

## SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

**ISOPROPANOL - DRUM 160K**

Version 1.0

Print Date 27.08.2020

Revision date / valid from 26.08.2020

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

Trade name : ISOPROPANOL - DRUM 160K  
Substance name : propan-2-ol  
Index-No. : 603-117-00-0  
CAS-No. : 67-63-0  
EC-No. : 200-661-7  
EU REACH-Reg. No. : 01-2119457558-25-xxxx

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

Use of the Substance/Mixture : Identified use: See table in front of appendix for a complete overview of identified uses.  
Uses advised against : At this moment we have not identified any uses advised against  
Remarks : Before referring to any Exposure Scenario attached to this Safety Data Sheet please check the grade of the product: the Exposure Scenarios presented are not related to all product grade

**1.3. Details of the supplier of the safety data sheet**

Company : Brenntag N.V.  
Nijverheidslaan 38  
BE 8540 Deerlijk  
Telephone : +32 (0)56 77 6944  
Telefax : +32 (0)56 77 5711  
E-mail address : info@brenntag.be  
Responsible/issuing person : Master Data Administration

Company : Brenntag Nederland B.V.  
Donker Duyvisweg 44  
NL 3316 BM Dordrecht  
Telephone : +31(0)78 65 44 944  
Telefax : +31(0)78 65 44 919  
E-mail address : info@brenntag.nl  
Responsible/issuing person : Master Data Administration

**1.4. Emergency telephone number**

Emergency telephone : Belgium: Antipoison Center - Brussels TEL: +32(0)70 245 245

**ISOPROPANOL - DRUM 160K**

number

Netherland: National Poisoning Information Center - Bilthoven  
 TEL: +31(0)30 274 8888 (Only for the purpose of informing  
 medical personnel in cases of acute intoxications)

**SECTION 2: Hazards identification****2.1. Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008

REGULATION (EC) No 1272/2008			
Hazard class	Hazard category	Target Organs	Hazard statements
Flammable liquids	Category 2	---	H225
Eye irritation	Category 2	---	H319
Specific target organ toxicity - single exposure	Category 3	Central nervous system	H336

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

**Most important adverse effects**

Human Health : See section 11 for toxicological information.  
 Physical and chemical hazards : See section 9/10 for physicochemical information.  
 Potential environmental effects : See section 12 for environmental information.

**2.2. Label elements**

Labelling according to Regulation (EC) No 1272/2008

Hazard symbols :



Signal word : Danger

Hazard statements : H225 Highly flammable liquid and vapour.  
 H319 Causes serious eye irritation.  
 H336 May cause drowsiness or dizziness.

Precautionary statements

Prevention : P210 Keep away from heat, hot surfaces, sparks,

**ISOPROPANOL - DRUM 160K**

	P261 P280	open flames and other ignition sources. No smoking. Avoid breathing vapours/spray. Wear protective gloves/ eye protection/ face protection.
Response	: P305 + P351 + P338  P304 + P340 + P312	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell.
Storage	: P403 + P235	Store in a well-ventilated place. Keep cool.

**Hazardous components which must be listed on the label:**

- propan-2-ol

**2.3. Other hazards**

For Results of PBT and vPvB assessment see section 12.5.

**SECTION 3: Composition/information on ingredients****3.1. Substances**

		Classification (REGULATION (EC) No 1272/2008)	
Hazardous components	Amount [%]	Hazard class / Hazard category	Hazard statements
propan-2-ol			
Index-No. : 603-117-00-0	<= 100	Flam. Liq.2	H225
CAS-No. : 67-63-0		Eye Irrit.2	H319
EC-No. : 200-661-7		STOT SE3	H336
EU REACH- : 01-2119457558-25-xxxx			
Reg. No.			

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

**SECTION 4: First aid measures****4.1. Description of first aid measures**

General advice : Remove from exposure, lie down. Take off all contaminated

**ISOPROPANOL - DRUM 160K**

	clothing immediately.
If inhaled	: Remove to fresh air. If breathing is irregular or stopped, administer artificial respiration. If unconscious place in recovery position. Consult a physician after significant exposure.
In case of skin contact	: Wash off immediately with soap and plenty of water. If skin irritation persists, call a physician.
In case of eye contact	: Rinse immediately with plenty of water, also under the eyelids, for at least 10 minutes. Consult an eye specialist immediately. Go to an ophthalmic hospital if possible.
If swallowed	: Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person. Do NOT induce vomiting. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Call a physician immediately.

**4.2. Most important symptoms and effects, both acute and delayed**

Symptoms	: Inhalation of high vapour concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting. See Section 11 for more detailed information on health effects and symptoms.
Effects	: See Section 11 for more detailed information on health effects and symptoms.

**4.3. Indication of any immediate medical attention and special treatment needed**

Treatment	: Treat symptomatically.
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**SECTION 5: Firefighting measures****5.1. Extinguishing media**

Suitable extinguishing media	: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
Unsuitable extinguishing media	: High volume water jet

**5.2. Special hazards arising from the substance or mixture**

Specific hazards during firefighting	: The vapour may be invisible, heavier than air and spread along ground. Vapours may form explosive mixtures with air. Flash back possible over considerable distance.
Hazardous combustion products	: Carbon monoxide, Carbon dioxide (CO <sub>2</sub> )

**5.3. Advice for firefighters**

**ISOPROPANOL - DRUM 160K**

Special protective equipment for firefighters	:	In the event of fire, wear self-contained breathing apparatus. Wear personal protective equipment.
Further advice	:	Cool closed containers exposed to fire with water spray. Heating will cause a pressure rise - with risk of bursting. Collect contaminated fire extinguishing water separately. This must not be discharged into drains.

**SECTION 6: Accidental release measures****6.1. Personal precautions, protective equipment and emergency procedures**

Personal precautions	:	Keep away from heat and sources of ignition. Use personal protective equipment. Keep away unprotected persons. Provide adequate ventilation. Avoid contact with skin and eyes. Do not breathe vapours or spray mist.
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**6.2. Environmental precautions**

Environmental precautions	:	Do not flush into surface water or sanitary sewer system. Avoid subsoil penetration.
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**6.3. Methods and materials for containment and cleaning up**

Methods and materials for containment and cleaning up	:	Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).
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**6.4. Reference to other sections**

See Section 1 for emergency contact information.  
See Section 8 for information on personal protective equipment.  
See Section 13 for waste treatment information.

**SECTION 7: Handling and storage****7.1. Precautions for safe handling**

Advice on safe handling	:	Keep container tightly closed. Ensure adequate ventilation. Use personal protective equipment. Avoid contact with skin, eyes and clothing. Do not breathe vapours or spray mist. Emergency eye wash fountains and emergency showers should be available in the immediate vicinity.
Hygiene measures	:	Keep away from food, drink and animal feedingstuffs. Smoking, eating and drinking should be prohibited in the application area. Wash hands before breaks and at the end of workday. Take off all contaminated clothing immediately.

**7.2. Conditions for safe storage, including any incompatibilities**

**ISOPROPANOL - DRUM 160K**

Requirements for storage areas and containers	: Store in original container. Keep in an area equipped with solvent resistant flooring. Unsuitable materials for containers: Aluminium; polystyrene; ethylene propylene diene rubber; butyl-rubber; natural rubber; cast iron
Advice on protection against fire and explosion	: Keep away from sources of ignition - No smoking. Vapours are heavier than air and may spread along floors. Vapours may form explosive mixtures with air. Take measures to prevent the build up of electrostatic charge. Use only in an area containing explosion proof equipment.
Further information on storage conditions	: Keep tightly closed in a dry and cool place. Keep away from direct sunlight. Keep in a well-ventilated place.
Advice on common storage	: Incompatible with oxidizing agents. Do not store together with oxidizing and self-igniting products. Keep away from food, drink and animal feedingstuffs.
Suitable packaging materials	: Stainless steel

**7.3. Specific end use(s)**

Specific use(s)	: Identified use: See table in front of appendix for a complete overview of identified uses.
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**SECTION 8: Exposure controls/personal protection****8.1. Control parameters**

Component:	propan-2-ol	CAS-No. 67-63-0
Derived No Effect Level (DNEL)/Derived Minimal Effect Level (DMEL)		
DNEL		
Workers, Long-term - systemic effects, Skin contact	:	888 mg/kg bw/day
DNEL		
Workers, Long-term - systemic effects, Inhalation	:	500 mg/m <sup>3</sup>
DNEL		
Consumers, Long-term - systemic effects, Skin contact	:	319 mg/kg bw/day
DNEL		
Consumers, Long-term - systemic effects, Inhalation	:	89 mg/m <sup>3</sup>
DNEL		
Consumers, Long-term - systemic effects, Ingestion	:	26 mg/kg bw/day
Predicted No Effect Concentration (PNEC)		

**ISOPROPANOL - DRUM 160K**

Fresh water	: 140,9 mg/l
Marine water	: 140,9 mg/l
Intermittent releases	: 140,9 mg/l
Sewage treatment plant (STP)	: 2251 mg/l
Sediment	: 552 mg/kg d.w.
Soil	: 28 mg/kg
Secondary poisoning	: 160 mg/kg food

**Other Occupational Exposure Limit Values**

Belgium. OELs. Exposure Limit Values to Chemical Substances at Work, Code of Well-being at work, Book VI, Title 1, as amended, Time Weighted Average (TWA):  
200 ppm, 500 mg/m<sup>3</sup>

Belgium. OELs. Exposure Limit Values to Chemical Substances at Work, Code of Well-being at work, Book VI, Title 1, as amended, Short Term Exposure Limit (STEL):  
400 ppm, 1.000 mg/m<sup>3</sup>, (15 minutes)

**8.2. Exposure controls****Appropriate engineering controls**

Refer to protective measures listed in sections 7 and 8.

