occupational hygiene is implemented*

**- Risk management measures**

*General measures (flammable liquid):*

*Risks of the physicochemical properties of substances, such as flammability or explosiveness, can be controlled by implementing risk management measures. It is recommended to follow the new ATEX Directive 2014/34 / EU. Based on the implementation of a selection of risk management measures for handling and storage for the identified uses, the risk can be viewed as controlled at an acceptable level. Use in closed systems. Avoid ignition sources - Do not smoke. Use in well-ventilated areas to avoid the formation of an explosive atmosphere. Devices and protective systems approved for inflammable substances. Limit the flow rate in the pipes during pumping to avoid electrostatic charging. Clean the tank and the plant to be filled. Use a spark-free tool. Observe relevant EU / national guidelines. Observe additional notes in the SDS.*

*For following contributing scenarios store substance within a closed system:*

*Bulk transfers (closed systems): PROC1, PROC2*

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**Trade name: Isopropanol 99%**

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For following contributing scenarios no other specific measures are identified:

Injection molding of products: PROC6, PROC14

Reworking of articles: PROC21

Equipment maintenance: PROC8a

For following contributing scenarios Store substance within a closed system:

Storage: PROC1, PROC2

For the following contributing scenarios using large or medium-sized operating systems:

Material transfers: PROC8b

**- Worker protection**

**- Personal protective measures**

For more information on "Personal protective equipment" see section 8 of the MSDS

**- Disposal measures**

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

If possible, send to be recycled, otherwise burn or deposit in a certified facility.

**- Exposure estimation** The exposure estimation was carried out in accordance with ECETOC TRA.

**- Worker (dermal)**

	Exposure estimation	RCR
PROC1:	1,37 mg/kg/d	0,00
PROC2:	1,37 mg/kg/d	0,00
PROC6:	27,43 mg/kg/d	0,03
PROC8a:	13.71 mg/kg/d	0,02
PROC8b:	6,86 mg/kg/d	0,01
PROC14:	3.43 mg/kg/d	0,00
PROC21:	2,83 mg/kg/d	0,00

**- Worker (inhalation)**

	Exposure estimation	RCR
PROC1:	20 ppm	0,10
PROC2:	20 ppm	0,10
PROC6:	100 ppm	0,49
PROC8a:	100 ppm	0,49
PROC8b:	50 ppm	0,25
PROC14:	100 ppm	0,49
PROC21:	0 ppm	0,00

**- Environment**

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

**- Guidance for downstream users**

**Health:**

The available data on hazards do not confirm the need for a DNEL value to other health effects.

Expected exposure does not exceed the DNEL / DMEL values when the risk management measures / operating conditions are observed.

Risk management measures are based on the qualitative risk description.

If further risk management measures / operating conditions are adopted, users should ensure that risks are limited to at least an equivalent level.

Detailed information on the exposure estimation can be found at <http://www.ecetoc.org/tra>.

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**Trade name: Isopropanol 99%**

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**Annex: Exposure scenario 24**

**- Short title of the exposure scenario**

Use for water treatment

Professional

**- Sector of Use**

SU22 Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

**- Process category**

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

PROC4 Chemical production where opportunity for exposure arises

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

PROC13 Treatment of articles by dipping and pouring

**- Environmental release category** ERC8f Widespread use leading to inclusion into/onto article (outdoor)

**- Description of the activities / processes covered in the Exposure Scenario**

Covers the use of the substance for the treatment of water in open and closed systems.

**- Conditions of use**

**- Duration and frequency**

**- Worker**

Regular use with exposure up to 8 hrs. per workday.

(unless stated differently)

**- Environment**

As no environmental hazard was identified no environmental exposure assessment and risk characterization has been carried out.

**- Physical parameters**

**- Physical state**

Fluid

Vapour pressure: 62.2 hPa (20 °C)

**- Concentration of the substance in the mixture** Includes concentrations up to: 100%

**- Other operational conditions**

The use assumes ≤ 20 °C above ambient temperature, if not indicated otherwise.

**- Other operational conditions affecting worker exposure**

Assumes a good basic standard of occupational hygiene is implemented

**- Risk management measures**

General measures (flammable liquid):

Risks of the physicochemical properties of substances, such as flammability or explosiveness, can be controlled by implementing risk management measures. It is recommended to follow the new ATEX Directive 2014/34 / EU. Based on the implementation of a selection of risk management measures for handling and storage for the identified uses, the risk can be viewed as controlled at an acceptable level.

Use in closed systems. Avoid ignition sources - Do not smoke. Use in well-ventilated areas to avoid the formation of an explosive atmosphere. Devices and protective systems approved for inflammable substances. Limit the flow rate in the pipes during pumping to avoid electrostatic charging. Clean the tank and the plant to be filled. Use a spark-free tool. Observe relevant EU / national guidelines. Observe additional notes in the SDS.