**Personal protective equipment***Respiratory protection*

Advice : In case of insufficient ventilation, wear suitable respiratory equipment.  
When aerosol or mist is formed use suitable respiratory protection.  
Respiratory protection complying with EN 141.  
Recommended Filter type:A  
Combination filter: A-P2  
In case of intensive or longer exposure use self-contained breathing apparatus.

*Hand protection*

Advice : Protective gloves complying with EN 374.  
Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves.  
Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time.  
Protective gloves should be replaced at first signs of wear.

**ISOPROPANOL - DRUM 160K**

Material : Nitrile rubber  
Break through time :  $\geq 8$  h  
Glove thickness : 0,35 mm

Material : Fluorinated rubber  
Break through time :  $\geq 8$  h  
Glove thickness : 0,4 mm

Material : butyl-rubber  
Break through time :  $\geq 8$  h  
Glove thickness : 0,5 mm

*Eye protection*

Advice : Safety goggles

*Skin and body protection*

Advice : Solvent resistant protective clothing

**Environmental exposure controls**

General advice : Do not flush into surface water or sanitary sewer system.  
Avoid subsoil penetration.

**SECTION 9: Physical and chemical properties****9.1. Information on basic physical and chemical properties**

Form : liquid

Colour : colourless  
clear

Odour : alcohol-like

Odour Threshold : no data available

pH : no data available

Melting point/range :  $-89\text{ }^{\circ}\text{C}$

Boiling point/boiling range :  $82\text{ }^{\circ}\text{C}$  (ASTM D1078)

Flash point :  $12\text{ }^{\circ}\text{C}$  (Method: ASTM D 56)

Evaporation rate : 3,9 (Butyl Acetate = 1)

Flammability (solid, gas) : Not applicable



**ISOPROPANOL - DRUM 160K**

Upper explosion limit	: 13 %(V)
Lower explosion limit	: 2 %(V)
Vapour pressure	: 43 hPa (20 °C)
Relative vapour density	: > 1 (Air = 1.0)
Relative density	: 0,786 (20 °C)
Water solubility	: completely soluble
Partition coefficient: n-octanol/water	: log Kow 0,05
Auto-ignition temperature	: > 350 °C
Thermal decomposition	: no data available
Viscosity, dynamic	: 2,5 mPa.s (20 °C)
Viscosity, kinematic	: 2,66 mm <sup>2</sup> /s (25 °C) (ASTM D 7042)
Explosivity	: Product is not explosive. Formation of explosive air/vapour mixtures is possible.
Oxidizing properties	: not oxidising

**9.2. Other information**

Molecular weight	: 60,10 g/mol
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**SECTION 10: Stability and reactivity****10.1. Reactivity**

Advice	: No decomposition if stored and applied as directed.
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**10.2. Chemical stability**

Advice	: Stable under recommended storage conditions.
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**10.3. Possibility of hazardous reactions**

Hazardous reactions	: Possible formation of peroxide.
Note	: Formation of explosive air/vapour mixtures is possible.

**10.4. Conditions to avoid**

Conditions to avoid	: Heat, flames and sparks.
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**10.5. Incompatible materials**

Materials to avoid	: Strong oxidizing agents, Amines, Aldehydes, alkanolamines, alkalis, Strong acids
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**ISOPROPANOL - DRUM 160K****10.6. Hazardous decomposition products**

Hazardous decomposition : Under fire conditions: Carbon oxides products

**SECTION 11: Toxicological information****11.1. Information on toxicological effects**

Component:	propan-2-ol	CAS-No. 67-63-0
Acute toxicity		
Oral		
LD50	:	5840 mg/kg (Rat) (OECD Test Guideline 401)
Inhalation		
LC50	:	> 25 mg/l (Rat; 6 h; vapour) (OECD Test Guideline 403)
Dermal		
LD50	:	13900 mg/kg (Rabbit) (OECD Test Guideline 402)
Irritation		
Skin		
Result	:	No skin irritation (OECD Test Guideline 404)Decreases the skin which may cause dry and rough. Prolonged or repeated skin contact may result in dermatitis.
Eyes		
Result	:	Eye irritation (OECD - Guideline 405)Splashes in eyes may cause strong pain. Vapour acts irritant.
Sensitisation		
Result	:	not sensitizing (Buehler Test; Dermal; Guinea pig) (OECD Test Guideline 406)
CMR effects		
Carcinogenicity		
NOEL	:	5.000 ppm (negative, Mouse, male and female)(Inhalation; 0, 500, 2500, 5000

**ISOPROPANOL - DRUM 160K**

ppm; 78 weeks; Frequency of treatment: 5 days/week)(OECD Test Guideline 451)

**CMR Properties**

Carcinogenicity	:	Based on available data, the classification criteria are not met.
Mutagenicity	:	In vitro tests did not show mutagenic effects In vivo tests did not show mutagenic effects
Teratogenicity	:	No effects on or via lactation
Reproductive toxicity	:	Based on available data, the classification criteria are not met.

**Genotoxicity in vitro**

Result	:	negative (Bacterial Reverse Mutation Test; Salmonella typhimurium; with and without metabolic activation) (OECD Test Guideline 471) negative (In vitro gene mutation study in mammalian cells; CHO (Chinese Hamster Ovary) cells; with and without metabolic activation) (OECD Test Guideline 476)
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**Genotoxicity in vivo**

Result	:	negative (In vivo micronucleus test; Mouse, male and female) (intraperitoneal; ) (OECD Test Guideline 474)
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**Teratogenicity**

NOAEL Maternal NOAEL Develop.	:	400 mg/kg bw/day 400 mg/kg bw/day (Rat, Sprague-Dawley)(Oral)(OECD Test Guideline 414)No adverse effects
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**Reproductive toxicity**

NOAEL Parent	:	853 mg/kg bw/day (One-Generation Reproduction Toxicity Study; Rat, wistar, male and female)(Oral)(OECD Test Guideline 415)No negative effects.
NOAEL Parent	:	500 mg/kg bw/day (Two-generation reproductive toxicity; Rat, Sprague-Dawley, male and female)(Oral)(OECD Test Guideline 416)No negative effects.

**Specific Target Organ Toxicity****Single exposure**

Inhalation	:	Target Organs: Central nervous systemMay cause drowsiness or
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**ISOPROPANOL - DRUM 160K**

dizziness.

**Repeated exposure**

Remarks : Oral and inhalation repeated exposure studies demonstrated target organ effects in male rats (kidney) and male and female mice (thyroid) by mechanisms of action that are not relevant to humans

**Other toxic properties****Aspiration hazard**

Aspiration hazard if swallowed - can enter lungs and cause damage.  
Aspiration may cause pulmonary oedema and pneumonitis.  
Based on available data, the classification criteria are not met.,

**SECTION 12: Ecological information****12.1. Toxicity**

Component:	propan-2-ol	CAS-No. 67-63-0
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**Acute toxicity****Fish**

LC50 : 9.640 mg/l (Pimephales promelas; 96 h) (flow-through test; OECD Test Guideline 203)

**Toxicity to daphnia and other aquatic invertebrates**

LC50 : 9.714 mg/l (Daphnia magna; 24 h) (static test; OECD Test Guideline 202)

**algae**

EC50 : > 100 mg/l (Scenedesmus subspicatus; 72 h)  
LOEC 1000 mg/l (algae; 8 d)

**Bacteria**

EC50 : > 100 mg/l (Bacteria) no harming action

**ISOPROPANOL - DRUM 160K****12.2. Persistence and degradability**

Component:	propan-2-ol	CAS-No. 67-63-0
Persistence and degradability		
Persistence		
Result	:	Transformation due to hydrolysis not expected to be significant. Transformation due to photolysis not expected to be significant.
Biodegradability		
Result	:	53 % (aerobic; domestic sewage; Related to: O2 consumption; Exposure Time: 5 d)(Directive 67/548/EEC, Annex V, C.5)Readily biodegradable.

**12.3. Bioaccumulative potential**

<b>Component:</b>	<b>propan-2-ol</b>	<b>CAS-No. 67-63-0</b>
<b>Bioaccumulation</b>		
Result	: log K <sub>ow</sub> 0,05 : Bioaccumulation is not expected.	

**12.4. Mobility in soil**

<b>Component:</b>	<b>propan-2-ol</b>	<b>CAS-No. 67-63-0</b>
<b>Mobility</b>		
Water	: The product is water soluble.	
Soil	: Mobile in soils	

**12.5. Results of PBT and vPvB assessment**

<b>Component:</b>	<b>propan-2-ol</b>	<b>CAS-No. 67-63-0</b>
<b>Results of PBT and vPvB assessment</b>		
Result	: This substance is not considered to be persistent, bioaccumulating nor toxic (PBT)., This substance is not considered to be very persistent and very bioaccumulating (vPvB).	

**12.6. Other adverse effects**

<b>Data for the product</b>		
<b>Additional ecological information</b>		

**ISOPROPANOL - DRUM 160K**

Result : Do not flush into surface water or sanitary sewer system.  
Avoid subsoil penetration.

**SECTION 13: Disposal considerations****13.1. Waste treatment methods**

Product : Disposal together with normal waste is not allowed. Special disposal required according to local regulations. Do not let product enter drains. Contact waste disposal services.

Contaminated packaging : Empty contaminated packagings thoroughly. They can be recycled after thorough and proper cleaning. If recycling is not practicable, dispose of in compliance with local regulations. Do not burn, or use a cutting torch on, the empty drum. Risk of explosion.

European Waste Catalogue Number : No waste code according to the European Waste Catalogue can be assigned for this product, as the intended use dictates the assignment. The waste code is established in consultation with the regional waste disposer.

**SECTION 14: Transport information****14.1. UN number**

1219

**14.2. UN proper shipping name**

ADR : ISOPROPANOL  
RID : ISOPROPANOL  
IMDG : ISOPROPANOL

**14.3. Transport hazard class(es)**

ADR-Class : 3  
(Labels; Classification Code; Hazard Identification Number; Tunnel restriction code) 3; F1; 33; (D/E)

RID-Class : 3  
(Labels; Classification Code; Hazard Identification Number) 3; F1; 33

IMDG-Class : 3  
(Labels; EmS) 3; F-E, S-D

**14.4. Packaging group**

ADR : II  
RID : II  
IMDG : II

**ISOPROPANOL - DRUM 160K****14.5. Environmental hazards**

Environmentally hazardous according to ADR : no  
 Environmentally hazardous according to RID : no  
 Marine Pollutant according to IMDG-Code : no

**14.6. Special precautions for user**

Not applicable.

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

IMDG : Not applicable.

**SECTION 15: Regulatory information****15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture**

Component:	propan-2-ol	CAS-No. 67-63-0
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EU. Regulation EU No. : ; The substance/mixture does not fall under this legislation.  
 649/2012 concerning the  
 export and import of  
 dangerous chemicals

EU. REACH, Annex XVII, : Point Nos.: , 3; Listed  
 Marketing and Use  
 Restrictions (Regulation  
 1907/2006/EC)

Point Nos.: , 40; Listed

EU. Regulation No : EC Number: , 200-661-7; Listed  
 1451/2007 [Biocides],  
 Annex I, OJ (L 325)

EU. Directive : Lower-tier requirements: 5.000 tonnes; Part 1: Categories of  
 2012/18/EU (SEVESO dangerous substances; P5c: Flammable liquids, Categories 2  
 III) Annex I or 3 not covered by P5a and P5b, The information given is  
 valid if the product is stored below the boiling point and at a  
 pressure of 1013 hPa.  
 Upper-tier requirements: 50.000 tonnes; Part 1: Categories of  
 dangerous substances; P5c: Flammable liquids, Categories 2  
 or 3 not covered by P5a and P5b, The information given is  
 valid if the product is stored below the boiling point and at a  
 pressure of 1013 hPa.

**ISOPROPANOL - DRUM 160K****Notification status****propan-2-ol:**

Regulatory List	Notification	Notification number
AICS	YES	
DSL	YES	
EINECS	YES	200-661-7
ENCS (JP)	YES	(2)-207
IECSC	YES	
ISHL (JP)	YES	2-(8)-319
ISHL (JP)	YES	(2)-207
JEX (JP)	YES	(2)-207
KECI (KR)	YES	KE-29363
NZIOC	YES	HSR001180
PICCS (PH)	YES	
TSCA	YES	

**15.2. Chemical safety assessment**

A Chemical Safety Assessment has been carried out for this substance.

**SECTION 16: Other information****Full text of H-Statements referred to under sections 2 and 3.**

H225	Highly flammable liquid and vapour.
H319	Causes serious eye irritation.
H336	May cause drowsiness or dizziness.

**Abbreviations and Acronyms**

<b>BCF</b>	bioconcentration factor
<b>BOD</b>	biochemical oxygen demand
<b>CAS</b>	Chemical Abstracts Service
<b>CLP</b>	Classification, Labelling and Packaging
<b>CMR</b>	carcinogenic, mutagenic or toxic to reproduction
<b>COD</b>	chemical oxygen demand
<b>DNEL</b>	derived no-effect level
<b>EINECS</b>	European Inventory of Existing Commercial Chemical Substances
<b>ELINCS</b>	European List of Notified Chemical Substances
<b>GHS</b>	Globally Harmonized System of Classification and Labelling of Chemicals
<b>LC50</b>	median lethal concentration
<b>LOAEC</b>	lowest observed adverse effect concentration
<b>LOAEL</b>	lowest observed adverse effect level
<b>LOEL</b>	lowest observed effect level



**ISOPROPANOL - DRUM 160K**

<b>NLP</b>	no-longer polymer
<b>NOAEC</b>	no observed adverse effect concentration
<b>NOAEL</b>	no observed adverse effect level
<b>NOEC</b>	no observed effect concentration
<b>NOEL</b>	no observed effect level
<b>OECD</b>	Organisation for Economic Cooperation and Development
<b>OEL</b>	occupational exposure limit
<b>PBT</b>	persistent, bioaccumulative and toxic
<b>REACH Auth. No.:</b>	REACH Authorisation Number
<b>REACH AuthAppC. No.</b>	REACH Authorisation Application Consultation Number
<b>PNEC</b>	predicted no-effect concentration
<b>STOT</b>	specific target organ toxicity
<b>SVHC</b>	substance of very high concern
<b>UVCB</b>	substance of unknown or variable composition, complex reaction products or biological materials
<b>vPvB</b>	very persistent and very bioaccumulative

**Further information**

Key literature references and sources for data	:	Supplier information and data from the "Database of registered substances" of the European Chemicals Agency (ECHA) were used to create this safety data sheet.
Methods used for product classification	:	The classification for human health, physical and chemical hazards and environmental hazards were derived from a combination of calculation methods and if available test data.
Hints for trainings	:	The workers have to be trained regularly on the safe handling of the products based on the information provided in the Safety Data Sheet and the local conditions of the workplace. National regulations for the training of workers in the handling of hazardous materials must be adhered to.
Other information	:	<p>The information provided in this Safety Data Sheet is correct to our knowledge at the date of its revision. The information given only describes the products with regard to safety arrangements and is not to be considered as a warranty or quality specification and does not constitute a legal relationship.</p> <p>The information contained in this Safety Data Sheet relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.</p>

|| Indicates updated section.

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

No.	Short title	Main User Group (SU)	Sector of Use (SU)	Product Category (PC)	Process Category (PROC)	Environmental Release Category (ERC)	Article Category (AC)	Specified
1	Manufacture of substance	3	8, 9	NA	1, 2, 3, 4, 8a, 8b, 15	1, 4	NA	ES001
2	Use as an intermediate	3	8, 9	NA	1, 2, 3, 4, 8a, 8b, 15	6a	NA	ES003
3	Distribution of substance	3	8, 9	NA	1, 2, 3, 4, 8a, 8b, 9, 15	1, 2, 3, 4, 5, 6a, 6b, 6c, 6d, 7	NA	ES005
4	Formulation & (re)packing of substances and mixtures	3	10	NA	1, 2, 3, 4, 5, 8a, 8b, 9, 14, 15	2	NA	ES007
5	Rubber production and processing	3	NA	NA	1, 2, 3, 4, 5, 6, 7, 8a, 8b, 9, 13, 14, 15, 21	4	NA	ES029
6	Polymer processing	3	NA	NA	1, 2, 3, 4, 5, 6, 8a, 8b, 9, 13, 14, 21	4	NA	ES031
7	Polymer processing	22	NA	NA	1, 2, 6, 8a, 8b, 14, 21	8a, 8d	NA	ES069
8	Uses in coatings	3	NA	NA	1, 2, 3, 4, 5, 7, 8a, 8b, 9, 10, 13, 14, 15	4	NA	ES009
9	Uses in coatings	22	NA	NA	1, 2, 3, 4, 5, 8a, 8b, 10, 11, 13, 15, 19	8a, 8d	NA	ES039
10	Uses in coatings	21	NA	1, 4, 8, 9a, 9b, 9c, 15, 18, 23, 24, 31, 34	NA	8a, 8d	NA	ES073
11	Use in Cleaning Agents	3	NA	NA	1, 2, 3, 4, 7, 8a, 8b, 10, 13	4	NA	ES011
12	Use in Cleaning Agents	22	NA	NA	1, 2, 3, 4, 8a, 8b, 10, 11, 13	8a, 8d	NA	ES041
13	Use in Cleaning Agents	21	NA	3, 4, 8, 9a, 24, 35, 38	NA	8a, 8d	NA	ES338