For following contributing scenarios no other specific measures are identified:

General exposures (closed systems): PROC3

For following contributing scenarios Store substance within a closed system:

Storage: PROC1

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**Trade name: Isopropanol 99%**

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For following contributing scenarios use drum pumps or carefully pour out container:

Pouring from small containers: PROC13

For the following scenarios drain downs in sealed storage pending disposal or for subsequent recycle:

Equipment maintenance: PROC8a

For the following contributing scenarios limit access area to the facilities:

General exposures (open systems): PROC4

For the following scenarios avoid spillages when removing the pump:

Use drum pumps: PROC8b

Drum/batch transfers: PROC8b

Pouring from small containers: PROC13

**- Worker protection**

**- Personal protective measures**

For more information on "Personal protective equipment" see section 8 of the MSDS

**- Disposal measures**

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

If possible, send to be recycled, otherwise burn or deposit in a certified facility.

**- Exposure estimation** The exposure estimation was carried out in accordance with ECETOC TRA.

**- Worker (dermal)**

.	Exposure estimation	RCR
PROC1:	0,34 mg/kg/d	0,00
PROC3:	0,34 mg/kg/d	0,00
PROC4:	0,69 mg/kg/d	0,00
PROC8a:	13,71 mg/kg/d	0,02
PROC8b:	6,86 mg/kg/d	0,01
PROC13:	0,69 mg/kg/d	0,00

**- Worker (inhalation)**

.	Exposure estimation	RCR
PROC1:	0,01 ppm	0,00
PROC3:	25 ppm	0,12
PROC4:	50 ppm	0,25
PROC8a:	100 ppm	0,49
PROC8b:	50 ppm	0,25
PROC13:	100 ppm	0,49

**- Environment**

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

**- Guidance for downstream users**

Health:

The available data on hazards do not confirm the need for a DNEL value to other health effects.

Expected exposure does not exceed the DNEL / DMEL values when the risk management measures / operating conditions are observed.

Risk management measures are based on the qualitative risk description.

If further risk management measures / operating conditions are adopted, users should ensure that risks are limited to at least an equivalent level.

Detailed information on the exposure estimation can be found at <http://www.ecetoc.org/tra>.

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**Trade name: Isopropanol 99%**

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**Annex: Exposure scenario 25**

**- Short title of the exposure scenario**

Use in cleaning agents  
consumer

**- Sector of Use** SU21 Consumer uses: Private households / general public / consumers

**- Product category**

PC3 Air care products  
PC4 Anti-Freeze and de-icing products  
PC8 Biocidal products  
PC9a Coatings and paints, thinners, paint removers  
PC9b Fillers, putties, plasters, modelling clay  
PC9c Finger paints  
PC24 Lubricants, greases, release products  
PC35 Washing and cleaning products (including solvent based products)  
PC38 Welding and soldering products, flux products

**- Environmental release category**

ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)  
ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)

**- Description of the activities / processes covered in the Exposure Scenario**

Covers general exposures to consumers arising from the use of household products sold as washing and cleaning products, aerosols, coatings, de-icers, lubricants and air care products.

**- Conditions of use**

**- Duration and frequency** Not applicable

**- Environment**

As no environmental hazard was identified no environmental exposure assessment and risk characterization has been carried out.

**- Physical parameters**

**- Physical state**

Fluid  
Vapour pressure: 5 - 100 hPa (20 °C)

**- Other operational conditions** Covers use at ambient temperatures.

**- Other operational conditions affecting consumer exposure**

Covers use in household typical ventilation. (0.6 air exchange per hour)  
Unless otherwise specified.

**- Risk management measures**

General measures (flammable liquid):

Risks of the physicochemical properties of substances, such as flammability or explosiveness, can be controlled by implementing risk management measures. It is recommended to follow the new ATEX Directive 2014/34 / EU. Based on the implementation of a selection of risk management measures for handling and storage for the identified uses, the risk can be viewed as controlled at an acceptable level. Use in closed systems. Avoid ignition sources - Do not smoke. Use in well-ventilated areas to avoid the formation of an explosive atmosphere. Devices and protective systems approved for inflammable substances. Limit the flow rate in the pipes during pumping to avoid electrostatic charging. Clean the tank and the plant to be filled. Use a spark-free tool. Observe relevant EU / national guidelines. Observe additional notes in the SDS.

Air treatment products Air treatment with immediate effect (Aerosol Sprays): PC03

Includes concentrations  $\leq 50\%$ , covers up to 4 times per day 365 d/y, use amounts per application  $\leq 0.1$  g, Includes application for room size of 20 m<sup>3</sup>, Exposure  $\leq 0.25$  h, Contains a skin contact area  $\leq 857.5$  cm<sup>2</sup>

Air treatment products Air treatment with a persistent effect (solid and liquid): PC03

Includes concentrations  $\leq 10\%$ , Covers the use up to 1 time per day 365 d/y, If a skin contact area  $\leq 35.7$  cm<sup>2</sup>, Quantities used per application  $\leq 0.48$  g, If the application covers a room size of 20 m<sup>3</sup>, Covers

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exposure  $\leq$  8 h

*Antifreeze and de-icing agents Car window washing: PC04*

*Includes concentrations  $\leq$  1%, including use up to 1 time per day 365 d/y, used quantities per application  $\leq$  0.5 g, covers the application in a single garage (34 m<sup>3</sup>) with typical ventilation. 1.5 air changes per hour, covers the application at a room size of 34 m<sup>3</sup>, Including exposure  $\leq$  0.02 h, Includes a skin contact area  $\leq$  857.5 cm<sup>2</sup>*