PA100057\_001

1/115

EN

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

14	Use as binders and release agents	3	NA	NA	1, 2, 3, 4, 6, 7, 8b, 10, 14	4	NA	ES021
15	Use as binders and release agents	22	NA	NA	1, 2, 3, 4, 6, 8b, 10, 11, 14	8a, 8d	NA	ES047
16	Use in agrochemicals	22	NA	NA	1, 2, 4, 8a, 8b, 11, 13	8a, 8d	NA	ES049
17	Use in agrochemicals	21	NA	12, 27	NA	8a, 8d	NA	ES438
18	Use as a fuel	3	NA	NA	1, 2, 3, 8a, 8b, 16	7	NA	ES023
19	Use as a fuel	22	NA	NA	1, 2, 3, 8a, 8b, 16	9a, 9b	NA	ES051
20	Use as a fuel	21	NA	13	NA	9a, 9b	NA	ES440
21	Use as lubricants	3	NA	NA	1, 2, 3, 4, 7, 8a, 8b, 9, 10, 13, 17, 18	4, 7	NA	ES015
22	Use as lubricants	22	NA	NA	1, 2, 3, 4, 8a, 8b, 9, 10, 11, 13, 17, 18, 20	8a, 9a, 9b, 8d	NA	ES036
23	Use as lubricants	21	NA	1, 24, 31	NA	8a, 8d, 9a, 9b	NA	ES427
24	Use as Functional Fluids	3	NA	NA	1, 2, 4, 8a, 8b, 9	7	NA	ES025
25	Use as Functional Fluids	22	NA	NA	1, 2, 3, 8a, 9, 20	9a, 9b	NA	ES053
26	Use as Functional Fluids	21	NA	16, 17	NA	9a, 9b	NA	ES449
27	Use in laboratories	3	NA	NA	10, 15	2, 4	NA	ES027
28	Use in laboratories	22	NA	NA	10, 15	8a	NA	ES061
29	Use in metal working fluids / rolling oils	3	NA	NA	1, 2, 3, 4, 5, 7, 8a, 8b, 9, 10, 13, 17	4	NA	ES017
30	Use in metal working fluids / rolling oils	22	NA	NA	1, 2, 3, 8a, 8b, 9, 10, 11, 13, 17	8a, 8d	NA	ES045
31	Blowing agents	3	NA	NA	1, 3, 8b, 12	4	NA	ES019
32	Use in de-icing and anti-icing applications	22	NA	NA	8b, 11	8d	NA	ES055
33	Use in de-icing and anti-icing applications	21	NA	4	NA	8d	NA	ES453
34	Use in road and	22	NA	NA	8a, 8b, 9,	8d, 8f	NA	ES059

PA100057\_001

2/115

EN

**SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006**

**Isopropanol**

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

	construction applications				10, 11, 13			
35	Use as water treatment chemicals	3	NA	NA	1, 2, 3, 4, 8a, 8b, 13	3, 4	NA	ES033
36	Use as water treatment chemicals	22	NA	NA	1, 3, 4, 8a, 8b, 13	8f	NA	ES071
37	Use as water treatment chemicals	21	NA	36, 37	NA	8f	NA	ES459
38	Use in Oil and Gas field drilling and production operations	3	NA	NA	1, 2, 3, 4, 8a, 8b	4	NA	ES013
39	Use as mining chemicals	3	NA	NA	1, 2, 3, 4, 5, 8a, 8b, 9	4	NA	ES037
40	Explosives manufacture & use	22	NA	NA	1, 2, 3, 5, 8a, 8b	8d	NA	ES063
41	Other consumer uses	21	NA	28, 39	NA	8a, 8d	NA	ES457

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

### 1. Short title of Exposure Scenario 1: Manufacture of substance

Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	SU8: Manufacture of bulk, large scale chemicals (including petroleum products) SU9: Manufacture of fine chemicals
Process categories	PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC15: Use as laboratory reagent
Environmental Release Categories	ERC1: Manufacture of substances ERC4: Industrial use of processing aids in processes and products, not becoming part of articles

### 2.1 Contributing scenario controlling environmental exposure for: ERC1, ERC4

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

### 2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC15

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	General exposures (closed systems)	Handle substance within a closed system.(PROC1, PROC2, PROC3)
	General exposures (open systems)	Handle substance within a closed system.(PROC4)
	Bulk transfers (open systems)	Handle substance within a closed system.(PROC8b)
	Bulk transfers (closed systems)	Ensure material transfers are under containment or extract ventilation. Clear transfer lines prior to de-coupling.(PROC8b)

PA100057\_001

4/115

EN

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

	Equipment cleaning and maintenance	Retain drain downs in sealed storage pending disposal or for subsequent recycle. Drain down system prior to equipment break-in or maintenance. Clear spills immediately.(PROC8a)
	Storage	Store substance within a closed system. Avoid dip sampling. Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour).(PROC2)
Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.	

### 3. Exposure estimation and reference to its source

#### Environment

No exposure assessment presented for the environment.

#### Workers

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.  
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.  
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.  
For scaling see: <http://www.ecetoc.org/tra>  
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

#### Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

### 1. Short title of Exposure Scenario 2: Use as an intermediate

Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	SU8: Manufacture of bulk, large scale chemicals (including petroleum products) SU9: Manufacture of fine chemicals
Process categories	PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC15: Use as laboratory reagent
Environmental Release Categories	ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates)

### 2.1 Contributing scenario controlling environmental exposure for: ERC6a

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

### 2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC15

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	General exposures (closed systems)	Handle substance within a closed system.(PROC1, PROC2, PROC3)
	General exposures (open systems)	Handle substance within a closed system.(PROC4)
	Bulk transfers (open systems)	Handle substance within a closed system.(PROC8b)
	Bulk transfers (closed systems)	Ensure material transfers are under containment or extract ventilation.(PROC8b)
	Equipment cleaning and maintenance	Retain drain downs in sealed storage pending disposal or for subsequent recycle.

PA100057\_001

6/115

EN

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

		Drain down system prior to equipment break-in or maintenance. Clear spills immediately.(PROC8a)
	Storage	Store substance within a closed system. Avoid dip sampling.(PROC2)
Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.	

### 3. Exposure estimation and reference to its source

#### Environment

No exposure assessment presented for the environment.

#### Workers

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.  
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.  
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.  
For scaling see: <http://www.ecetoc.org/tra>  
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

### Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.



# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

### 1. Short title of Exposure Scenario 3: Distribution of substance

Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	SU8: Manufacture of bulk, large scale chemicals (including petroleum products) SU9: Manufacture of fine chemicals
Process categories	PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC15: Use as laboratory reagent
Environmental Release Categories	ERC1: Manufacture of substances ERC2: Formulation of preparations ERC3: Formulation in materials ERC4: Industrial use of processing aids in processes and products, not becoming part of articles ERC5: Industrial use resulting in inclusion into or onto a matrix ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates) ERC6b: Industrial use of reactive processing aids ERC6c: Industrial use of monomers for manufacture of thermoplastics ERC6d: Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers ERC7: Industrial use of substances in closed systems

### 2.1 Contributing scenario controlling environmental exposure for: ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7

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

### 2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC15

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day

PA100057\_001

8/115

EN

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

Human factors not influenced by risk management

Assumes use at not more than 20°C above ambient temperature.

Technical conditions and measures to control dispersion from source towards the worker

General exposures (closed systems)	Handle substance within a closed system.(PROC1, PROC2, PROC3)
General exposures (open systems)	Clear transfer lines prior to de-coupling.(PROC4)
Process sampling	Avoid dip sampling.(PROC3)
Bulk transfers (open systems)	Clear transfer lines prior to de-coupling.(PROC8b)
Bulk transfers (closed systems)	Clear transfer lines prior to de-coupling.(PROC8b)
Drum and small package filling	Clear spills immediately. Put lids on containers immediately after use.(PROC9)
Equipment cleaning and maintenance	Retain drain downs in sealed storage pending disposal or for subsequent recycle. Drain down system prior to equipment break-in or maintenance. Apply vessel entry procedures including use of supplied compressed air.(PROC8a)
Storage	Store substance within a closed system. Avoid dip sampling.(PROC2)

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

Use suitable eye protection.  
Avoid direct eye contact with product, also via contamination on hands.

### 3. Exposure estimation and reference to its source

#### Environment

No exposure assessment presented for the environment.

#### Workers

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.  
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.  
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.  
For scaling see: <http://www.ecetoc.org/tra>  
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are

*SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006***Isopropanol**

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

within the boundaries set by the ES

**Additional good practice advice beyond the REACH Chemical Safety Assessment**

Assumes a good basic standard of occupational hygiene is implemented.

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

### 1. Short title of Exposure Scenario 4: Formulation & (re)packing of substances and mixtures

Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	SU 10: Formulation [mixing] of preparations and/ or re-packaging (excluding alloys)
Process categories	PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC14: Production of preparations or articles by tableting, compression, extrusion, pelettisation PROC15: Use as laboratory reagent
Environmental Release Categories	ERC2: Formulation of preparations

### 2.1 Contributing scenario controlling environmental exposure for: ERC2

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

### 2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC14, PROC15

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	General exposures (closed systems)	Handle substance within a closed system.(PROC1, PROC2, PROC3)
	Process sampling	Avoid dip sampling.(PROC3)
	Bulk transfers	Clear transfer lines prior to de-coupling. Clear spills immediately.