*Antifreeze and de-icing agents Pouring in radiators: PC04*

*Includes concentrations  $\leq$  50%, Covers the use up to 1 time per day 365 d/y, Includes a skin contact area  $\leq$  428 cm<sup>2</sup>, Amounts used per application  $\leq$  2000 g, Covers the application in a single garage (34 m<sup>3</sup>) with typical ventilation. 1.5 air exchange per hour, Covers exposure  $\leq$  0.17 h, Covers use at a room size of 34 m<sup>3</sup>*

*Antifreeze and de-icing agents Closed-bottomed: PC04*

*Includes concentrations  $\leq$  50%, Covers the use up to 1 time per day 365 d/y, Covers a skin contact area up to 214.4 cm<sup>2</sup>, Quantities used per application  $\leq$  4 g, Covers the application in a single garage (34 m<sup>3</sup>) with typical ventilation. 1.5 air exchange per hour, Covers use at a room size of 34 m<sup>3</sup>, Covers exposure  $\leq$  0.25 h*

*Biocidal products (eg disinfectants, pesticides) Laundry and dishwashing products: PC08*

*Includes concentrations  $\leq$  50%, Including use up to 1 time per day 365 d/y, Comprises a skin contact area of up to 857.5 cm<sup>2</sup>, used quantities per application  $\leq$  15 g, the application covers a room size of 20 m<sup>3</sup>, Including exposure  $\leq$  0.5 h*

*Biocide products (eg disinfectants, pesticides) Liquid cleaners (general purpose cleaners, sanitary cleaners, floor cleaners, glass cleaners, carpet cleaners, metal cleaners): PC08*

*Includes concentrations  $\leq$  50%, Including use up to 1 time per day 128 d / y, Comprises a skin contact area of up to 857.5 cm<sup>2</sup>, used quantities per application  $\leq$  27 g, covers exposure up to 0.33 h, covers the application with a room size of 20 m<sup>3</sup>*

*Biocidal products (eg disinfectants, pesticides) Cleaning sprays (general purpose cleaners, sanitary cleaners, glass cleaners): PC08*

*Includes concentrations  $\leq$  50%, Including use up to 1 time per day 128 d/y, Comprises a skin contact area of up to 428 cm<sup>2</sup>, the quantities used per application  $\leq$  35 g, the application covers a room size of 20 m<sup>3</sup>, covers exposure up to 0.17 h,*

*Coatings and paints, thinner, remover solvent-rich, high-solid, aqueous paint: PC09A*

*Includes concentrations  $\leq$  27.5%, Including the use up to 1 time per day 6 d/y, Covers a skin contact area up to 428.75 cm<sup>2</sup>, Quantities used per application  $\leq$  744 g, Covers exposure up to 2.2 h, covers the application with a room size of 20 m<sup>3</sup>*

*Coatings and paints, Thinner, Remover Aerosol spray can: PC09A*

*Includes concentrations  $\leq$  50%, Covers the use up to 1 time per day 2 d / y, Quantities used per application  $\leq$  215 g, Covers the application in a single garage (34 m<sup>3</sup>) with typical ventilation. 1.5 air exchange per hour, If the application covers a room size of 34 m<sup>3</sup>, Covers exposure up to 0.33 h,*

*Coatings and paints, thinners, remover Removals (paint, adhesive, wallpaper, sealant remover): PC09A*

*Includes concentrations  $\leq$  50%, Covers the use up to 1 time per day, 3 d / y, Covers a skin contact area up to 857.5 cm<sup>2</sup>, Quantities used per application  $\leq$  491 g, Covers exposure up to 2 h, Comprises the application for a room size of 20 m<sup>3</sup>*

*Fillers, Fillers, Mortars, Modeling Fillers and Putty: PC09B*

*Includes concentrations  $\leq$  2%, Covers the use up to 1 time per day, 12 d/y, Covers a skin contact area up*

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to 35.73 cm<sup>2</sup>, Quantities used per application ≤ 85 g, If the application covers a room size of 20 m<sup>3</sup>,  
Covers exposure up to 4 h

*Fillers, fillers, mortars, modeling mortars and flooring compounds: PC09B*

Includes concentrations ≤ 2%, Covers a skin contact area up to 857.5 cm<sup>2</sup>, Quantities used per application ≤ 13800 g, If the application covers a room size of 20 m<sup>3</sup>, Covers exposure up to 2 h, Covers use up to 12 d/y 1 time per day

*Fillers, fillers, mortars, modeling clay Modeling mass: PC09B*

Includes concentrations ≤ 1%, Covers the use up to 1 time per day 365 d/y, The assumption is that each user has a swallowed quantity of 1 g, Covers a skin contact area up to 254.4 cm<sup>2</sup>, If the application covers a room size of 20 m<sup>3</sup>, Covers exposure up to 4 h, Quantities used per application ≤ 13800 g

*Finger colors: PC09C*

Includes concentrations ≤ 15%, Covers the use up to 1 time per day 365 d/y, The assumption is an ingested amount of 1.35 g per application, a skin contact area ≤ 254.4 cm<sup>2</sup>, Covers exposure up to 4h, Comprises the application for a room size of 20 m<sup>3</sup>

*Lubricants, grease and release agent liquids PC24*

Includes concentrations ≤ 100%, Including the use up to 1 time per day 4 d/y, Covers a skin contact area of up to 468 cm<sup>2</sup>, amounts used per application ≤ 2200 g, Covers the application in a single garage (34 m<sup>3</sup>) with typical ventilation. 1.5 air exchange per hour, Covers exposure up to 0.17 h, covers the application with a room size of 34 m<sup>3</sup>

*Lubricants, lubricating greases and release agents Pastes: PC24*

Includes concentrations ≤ 20%, Including the use up to 1 time per day 10 d/y, Covers a skin contact area up to 468 cm<sup>2</sup>, If the application covers a room size of 20 m<sup>3</sup>, Quantities used per application ≤ 34 g, Covers exposure up to 4 h

*Lubricants, greases and release agents Sprays: PC24*

Includes concentrations ≤ 50%, Including the use up to 1 time per day 6 d/y, Covers a skin contact area up to 428.75 cm<sup>2</sup>, Amounts used per application ≤ 73 g, Covers exposure up to 0.17 h, Comprises the application for a room size of 20 m<sup>3</sup>

*Washing and cleaning products (including solvent based) liquid cleaners (all-purpose cleaners, sanitary cleaners, floor cleaners, glass cleaners, carpet cleaners, metal cleaners): PC35*

Includes concentrations ≤ 5%, Covers the use up to 1 time per day 128 d/y, Covers a skin contact area of up to 857.5 cm<sup>2</sup>, amounts used per application ≤ 27 g, If the application covers a room size of 20 m<sup>3</sup>, Covers exposure up to 0.33 h

*Washing and cleaning products (including solvent-based products) Cleaning sprays (general purpose cleaners, sanitary cleaners, glass cleaners): PC35*

Includes concentrations ≤ 15%, Covers the use up to 1 time per day 128 d/y, Covers a skin contact area up to 428 cm<sup>2</sup>, Quantities used per application ≤ 35 g, If the application covers a room size of 20 m<sup>3</sup>, Covers exposure up to 0.17 h

*Welding and brazing products (with flux covers and fluxes), flux: PC38*

Includes concentrations ≤ 20%, Covers the use up to 1 time per day 365 d/y, Quantities used per application ≤ 12 g, Covers exposure up to 1 h, If the application covers a room size of 20 m<sup>3</sup>, Covers a skin contact area up to 857.5 cm<sup>2</sup>

*Air treatment products Air treatment with immediate effect (Aerosol Sprays): PC03*

Includes concentrations up to 50%, If the usage includes <365 d/y 4 times a day, Quantities used per application ≤ 5 g, If the application covers a room size of 20 m<sup>3</sup>, Covers exposure up to 0.25 h,

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Covers a skin contact area up to 428 cm<sup>2</sup>

*Air treatment products Air treatment with a persistent effect (solid and liquid): PC03*

*Includes concentrations ≤ 50%, Covers the use up to 1 time per day 365 d/y, Covers a skin contact area up to 35.7 cm<sup>2</sup>, Quantities used per application ≤ 0.48 g, If the application covers a room size of 20 m<sup>3</sup>, Covers exposure up to 8 h*

**- Worker protection**

**- Personal protective measures**

*For more information on "Personal protective equipment" see section 8 of the MSDS*

**- Disposal measures**

*Must not be disposed of together with household garbage. Do not allow product to reach sewage system.*

*If possible, send to be recycled, otherwise burn or deposit in a certified facility.*

*This substance is consumed during use and no waste of substance is generated.*

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**- Exposure estimation** *The exposure estimation was carried out in accordance with ECETOC TRA.*

**- Environment**

*As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.*

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**- Guidance for downstream users**

*Health:*

*The available data on hazards do not confirm the need for a DNEL value to other health effects.*

*Expected exposure does not exceed the DNEL / DMEL values when the risk management measures / operating conditions are observed.*

*Risk management measures are based on the qualitative risk description.*

*If further risk management measures / operating conditions are adopted, users should ensure that risks are limited to at least an equivalent level.*

*Detailed information on the exposure estimation can be found at <http://www.ecetoc.org/tra>.*

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**Annex: Exposure scenario 26**

**- Short title of the exposure scenario**

Uses in Coatings  
consumer

**- Sector of Use** SU21 Consumer uses: Private households / general public / consumers

**- Product category**

PC1 Adhesives, sealants  
PC4 Anti-Freeze and de-icing products  
PC8 Biocidal products  
PC9a Coatings and paints, thinners, paint removers  
PC9b Fillers, putties, plasters, modelling clay  
PC9c Finger paints  
PC15 Non-metal-surface treatment products  
PC18 Ink and toners  
PC23 Leather treatment products  
PC24 Lubricants, greases, release products  
PC31 Polishes and wax blends  
PC34 Textile dyes, and impregnating products

**- Environmental release category**

ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)  
ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)

**- Notes** Specific Environmental Release Category: ESVOC 8.3c.v1

**- Description of the activities / processes covered in the Exposure Scenario**

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.