PA100057\_001

11/115

EN

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

		Remotely vent displaced vapours.(PROC8b)
	Drum and small package filling	Put lids on containers immediately after use.(PROC9)
	Equipment cleaning and maintenance	Apply vessel entry procedures including use of supplied compressed air. Retain drain downs in sealed storage pending disposal or for subsequent recycle.(PROC8a)
	Storage	Store substance within a closed system. Avoid dip sampling.(PROC2)
Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.	

### 3. Exposure estimation and reference to its source

#### Environment

No exposure assessment presented for the environment.

#### Workers

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.  
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.  
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.  
For scaling see: <http://www.ecetoc.org/tra>  
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

#### Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

### 1. Short title of Exposure Scenario 5: Rubber production and processing

Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC6: Calendering operations PROC7: Industrial spraying PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC13: Treatment of articles by dipping and pouring PROC14: Production of preparations or articles by tableting, compression, extrusion, pelettisation PROC15: Use as laboratory reagent PROC21: Low energy manipulation of substances bound in materials and/or articles
Environmental Release Categories	ERC4: Industrial use of processing aids in processes and products, not becoming part of articles

### 2.1 Contributing scenario controlling environmental exposure for: ERC4

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

### 2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC7, PROC8a, PROC8b, PROC9, PROC13, PROC14, PROC15, PROC21

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	Material transfers	Handle substance within a closed system.(PROC8b)
	Calendering (including	Minimise exposure by extracted full enclosure for

PA100057\_001

13/115

EN

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

Banburys)	the operation or equipment.(PROC6)
Tyre build up	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings.(PROC7)
Vulcanisation	Minimise exposure by extracted full enclosure for the operation or equipment.(PROC6)
Vulcanisation	Provide extract ventilation to material transfer points and other openings.(PROC6)
Cooling cured articles	Minimise exposure by extracted full enclosure for the operation or equipment.(PROC6)
Storage	Store substance within a closed system.(PROC1, PROC2)

### 3. Exposure estimation and reference to its source

#### Environment

No exposure assessment presented for the environment.

#### Workers

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.  
 Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.  
 Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.  
 For scaling see: <http://www.ecetoc.org/tra>  
 Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

#### Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

### 1. Short title of Exposure Scenario 6: Polymer processing

Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC6: Calendering operations PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC13: Treatment of articles by dipping and pouring PROC14: Production of preparations or articles by tableting, compression, extrusion, pelettisation PROC21: Low energy manipulation of substances bound in materials and/or articles
Environmental Release Categories	ERC4: Industrial use of processing aids in processes and products, not becoming part of articles

### 2.1 Contributing scenario controlling environmental exposure for: ERC4

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

### 2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC13, PROC14, PROC21

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	Bulk transfers	Handle substance within a closed system.(PROC8b)
	Bulk weighing	Handle substance within a closed system.(PROC1)
	Small scale weighing	Handle all packages and containers carefully to

PA100057\_001

15/115

EN



# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

	minimise spills.(PROC9)
Additive premixing	Handle all packages and containers carefully to minimise spills.(PROC3, PROC4)
Bulk transfers	Use dry break couplings for material transfer.(PROC8b, PROC9)
Equipment maintenance	Clear up spills immediately and dispose of waste safely.(PROC8a)
Storage	Store substance within a closed system.(PROC1, PROC2)

### 3. Exposure estimation and reference to its source

#### Environment

No exposure assessment presented for the environment.

#### Workers

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.  
 Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.  
 Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.  
 For scaling see: <http://www.ecetoc.org/tra>  
 Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

#### Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

### 1. Short title of Exposure Scenario 7: Polymer processing

Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process categories	PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC6: Calendering operations PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC14: Production of preparations or articles by tableting, compression, extrusion, pelettisation PROC21: Low energy manipulation of substances bound in materials and/or articles
Environmental Release Categories	ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8d: Wide dispersive outdoor use of processing aids in open systems

### 2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8d

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

### 2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC6, PROC8a, PROC8b, PROC14, PROC21

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	Bulk transfers	Handle substance within a closed system.(PROC1, PROC2)
	Material transfers	Use bulk or semi-bulk handling systems.(PROC8b)
	Storage	Store substance within a closed system.(PROC1, PROC2)

### 3. Exposure estimation and reference to its source

#### Environment

No exposure assessment presented for the environment.

PA100057\_001

17/115

EN

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

### Workers

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.  
 Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.  
 Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.  
 For scaling see: <http://www.ecetoc.org/tra>  
 Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

### Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

### 1. Short title of Exposure Scenario 8: Uses in coatings

Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC7: Industrial spraying PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC10: Roller application or brushing PROC13: Treatment of articles by dipping and pouring PROC14: Production of preparations or articles by tableting, compression, extrusion, pelettisation PROC15: Use as laboratory reagent
Environmental Release Categories	ERC4: Industrial use of processing aids in processes and products, not becoming part of articles

### 2.1 Contributing scenario controlling environmental exposure for: ERC4

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

### 2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PROC15

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	General exposures (closed systems)	Handle substance within a closed system.(PROC1)
	General exposures (closed systems) with sample collection	Handle substance within a closed system.(PROC2)

PA100057\_001

19/115

EN

## SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

### Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

	Use in contained systems	
	Film formation - force drying (50-100°C). stoving (>100°C). UV/EB radiation curing	Handle substance within a closed system.(PROC2)
	Mixing operations (closed systems) General exposures (closed systems)	Handle substance within a closed system.(PROC3)
	Spraying (automatic/robotic)	Carry out in a vented booth provided with laminar airflow.(PROC7)
	Manual Spraying	Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour).(PROC7)
	Material transfers	Clear transfer lines prior to de-coupling.(PROC8a)
	Material transfers	Clear transfer lines prior to de-coupling.(PROC8b)
	Dipping, immersion and pouring	Avoid manual contact with wet work pieces.(PROC13)
Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.	

### 3. Exposure estimation and reference to its source

#### Environment

No exposure assessment presented for the environment.

#### Workers

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.  
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.  
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.  
For scaling see: <http://www.ecetoc.org/tra>  
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

#### Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

PA100057\_001

20/115

EN

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

### 1. Short title of Exposure Scenario 9: Uses in coatings

Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process categories	PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC10: Roller application or brushing PROC11: Non industrial spraying PROC13: Treatment of articles by dipping and pouring PROC15: Use as laboratory reagent PROC19: Hand-mixing with intimate contact and only PPE available
Environmental Release Categories	ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8d: Wide dispersive outdoor use of processing aids in open systems

### 2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8d

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

### 2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC10, PROC11, PROC13, PROC15, PROC19

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	General exposures (closed systems)	Handle substance within a closed system.(PROC1)
	Filling / preparation of equipment from drums or containers	Handle substance within a closed system.(PROC2)
	General exposures (closed systems)	Handle substance within a closed system.(PROC2)

PA100057\_001

21/115

EN

## SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

### Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

	Use in contained systems	
	Manual Spraying Indoor	Carry out in a vented booth or extracted enclosure.(PROC11)
	Manual Spraying Outdoor.	Ensure operation is undertaken outdoors.(PROC11)
	Dipping, immersion and pouring Indoor	Avoid manual contact with wet work pieces. Clear up spills immediately and dispose of waste safely.(PROC13)
	Dipping, immersion and pouring Outdoor.	Avoid manual contact with wet work pieces. Clear up spills immediately and dispose of waste safely.(PROC13)
	Hand application - finger paints, pastels, Adhesives Indoor	Ensure doors and windows are opened.(PROC19)
Conditions and measures related to personal protection, hygiene and health evaluation	Manual Spraying Outdoor.	Wear a respirator conforming to EN140 with Type A filter or better.(PROC11)
	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.	

### 3. Exposure estimation and reference to its source

#### Environment

No exposure assessment presented for the environment.

#### Workers

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.  
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.  
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.  
For scaling see: <http://www.ecetoc.org/tra>  
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

#### Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

PA100057\_001

22/115

EN

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

### 1. Short title of Exposure Scenario 10: Uses in coatings

Main User Groups	SU 21: Consumer uses: Private households (= general public = consumers)
Chemical 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 tanning, dye, finishing, impregnation and care products PC24: Lubricants, greases, release products PC31: Polishes and wax blends PC34: Textile dyes, finishing and impregnating products; including bleaches and other processing aids
Environmental Release Categories	ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8d: Wide dispersive outdoor use of processing aids in open systems

### 2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8d

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

### 2.2 Contributing scenario controlling consumer exposure for: PC1: Glues, hobby use

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 30%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	9 g
Frequency and duration of use	Frequency of use	365 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	240 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 35,73 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	20 m <sup>3</sup>
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

PA100057\_001

23/115

EN



# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

### 2.3 Contributing scenario controlling consumer exposure for: PC1: Glues DIY-use (carpet glue, tile glue, wood parquet glue)

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 30%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	6390 g
Frequency and duration of use	Frequency of use	1 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	360 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 110 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	20 m <sup>3</sup>
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

### 2.4 Contributing scenario controlling consumer exposure for: PC1: Glue from spray

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 30%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	85,05 g
Frequency and duration of use	Frequency of use	6 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	240 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 35,73 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	20 m <sup>3</sup>
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g.	Consumer Measures	No specific risk management measure identified

PA100057\_001

24/115

EN

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

behavioural advice, personal protection and hygiene)

beyond those operational conditions stated.