**- Conditions of use**

**- Duration and frequency**

**- Worker**

**- Consumers**

1 application(s) / day  
(unless stated differently)

**- Environment**

As no environmental hazard was identified no environmental exposure assessment and risk characterization has been carried out.

**- Physical parameters**

**- Physical state**

Fluid  
Vapour pressure: 5 - 100 hPa (20 °C)

**- Other operational conditions** Covers use at ambient temperatures.

**- Other operational conditions affecting consumer exposure**

Room size: 20 m<sup>3</sup>  
Covers use under typical household ventilation. 0.6 Air changes per hour  
(unless stated differently)

**- Risk management measures**

General measures (flammable liquid):

Risks of the physicochemical properties of substances, such as flammability or explosiveness, can be controlled by implementing risk management measures. It is recommended to follow the new ATEX Directive 2014/34 / EU. Based on the implementation of a selection of risk management measures for handling and storage for the identified uses, the risk can be viewed as controlled at an acceptable level. Use in closed systems. Avoid ignition sources - Do not smoke. Use in well-ventilated areas to avoid the formation of an explosive atmosphere. Devices and protective systems approved for inflammable substances. Limit the flow rate in the pipes during pumping to avoid electrostatic charging. Clean the tank and the plant to be filled. Use a spark-free tool. Observe relevant EU / national guidelines. Observe

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*additional notes in the SDS.*

*Adhesives, sealants Glues, hobby use: PC01*

*Covers concentrations up to 30%, Covers use up to 365 days/y, Covers skin contact area up to 35.73 cm<sup>2</sup>, For each use event, covers use amounts up to 9 g, Covers exposure up to 4 hour(s)*

*Adhesives, sealants Glues, DIY-use (carpet glue, tile glue, wood parquet glue): PC01*

*Covers concentrations up to 30%, Covers use up to 1 days/y, Covers skin contact area up to 110 cm<sup>2</sup>, For each use event, covers use amounts up to 6390 g, Covers exposure up to 6 hour(s)*

*Adhesives, sealants Glue from spray: PC01*

*Covers concentrations up to 30%, Covers use up to 6 days/y, Covers skin contact area up to 35.73 cm<sup>2</sup> For each use event, covers use amounts up to 85.05 g, Covers exposure up to 4 hour(s)*

*Adhesives, sealants Sealants: PC01*

*Covers concentrations up to 30%, Covers use up to 365 days/y, Covers skin contact area up to 35.73 cm<sup>2</sup>, For each use event, covers use amounts up to 75 g, Covers exposure up to 1 hour(s)*

*Anti-freeze and de-icing products Washing car window: PC04*

*Covers concentrations up to 50%, Covers use up to 365 days/y, For each use event, covers use amounts up to 0.5 g, Covers use in a one car garage (34 m<sup>3</sup>) under typical ventilation. 1.5 Air changes per hour  
Covers exposure up to 0.02 hour(s), Covers use in room size of 34 m<sup>3</sup>, Covers skin contact area up to 857.5 cm<sup>2</sup>*

*Anti-freeze and de-icing products Pouring into radiator: PC04*

*Covers concentrations up to 50%, Covers use up to 365 days/y, Covers skin contact area up to 428 cm<sup>2</sup>, For each use event, covers use amounts up to 2000 g, Covers use in a one car garage (34 m<sup>3</sup>) under typical ventilation. 1.5 Air changes per hour, Covers exposure up to 0.17 hour(s), Covers use in room size of 34 m<sup>3</sup>*

*Anti-freeze and de-icing products Lock de-icer: PC04*

*Covers concentrations up to 50%, Covers use up to 365 days/y, Covers skin contact area up to 214.4 cm<sup>2</sup>, For each use event, covers use amounts up to 4 g, Covers use in a one car garage (34 m<sup>3</sup>) under typical ventilation. 1.5 Air changes per hour, Covers use in room size of 34 m<sup>3</sup>, Covers exposure up to 0.25 hour(s)*

*Biocidal products (e.g. disinfectants, pest control) Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners): PC08*

*Covers concentrations up to 5%, Covers use up to 128 days/y, Covers skin contact area up to 857.5 cm<sup>2</sup>, For each use event, covers use amounts up to 27 g, Covers exposure up to 0.33 hour(s)*

*Biocidal products (e.g. disinfectants, pest control) Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners): PC08*

*Covers concentrations up to 15%, Covers use up to 128 days/y, Covers skin contact area up to 428 cm<sup>2</sup>, For each use event, covers use amounts up to 35 g, Covers exposure up to 0.17 hour(s)*

*Coatings and paints, thinners, paint removers Solvent rich, high solid, water borne paint: PC09A*

*Covers concentrations up to 27.5%, Covers use up to 6 days/y, Covers skin contact area up to 428.75 cm<sup>2</sup>, For each use event, covers use amounts up to 744 g, Covers exposure up to 2.2 hour(s)*

*Coatings and paints, thinners, paint removers Aerosol spray can: PC09A*

*Covers concentrations up to 50%, Covers use up to 2 days/y, For each use event, covers use amounts up to 215 g, Covers use in a one car garage (34 m<sup>3</sup>) under typical ventilation. 1.5 Air changes per hour  
Covers exposure up to 0.33 hour(s), Covers use in room size of 34 m<sup>3</sup>, Covers skin contact area up to 857.5 cm<sup>2</sup>*

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*Coatings and paints, thinners, paint removers Removers (paint-, glue-, wall paper-, sealant-remover): PC09A*

*Covers concentrations up to 50%, Covers use up to 3 days/y, Covers skin contact area up to 857.5 cm<sup>2</sup>, For each use event, covers use amounts up to 491 g, Covers exposure up to 2 hour(s)*

*Fillers, putties, plasters, modelling clay fillers and Putty: PC09B*

*Covers concentrations up to 2%, Covers use up to 12 days/y, Covers skin contact area up to 35.73 cm<sup>2</sup>, For each use event, covers use amounts up to 85 g, Covers exposure up to 4 hour(s)*

*Fillers, putties, plasters, modelling clay Plasters and floor equalizers: PC09B*

*Covers concentrations up to 2%, Covers use up to 12 days/y, Covers skin contact area up to 857.5 cm<sup>2</sup>, For each use event, covers use amounts up to 13800 g, Covers exposure up to 2 hour(s)*

*Fillers, putties, plasters, modelling clay Modelling clay: PC09B*

*Covers concentrations up to 10%, Covers use up to 365 days/y, Covers skin contact area up to 254.4 cm<sup>2</sup>, For each use event, assumes swallowed amount of 1 g, For each use event, covers use amounts up to 13800 g, Covers exposure up to 6 hour(s)*

*Finger paints: PC09C*

*Covers concentrations up to 15%, Covers use up to 365 days/y, For each use event, assumes swallowed amount of 1.35 g, Covers skin contact area up to 254.4 cm<sup>2</sup>, Covers exposure up to 6 hour(s) For each use event, covers use amounts up to 13800g*

*Non-metal-surface treatment products Solvent rich, high solid, water borne paint: PC15*

*Covers concentrations up to 27.5%, Covers use up to 6 days/y, Covers skin contact area up to 428.75 cm<sup>2</sup>, For each use event, covers use amounts up to 744 g, Covers exposure up to 2.2 hour(s)*

*Non-metal-surface treatment products Aerosol spray can: PC15*

*Covers concentrations up to 50%, Covers use up to 2 days/y, For each use event, covers use amounts up to 215 g, Covers use in a one car garage (34 m<sup>3</sup>) under typical ventilation. 1.5 Air changes per hour Covers exposure up to 0.33 hour(s), Covers use in room size of 34 m<sup>3</sup>, Covers skin contact area up to 857.5 cm<sup>2</sup>*

*Non-metal-surface treatment products Removers (paint-, glue-, wall paper-, sealant-remover): PC15*

*Covers concentrations up to 50%, Covers use up to 3 days/y, Covers skin contact area up to 857.5 cm<sup>2</sup> For each use event, covers use amounts up to 491 g, Covers exposure up to 2 hour(s)*

*Ink and toners: PC18*

*Covers concentrations up to 10%, Covers use up to 365 days/y, Covers skin contact area up to 71.4 cm<sup>2</sup>, For each use event, covers use amounts up to 40 g, Covers exposure up to 2.2 hour(s)*

*Leather tanning, dye, finishing, impregnation and care products Polishes, wax / cream (floor, furniture, shoes): PC23*

*Covers concentrations up to 50%, Covers use up to 29 days/y, Covers skin contact area up to 430 cm<sup>2</sup> For each use event, covers use amounts up to 56 g, Covers exposure up to 1.23 hour(s)*

*Leather tanning, dye, finishing, impregnation and care products Polishes, spray (furniture, shoes): PC23*

*Covers concentrations up to 50%, Covers use up to 8 days/y, Covers skin contact area up to 430 cm<sup>2</sup>, For each use event, covers use amounts up to 56 g, Covers exposure up to 0.33 hour(s)*

*Lubricants, Greases and Release products Liquids: PC24*

*Covers concentrations up to 100%, Covers use up to 4 days/y, Covers skin contact area up to 468 cm<sup>2</sup>, For each use event, covers use amounts up to 2200 g, Covers use in a one car garage (34 m) under typical ventilation. 1.5 Air changes per hour, Covers exposure up to 0.17 hour(s), Covers use in room size*

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of 34 m<sup>3</sup>

*Lubricants, Greases and Release products Pastes: PC24*

*Covers concentrations up to 20%, Covers use up to 10 days/y, Covers skin contact area up to 468 cm<sup>2</sup>, For each use event, covers use amounts up to 34 g*

*Lubricants, Greases and Release products Sprays: PC24*

*Covers concentrations up to 50%, Covers use up to 6 days/y, Covers skin contact area up to 428.75 cm<sup>2</sup>, For each use event, covers use amounts up to 73 g, Covers exposure up to 0.17 hour(s)*