### 2.5 Contributing scenario controlling consumer exposure for: PC1: Sealants

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 30%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	75 g
Frequency and duration of use	Frequency of use	365 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	60 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 35,73 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

### 2.6 Contributing scenario controlling consumer exposure for: PC4: Washing car window

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 50%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	0,5 g
Frequency and duration of use	Frequency of use	365 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	1,2 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 857,5 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	34 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures., Covers use in a one car garage (34 m3) under typical ventilation.	

PA100057\_001

25/115

EN

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)

Consumer Measures

No specific risk management measure identified beyond those operational conditions stated.

### 2.7 Contributing scenario controlling consumer exposure for: PC4: Pouring into radiator

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 50%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	2000 g
Frequency and duration of use	Frequency of use	365 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	10,2 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 428 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	34 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures., Covers use in a one car garage (34 m3) under typical ventilation.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

### 2.8 Contributing scenario controlling consumer exposure for: PC4: Lock de-icer

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 50%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	4 g
Frequency and duration of use	Frequency of use	365 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	15 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 214,4 cm <sup>2</sup>
Other given operational conditions affecting consumers	Room size	34 m3
	Covers use under typical household ventilation., Covers use at ambient	

PA100057\_001

26/115

EN

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

exposure

temperatures., Covers use in a one car garage (34 m3) under typical ventilation.

Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)

Consumer Measures

No specific risk management measure identified beyond those operational conditions stated.

### 2.9 Contributing scenario controlling consumer exposure for: PC8: Cleaners, liquids

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 5%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	27 g
Frequency and duration of use	Frequency of use	128 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	19,8 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 857,5 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

### 2.10 Contributing scenario controlling consumer exposure for: PC8: Cleaners, trigger sprays

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 15%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	35 g
Frequency and duration of use	Frequency of use	128 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	10,2 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 428 cm <sup>2</sup>
Other given operational	Room size	20 m3

PA100057\_001

27/115

EN

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

conditions affecting consumers exposure

Covers use under typical household ventilation., Covers use at ambient temperatures.

Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)

Consumer Measures

No specific risk management measure identified beyond those operational conditions stated.

### 2.11 Contributing scenario controlling consumer exposure for: PC9a: Solvent rich, high solid, water borne paint, PC15: Solvent rich, high solid, water borne paint

Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 27,5%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	744 g
Frequency and duration of use	Frequency of use	6 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	132 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 428,75 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	20 m3
		Covers use under typical household ventilation., Covers use at ambient temperatures.
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

### 2.12 Contributing scenario controlling consumer exposure for: PC9a: Aerosol spray can, PC15: Aerosol spray can

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 50%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	215 g
Frequency and duration of use	Frequency of use	2 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	19,8 min

PA100057\_001

28/115

EN

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 857,5 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	34 m <sup>3</sup>
		Covers use under typical household ventilation., Covers use at ambient temperatures., Covers use in a one car garage (34 m <sup>3</sup> ) under typical ventilation.
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

### 2.13 Contributing scenario controlling consumer exposure for: PC9a: Removers (paint-, glue-, wall paper-, sealant-remover), PC15: Removers (paint-, glue-, wall paper-, sealant remover)

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 50%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	491 g
Frequency and duration of use	Frequency of use	3 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	120 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 857,5 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	20 m <sup>3</sup>
		Covers use under typical household ventilation., Covers use at ambient temperatures.
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

### 2.14 Contributing scenario controlling consumer exposure for: PC9b: Fillers and putty

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 2%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	85 g
Frequency and duration of use	Frequency of use	12 days/year
	Frequency of use	1 Times per day

PA100057\_001

29/115

EN

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

	Exposure duration per event	240 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 35,73 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	20 m <sup>3</sup>
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

### 2.15 Contributing scenario controlling consumer exposure for: PC9b: Plasters and floor equalizers

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 2%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	13800 g
Frequency and duration of use	Frequency of use	12 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	120 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 857,5 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	20 m <sup>3</sup>
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

### 2.16 Contributing scenario controlling consumer exposure for: PC9b: Modelling clay

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 10%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	1 g

PA100057\_001

30/115

EN

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

Frequency and duration of use	Frequency of use	365 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	360 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 254,4 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	20 m <sup>3</sup>
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

### 2.17 Contributing scenario controlling consumer exposure for: PC9c

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 50%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	1,35 g
Frequency and duration of use	Frequency of use	365 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	360 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 254,4 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	20 m <sup>3</sup>
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	Avoid using at a product concentration greater than 15 %

### 2.18 Contributing scenario controlling consumer exposure for: PC18

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 10%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa

PA100057\_001

31/115

EN



# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

Amount used	Amount used per event	40 g
Frequency and duration of use	Frequency of use	365 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	132 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 71,40 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	20 m <sup>3</sup>
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

### 2.19 Contributing scenario controlling consumer exposure for: PC23: Polishes, wax/cream (floor, furniture, shoes)

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 50%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	56 g
Frequency and duration of use	Frequency of use	29 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	73,8 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 430 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	20 m <sup>3</sup>
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

### 2.20 Contributing scenario controlling consumer exposure for: PC23: Polishes, spray (furniture, shoes)

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 50%
	Physical Form (at time of use)	liquid

PA100057\_001

32/115

EN

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

	use)	
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	56 g
Frequency and duration of use	Frequency of use	8 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	19,8 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 430 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

### 2.21 Contributing scenario controlling consumer exposure for: PC24: Liquids

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	2200 g
Frequency and duration of use	Frequency of use	4 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	10,2 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 468 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	34 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures., Covers use in a one car garage (34 m3) under typical ventilation.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

### 2.22 Contributing scenario controlling consumer exposure for: PC24: Pastes

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 20%
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PA100057\_001

33/115

EN

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	34 g
Frequency and duration of use	Frequency of use	10 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	360 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 468 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

### 2.23 Contributing scenario controlling consumer exposure for: PC24: Sprays

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 50%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	73 g
Frequency and duration of use	Frequency of use	6 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	10,2 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 428,75 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

### 2.24 Contributing scenario controlling consumer exposure for: PC31: Polishes, wax / cream (floor, furniture, shoes)

PA100057\_001

34/115

EN

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 50%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	142 g
Frequency and duration of use	Frequency of use	29 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	73,8 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 430 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

### 2.25 Contributing scenario controlling consumer exposure for: PC31: Polishes, spray (furniture, shoes)

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 50%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	35 g
Frequency and duration of use	Frequency of use	8 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	19,8 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 430 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

PA100057\_001

35/115

EN

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

protection and hygiene)

### 2.26 Contributing scenario controlling consumer exposure for: PC34

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 10%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	115 g
Frequency and duration of use	Frequency of use	365 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	60 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 857,5 cm²
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

### 3. Exposure estimation and reference to its source

#### Environment

No exposure assessment presented for the environment.

#### Consumers

The ECETOC TRA tool has been used to estimate consumer exposures unless otherwise indicated. Predicted exposures are not expected to exceed the applicable exposure limits when the operational conditions/risk management measures given in section 2 are implemented.

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

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

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

### 1. Short title of Exposure Scenario 11: Use in Cleaning Agents

Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC7: Industrial spraying PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC10: Roller application or brushing PROC13: Treatment of articles by dipping and pouring
Environmental Release Categories	ERC4: Industrial use of processing aids in processes and products, not becoming part of articles

#### 2.1 Contributing scenario controlling environmental exposure for: ERC4

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

#### 2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC7, PROC8a, PROC8b, PROC10, PROC13

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	Bulk transfers	Clear transfer lines prior to de-coupling.(PROC8a)
	Filling / preparation of equipment from drums or containers	Clear transfer lines prior to de-coupling.(PROC8b)
	Cleaning with high pressure washers	Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour).(PROC7)
Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.	

### 3. Exposure estimation and reference to its source

PA100057\_001 37/115 EN

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

### Environment

No exposure assessment presented for the environment.

### Workers

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.  
 Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.  
 Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.  
 For scaling see: <http://www.ecetoc.org/tra>  
 Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

### Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

### 1. Short title of Exposure Scenario 12: Use in Cleaning Agents

Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process categories	PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC10: Roller application or brushing PROC11: Non industrial spraying PROC13: Treatment of articles by dipping and pouring
Environmental Release Categories	ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8d: Wide dispersive outdoor use of processing aids in open systems

#### 2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8d

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

#### 2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC10, PROC11, PROC13

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Other operational conditions affecting workers exposure	Limit the substance content in the mixture to 1 %, Avoid carrying out activities involving exposure for more than 15 minutes.(PROC11)	
Technical conditions and measures to control dispersion from source towards the worker	Cleaning with high pressure washers	Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan. Ensure operation is undertaken outdoors.(PROC11)
Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.	

PA100057\_001

39/115

EN



# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

### 3. Exposure estimation and reference to its source

#### Environment

No exposure assessment presented for the environment.