*Polishes and wax blends Polishes, wax / cream (floor, furniture, shoes): PC31*

*Covers concentrations up to 50%, Covers use up to 9 days/y, Covers skin contact area up to 430 cm<sup>2</sup>, For each use event, covers use amounts up to 142 g, Covers exposure up to 1.23 hour(s)*

*Polishes and wax blends Polishes, spray (furniture, shoes): PC31*

*Covers concentrations up to 50%, Covers use up to 8 days/y, Covers skin contact area up to 430 cm<sup>2</sup>, For each use event, covers use amounts up to 35 g, Covers exposure up to 0.33 hour(s)*

*Textile dyes, finishing and impregnating products; including bleaches and other processing aids: PC34*

*Covers concentrations up to 10%, Covers use up to 365 days/y, Covers skin contact area up to 857.5 cm<sup>2</sup>, For each use event, covers use amounts up to 115 g, Covers exposure up to 1 hour(s), Covers exposure up to 1 hour(s)*

**- Worker protection**

**- Personal protective measures**

*For more information on "Personal protective equipment" see section 8 of the MSDS*

**- Disposal measures**

*Must not be disposed of together with household garbage. Do not allow product to reach sewage system.*

*If possible, send to be recycled, otherwise burn or deposit in a certified facility.*

*This substance is consumed during use and no waste of substance is generated.*

**- Exposure estimation** *The exposure estimation was carried out in accordance with ECETOC TRA.*

**- Environment**

*As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.*

**- Guidance for downstream users**

*Health:*

*The available data on hazards do not confirm the need for a DNEL value to other health effects.*

*Expected exposure does not exceed the DNEL / DMEL values when the risk management measures / operating conditions are observed.*

*Risk management measures are based on the qualitative risk description.*

*If further risk management measures / operating conditions are adopted, users should ensure that risks are limited to at least an equivalent level.*

*Detailed information on the exposure estimation can be found at <http://www.ecetoc.org/tra>.*

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**Annex: Exposure scenario 27**

**- Short title of the exposure scenario**

Use in antifreeze agents  
consumer

- **Sector of Use** SU21 Consumer uses: Private households / general public / consumers

- **Product category** PC4 Anti-Freeze and de-icing products

**- Environmental release category**

ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)

**- Description of the activities / processes covered in the Exposure Scenario**

Ice prevention and de-icing of vehicles, aircraft and other equipment by spraying.

**- Conditions of use**

- **Duration and frequency**

- **Worker**

- **Consumers**

1 application(s) / day  
(unless stated differently)

**- Environment**

As no environmental hazard was identified no environmental exposure assessment and risk characterization has been carried out.

**- Physical parameters**

- **Physical state**

Fluid

Vapour pressure: 5 - 100 hPa (20 °C)

- **Other operational conditions** Covers use at ambient temperatures.

- **Other operational conditions affecting consumer exposure** Room size: 34 m<sup>3</sup>

**- Risk management measures**

General measures (flammable liquid):

Risks of the physicochemical properties of substances, such as flammability or explosiveness, can be controlled by implementing risk management measures. It is recommended to follow the new ATEX Directive 2014/34 / EU. Based on the implementation of a selection of risk management measures for handling and storage for the identified uses, the risk can be viewed as controlled at an acceptable level. Use in closed systems. Avoid ignition sources - Do not smoke. Use in well-ventilated areas to avoid the formation of an explosive atmosphere. Devices and protective systems approved for inflammable substances. Limit the flow rate in the pipes during pumping to avoid electrostatic charging. Clean the tank and the plant to be filled. Use a spark-free tool. Observe relevant EU / national guidelines. Observe additional notes in the SDS.

Anti-freeze and de-icing products Washing car window: PC04

Covers concentrations up to 1%, Covers use up to 365 days/y, For each use event, covers use amounts up to 0.5 g, Covers use in a one car garage (34 m<sup>3</sup>) under typical ventilation. 1.5 Air changes per hour  
Covers exposure up to 0.02 hour(s), Covers skin contact area up to 428 cm<sup>2</sup>

Anti-freeze and de-icing products Pouring into radiator: PC04

Covers concentrations up to 10%, Covers use up to 365 days/y, Covers skin contact area up to 428 cm<sup>2</sup>, For each use event, covers use amounts up to 2000 g, Covers use in a one car garage (34 m<sup>3</sup>) under typical ventilation. 1.5 Air changes per hour, Covers exposure up to 0.17 hour(s)

Anti-freeze and de-icing products Lock de-icer: PC04

Covers concentrations up to 40%, Covers use up to 365 days/y, Covers skin contact area up to 214.4 cm<sup>2</sup>, For each use event, covers use amounts up to 4 g, Covers use in a one car garage (34 m<sup>3</sup>) under typical ventilation. 1.5 Air changes per hour, Covers exposure up to 0.25 hour(s)

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- **Worker protection**

- **Personal protective measures**

*For more information on "Personal protective equipment" see section 8 of the MSDS*

- **Disposal measures**

*Must not be disposed of together with household garbage. Do not allow product to reach sewage system.*

*If possible, send to be recycled, otherwise burn or deposit in a certified facility.*