#### Workers

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.  
 Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.  
 Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.  
 For scaling see: <http://www.ecetoc.org/tra>  
 Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

### Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

### 1. Short title of Exposure Scenario 13: Use in Cleaning Agents

Main User Groups	SU 21: Consumer uses: Private households (= general public = consumers)
Chemical product category	PC3: Air care products PC4: Anti-freeze and de-icing products PC8: Biocidal products PC9a: Coatings and paints, thinners, paint removers PC24: Lubricants, greases, release products PC35: Washing and cleaning products (including solvent based products) PC38: Welding and soldering products (with flux coatings or flux cores), flux products
Environmental Release Categories	ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8d: Wide dispersive outdoor use of processing aids in open systems

### 2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8d

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

### 2.2 Contributing scenario controlling consumer exposure for: PC3: Aircare, instant action (aerosol sprays)

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 50%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	0,1 g
Frequency and duration of use	Frequency of use	365 days/year
	Frequency of use	4 Times per day
	Exposure duration per event	15 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 857,5 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	20 m <sup>3</sup>
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

### 2.3 Contributing scenario controlling consumer exposure for: PC3: Aircare, continuous action (solid & liquid)

PA100057\_001

41/115

EN

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 10%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	0,48 g
Frequency and duration of use	Frequency of use	365 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	480 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 35,7 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

### 2.4 Contributing scenario controlling consumer exposure for: PC4: Washing car window

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 50%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	0,5 g
Frequency and duration of use	Frequency of use	365 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	1,2 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 857,5 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	34 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures., Covers use in a one car garage (34 m3) under typical ventilation.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

PA100057\_001

42/115

EN

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

### 2.5 Contributing scenario controlling consumer exposure for: PC4: Pouring into radiator

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 50%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	2000 g
Frequency and duration of use	Frequency of use	365 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	10,2 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 428 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	34 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures., Covers use in a one car garage (34 m3) under typical ventilation.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

### 2.6 Contributing scenario controlling consumer exposure for: PC4: Lock de-icer

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 50%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	4 g
Frequency and duration of use	Frequency of use	365 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	15 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 214,4 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	34 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures., Covers use in a one car garage (34 m3) under typical ventilation.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

PA100057\_001

43/115

EN

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

protection and hygiene)

### 2.7 Contributing scenario controlling consumer exposure for: PC8: Laundry and dish washing products

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 50%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	15 g
Frequency and duration of use	Frequency of use	365 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	30 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 857,5 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	20 m <sup>3</sup>
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

### 2.8 Contributing scenario controlling consumer exposure for: PC8: Cleaners, liquids

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 50%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	27 g
Frequency and duration of use	Frequency of use	128 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	19,8 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 857,5 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	20 m <sup>3</sup>
	Covers use under typical household ventilation., Covers use at ambient temperatures.	

PA100057\_001

44/115

EN

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)

Consumer Measures

No specific risk management measure identified beyond those operational conditions stated.

### 2.9 Contributing scenario controlling consumer exposure for: PC8: Cleaners, trigger sprays

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 50%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	35 g
Frequency and duration of use	Frequency of use	128 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	10,2 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 428 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	20 m3
		Covers use under typical household ventilation., Covers use at ambient temperatures.
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

### 2.10 Contributing scenario controlling consumer exposure for: PC9a: Solvent rich, high solid, water borne paint

Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 27,5%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	744 g
Frequency and duration of use	Frequency of use	6 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	132 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 428,75 cm <sup>2</sup>
Other given operational	Room size	20 m3

PA100057\_001

45/115

EN

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

conditions affecting consumers exposure	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

### 2.11 Contributing scenario controlling consumer exposure for: PC9a: Aerosol spray can

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 50%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	215 g
Frequency and duration of use	Frequency of use	2 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	19,8 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 857,5 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	34 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures., Covers use in a one car garage (34 m3) under typical ventilation.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

### 2.12 Contributing scenario controlling consumer exposure for: PC9a: Removers (paint-, glue-, wall paper-, sealant-remover)

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 50%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	491 g
Frequency and duration of use	Frequency of use	3 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	120 min
Human factors not influenced by	Exposed skin areas	Covers skin contact area up to 857,5 cm <sup>2</sup>

PA100057\_001

46/115

EN

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

### risk management

Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

### 2.13 Contributing scenario controlling consumer exposure for: PC24: Liquids

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	2200 g
Frequency and duration of use	Frequency of use	4 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	10,2 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 468 cm²
Other given operational conditions affecting consumers exposure	Room size	34 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures., Covers use in a one car garage (34 m3) under typical ventilation.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

### 2.14 Contributing scenario controlling consumer exposure for: PC24: Pastes

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 20%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	34 g
Frequency and duration of use	Frequency of use	10 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	240 min

PA100057\_001

47/115

EN



# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 468 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	20 m <sup>3</sup>
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

### 2.15 Contributing scenario controlling consumer exposure for: PC24: Sprays

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 50%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	73 g
Frequency and duration of use	Frequency of use	6 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	10,2 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 428,75 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	20 m <sup>3</sup>
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

### 2.16 Contributing scenario controlling consumer exposure for: PC35: Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners )

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 5%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	27 g
Frequency and duration of use	Frequency of use	128 days/year

PA100057\_001

48/115

EN

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

	Frequency of use	1 Times per day
	Exposure duration per event	19,8 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 857,5 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

### 2.17 Contributing scenario controlling consumer exposure for: PC35: Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 15%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	35 g
Frequency and duration of use	Frequency of use	128 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	10,2 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 428 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

### 2.18 Contributing scenario controlling consumer exposure for: PC38

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 50%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa

PA100057\_001

49/115

EN

## SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

### Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

Amount used	Amount used per event	12 g
Frequency and duration of use	Frequency of use	365 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	60 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 857,5 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	20 m <sup>3</sup>
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

### 3. Exposure estimation and reference to its source

#### Environment

No exposure assessment presented for the environment.

#### Consumers

The ECETOC TRA tool has been used to estimate consumer exposures unless otherwise indicated. Predicted exposures are not expected to exceed the applicable exposure limits when the operational conditions/risk management measures given in section 2 are implemented.

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

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

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

### 1. Short title of Exposure Scenario 14: Use as binders and release agents

Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC6: Calendering operations PROC7: Industrial spraying PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC10: Roller application or brushing PROC14: Production of preparations or articles by tableting, compression, extrusion, pelettisation
Environmental Release Categories	ERC4: Industrial use of processing aids in processes and products, not becoming part of articles

### 2.1 Contributing scenario controlling environmental exposure for: ERC4

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

### 2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC6, PROC7, PROC8b, PROC10, PROC14

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	Material transfers	Clear transfer lines prior to de-coupling.(PROC1, PROC2, PROC3)
	Casting operations (open systems)	Provide extraction ventilation at points where emissions occur.(PROC6)
	Spraying Machine	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings. Automate activity where possible.(PROC7)
	Spraying Manual	Carry out in a vented booth or extracted enclosure.(PROC7)
	Storage	Store substance within a closed system.(PROC1,

PA100057\_001

51/115

EN

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

	PROC2)
Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.

### 3. Exposure estimation and reference to its source

#### Environment

No exposure assessment presented for the environment.

#### Workers

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.  
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.  
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.  
For scaling see: <http://www.ecetoc.org/tra>  
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

#### Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

### 1. Short title of Exposure Scenario 15: Use as binders and release agents

Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process categories	PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC6: Calendering operations PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC10: Roller application or brushing PROC11: Non industrial spraying PROC14: Production of preparations or articles by tableting, compression, extrusion, pelettisation
Environmental Release Categories	ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8d: Wide dispersive outdoor use of processing aids in open systems

### 2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8d

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

### 2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC6, PROC8b, PROC10, PROC11, PROC14, PROC1, PROC2, PROC3, PROC4

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Other operational conditions affecting workers exposure	Limit the substance content in the mixture to 25 %.(PROC6)	
Technical conditions and measures to control dispersion from source towards the worker	Material transfers (closed systems)	Retain drain downs in sealed storage pending disposal or for subsequent recycle.(PROC1, PROC2, PROC3)
	Casting operations (open systems)	Provide extraction ventilation at points where emissions occur.(PROC6)
	Spraying Machine	Minimise exposure by extracted full enclosure for the operation or equipment.(PROC11)
	Spraying	Carry out in a vented booth or extracted

PA100057\_001

53/115

EN

## SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

### Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

	Manual	enclosure.(PROC11)
	Batch process	Store substance within a closed system.(PROC1, PROC2)
Organisational measures to prevent /limit releases, dispersion and exposure	Spraying Machine	Segregate the activity away from other operations.(PROC11)
	Spraying Manual	Segregate the activity away from other operations.(PROC11)
Conditions and measures related to personal protection, hygiene and health evaluation	Spraying Manual	Wear a respirator conforming to EN140 with Type A/P2 filter or better.(PROC11)
	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.	

### 3. Exposure estimation and reference to its source

#### Environment

No exposure assessment presented for the environment.