*This substance is consumed during use and no waste of substance is generated.*

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- **Exposure estimation** *The exposure estimation was carried out in accordance with ECETOC TRA.*

- **Environment**

*As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.*

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- **Guidance for downstream users**

*Health:*

*The available data on hazards do not confirm the need for a DNEL value to other health effects.*

*Expected exposure does not exceed the DNEL / DMEL values when the risk management measures / operating conditions are observed.*

*Risk management measures are based on the qualitative risk description.*

*If further risk management measures / operating conditions are adopted, users should ensure that risks are limited to at least an equivalent level.*

*Detailed information on the exposure estimation can be found at <http://www.ecetoc.org/tra>.*

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**Annex: Exposure scenario 28**

**- Short title of the exposure scenario**

Use as a fuel  
consumer

- **Sector of Use** SU21 Consumer uses: Private households / general public / consumers

- **Product category** PC13 Fuels

**- Environmental release category**

ERC9a Widespread use of functional fluid (indoor)

ERC9b Widespread use of functional fluid (outdoor)

**- Description of the activities / processes covered in the Exposure Scenario**

Umfasst die Verbraucheranwendungen in flüssigen Brennstoffen.

**- Conditions of use**

- **Duration and frequency**

- **Worker**

- **Consumers**

1 application(s) / day  
(unless stated differently)

**- Environment**

As no environmental hazard was identified no environmental exposure assessment and risk characterization has been carried out.

**- Physical parameters**

- **Physical state**

Fluid

Vapour pressure: 5 - 100 hPa (20 °C)

- **Concentration of the substance in the mixture** Includes concentrations up to: 100%

- **Other operational conditions** Covers use at ambient temperatures.

**- Risk management measures**

General measures (flammable liquid):

Risks of the physicochemical properties of substances, such as flammability or explosiveness, can be controlled by implementing risk management measures. It is recommended to follow the new ATEX Directive 2014/34 / EU. Based on the implementation of a selection of risk management measures for handling and storage for the identified uses, the risk can be viewed as controlled at an acceptable level. Use in closed systems. Avoid ignition sources - Do not smoke. Use in well-ventilated areas to avoid the formation of an explosive atmosphere. Devices and protective systems approved for inflammable substances. Limit the flow rate in the pipes during pumping to avoid electrostatic charging. Clean the tank and the plant to be filled. Use a spark-free tool. Observe relevant EU / national guidelines. Observe additional notes in the SDS.

Automotive Refuelling: PC13

Covers use up to 1 times per day, Covers use up to 52 days/yr, Covers skin contact area up to 210 cm<sup>2</sup>, For each use event, covers use amounts up to 37500g, Covers outdoor use. 0.6 Air changes per hour, Covers use in room size of 100 m<sup>3</sup>, Covers exposure up to 0.05 hour(s)

Scooter Refuelling: PC13

Covers use up to 1 times per day, Covers use up to 52 days/yr, Covers skin contact area up to 210 cm<sup>2</sup>, For each use event, covers use amounts up to 3750g, Covers outdoor use. 0.6 Air changes per hour, Covers use in room size of 100 m<sup>3</sup>, Covers exposure up to 0.03 hour(s)

Garden Equipment - Use: PC13

Covers use up to 1 times per day, Covers use up to 26 days/yr, For each use event, covers use amounts up to 750g, Covers outdoor use. 0.6 Air changes per hour, Covers exposure up to 2 hour(s), Covers use in room size of 100 m<sup>3</sup>

Garden Equipment - Refueling: PC13

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Covers use up to 1 times per day, Covers use up to 26 days/yr, Covers skin contact area up to 420 cm<sup>2</sup>, For each use event, covers use amounts up to 750g, Covers use in a one car garage (34 m<sup>3</sup>) under typical ventilation. 1.5 Air changes per hour, Covers use in room size of 34 m<sup>3</sup>, Covers exposure up to 0.03 hour(s)

Home space heater fuel: PC13

Covers use up to 1 times per day, Covers use up to 52 days/yr, Covers skin contact area up to 210 cm<sup>2</sup>, For each use event, covers use amounts up to 3000g, Covers use in room size of 20 m<sup>3</sup>, Covers exposure up to 0.03 hour(s), Covers use in a one car garage (34 m<sup>3</sup>) under typical ventilation.

**- Worker protection**

**- Personal protective measures**

For more information on "Personal protective equipment" see section 8 of the MSDS

**- Disposal measures**

Must not be disposed of together with household garbage. Do not allow product to reach sewage system. If possible, send to be recycled, otherwise burn or deposit in a certified facility.

**- Exposure estimation** The exposure estimation was carried out in accordance with ECETOC TRA.

**- Environment**

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

**- Guidance for downstream users**

Health:

The available data on hazards do not confirm the need for a DNEL value to other health effects.

Expected exposure does not exceed the DNEL / DMEL values when the risk management measures / operating conditions are observed.

Risk management measures are based on the qualitative risk description.

If further risk management measures / operating conditions are adopted, users should ensure that risks are limited to at least an equivalent level.

Detailed information on the exposure estimation can be found at <http://www.ecetoc.org/tra>.