#### Workers

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.  
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.  
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.  
For scaling see: <http://www.ecetoc.org/tra>  
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

#### Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

### 1. Short title of Exposure Scenario 16: Use in agrochemicals

Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process categories	PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC11: Non industrial spraying PROC13: Treatment of articles by dipping and pouring
Environmental Release Categories	ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8d: Wide dispersive outdoor use of processing aids in open systems

### 2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8d

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

### 2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC4, PROC8a, PROC8b, PROC11, PROC13

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
	Frequency of use	< 4 hours/day(PROC11)
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Other operational conditions affecting workers exposure	Limit the substance content in the mixture to 25 %.(PROC11)	
Technical conditions and measures to control dispersion from source towards the worker	Spraying/fogging by machine application	Apply within a vented cab supplied with filtered air under positive pressure and with a protection factor of >20.(PROC11)
	Operation of equipment containing engine oils and similar	Retain drain downs in sealed storage pending disposal or for subsequent recycle.(PROC8a)
	Disposal of wastes	Clear up spills immediately and dispose of waste safely.(PROC8a)
	Storage	Store substance within a closed system.(PROC1,

PA100057\_001

55/115

EN



# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

	PROC2)
Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.

### 3. Exposure estimation and reference to its source

#### Environment

No exposure assessment presented for the environment.

#### Workers

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.  
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.  
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.  
For scaling see: <http://www.ecetoc.org/tra>  
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

#### Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

### 1. Short title of Exposure Scenario 17: Use in agrochemicals

Main User Groups	SU 21: Consumer uses: Private households (= general public = consumers)
Chemical product category	PC12: Lawn and garden preparations, including fertilizers (- Fertilizers) PC27: Plant protection products
Environmental Release Categories	ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8d: Wide dispersive outdoor use of processing aids in open systems

### 2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8d

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

### 2.2 Contributing scenario controlling consumer exposure for: PC12, PC27

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 50%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	0,3 g
Frequency and duration of use	Frequency of use	365 days/year
	Frequency of use	1 Times per day
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 857,5 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

### 3. Exposure estimation and reference to its source

#### Environment

No exposure assessment presented for the environment.

#### Consumers

The ECETOC TRA tool has been used to estimate consumer exposures unless otherwise indicated. Predicted exposures are not expected to exceed the applicable exposure limits when the operational conditions/risk management measures given in section 2 are implemented.

PA100057\_001

57/115

EN

*SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006***Isopropanol**

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

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

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

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

### 1. Short title of Exposure Scenario 18: Use as a fuel

Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC16: Using material as fuel sources, limited exposure to unburned product to be expected
Environmental Release Categories	ERC7: Industrial use of substances in closed systems

### 2.1 Contributing scenario controlling environmental exposure for: ERC7

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

### 2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC16

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	Bulk transfers	Handle substance within a closed system. Clear transfer lines prior to de-coupling.(PROC8b)
	Drum/batch transfers	Avoid spillage when withdrawing pump. Use drum pumps or carefully pour from container.(PROC8b)
	General exposures (open systems) (closed systems)	Handle substance within a closed system.(PROC1, PROC2)
	Equipment cleaning and maintenance	Apply vessel entry procedures including use of supplied compressed air. Retain drain downs in sealed storage pending disposal or for subsequent recycle. Drain down system prior to equipment break-in or maintenance.(PROC8a)

PA100057\_001

59/115

EN

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

	Vessel and container cleaning	Apply vessel entry procedures including use of supplied compressed air. Retain drain downs in sealed storage pending disposal or for subsequent recycle.(PROC8a)
	Storage	Store substance within a closed system. Avoid dip sampling.(PROC1, PROC2)
Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.	

### 3. Exposure estimation and reference to its source

#### Environment

No exposure assessment presented for the environment.

#### Workers

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.  
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.  
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.  
For scaling see: <http://www.ecetoc.org/tra>  
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

#### Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

### 1. Short title of Exposure Scenario 19: Use as a fuel

Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process categories	PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC16: Using material as fuel sources, limited exposure to unburned product to be expected
Environmental Release Categories	ERC9a: Wide dispersive indoor use of substances in closed systems ERC9b: Wide dispersive outdoor use of substances in closed systems

### 2.1 Contributing scenario controlling environmental exposure for: ERC9a, ERC9b

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

### 2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC16

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	Bulk transfers	Handle substance within a closed system. Clear transfer lines prior to de-coupling.(PROC8b)
	Drum/batch transfers	Avoid spillage when withdrawing pump.(PROC8b)
	refuelling aircraft	Avoid spillage when withdrawing pump.(PROC8a)
	General exposures (closed systems)	Handle substance within a closed system.(PROC3)
	General exposures (open systems) (closed systems)	Handle substance within a closed system.(PROC16)
	Equipment cleaning and maintenance	Retain drain downs in sealed storage pending disposal or for subsequent recycle.(PROC8a)
	Vessel and container cleaning	Apply vessel entry procedures including use of supplied compressed air.

PA100057\_001

61/115

EN

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

		Retain drain downs in sealed storage pending disposal or for subsequent recycle.(PROC8a)
	Storage	Store substance within a closed system.(PROC1, PROC2)
Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.	

### 3. Exposure estimation and reference to its source

#### Environment

No exposure assessment presented for the environment.

#### Workers

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.  
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.  
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.  
For scaling see: <http://www.ecetoc.org/tra>  
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

#### Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

### 1. Short title of Exposure Scenario 20: Use as a fuel

Main User Groups	SU 21: Consumer uses: Private households (= general public = consumers)
Chemical product category	PC13: Fuels
Environmental Release Categories	ERC9a: Wide dispersive indoor use of substances in closed systems ERC9b: Wide dispersive outdoor use of substances in closed systems

### 2.1 Contributing scenario controlling environmental exposure for: ERC9a, ERC9b

### 2.2 Contributing scenario controlling consumer exposure for: PC13: Liquid: Automotive Refuelling

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	37500 g
Frequency and duration of use	Frequency of use	52 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	3 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 210 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Outdoor use.	
	Room size	100 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

### 2.3 Contributing scenario controlling consumer exposure for: PC13: Liquid: Scooter Refuelling

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	3750 g
Frequency and duration of use	Frequency of use	52 days/year

PA100057\_001

63/115

EN



# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

	Frequency of use	1 Times per day
	Exposure duration per event	1,8 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 210 cm²
Other given operational conditions affecting consumers exposure	Outdoor use.	
	Room size	100 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.
2.4 Contributing scenario controlling consumer exposure for: PC13: Liquid: Garden Equipment - Use		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	750 g
Frequency and duration of use	Frequency of use	26 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	120 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 420 cm²
Other given operational conditions affecting consumers exposure	Outdoor use.	
	Room size	100 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.
2.5 Contributing scenario controlling consumer exposure for: PC13: Liquid: Garden Equipment - Refueling		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of	liquid
PA100057_00164/115EN		

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

	use)	
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	750 g
Frequency and duration of use	Frequency of use	26 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	1,8 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 420 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	34 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures., Covers use in a one car garage (34 m3) under typical ventilation.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.
<b>2.6 Contributing scenario controlling consumer exposure for: PC13: Liquid: home space heater fuel</b>		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	750 g
Frequency and duration of use	Frequency of use	26 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	1,8 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 210 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.
<b>2.7 Contributing scenario controlling consumer exposure for: PC13: Liquid: Lamp oil</b>		
Product characteristics	Concentration of the	Covers percentage substance in the product up to
PA100057_001	65/115	EN

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

	Substance in Mixture/Article	100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	100 g
Frequency and duration of use	Frequency of use	52 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	0,6 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 210 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	20 m <sup>3</sup>
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

### 3. Exposure estimation and reference to its source

#### Environment

No exposure assessment presented for the environment.

#### Consumers

The ECETOC TRA tool has been used to estimate consumer exposures unless otherwise indicated. Predicted exposures are not expected to exceed the applicable exposure limits when the operational conditions/risk management measures given in section 2 are implemented.

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

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

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

### 1. Short title of Exposure Scenario 21: Use as lubricants

Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC7: Industrial spraying PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC10: Roller application or brushing PROC13: Treatment of articles by dipping and pouring PROC17: Lubrication at high energy conditions and in partly open process PROC18: Greasing at high energy conditions
Environmental Release Categories	ERC4: Industrial use of processing aids in processes and products, not becoming part of articles ERC7: Industrial use of substances in closed systems

### 2.1 Contributing scenario controlling environmental exposure for: ERC4, ERC7

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

### 2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC17, PROC18

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	General exposures (closed systems)	Handle substance within a closed system.(PROC1, PROC2, PROC3)
	Bulk transfers	Clear transfer lines prior to de-coupling. Clear spills immediately. Remotely vent displaced vapours.(PROC8b)
	Operation and lubrication	Provide extract ventilation to points where

PA100057\_001

67/115

EN

## SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

### Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

	of high energy open equipment	emissions occur. Restrict area of openings to equipment.(PROC17, PROC18)
	Spraying	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings. Automate activity where possible. Clear transfer lines prior to de-coupling.(PROC7)
	Maintenance (of larger plant items) and machine set up	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings. Automate activity where possible.(PROC8b)
	Maintenance of small items	Avoid manual contact with wet work pieces. Retain drain downs in sealed storage pending disposal or for subsequent recycle.(PROC8a)
	Remanufacture of reject articles	Retain drain downs in sealed storage pending disposal or for subsequent recycle.(PROC9)
	Storage	Store substance within a closed system. Avoid dip sampling.(PROC1, PROC2)
Conditions and measures related to personal protection, hygiene and health evaluation	Bulk transfers	Wear suitable gloves tested to EN374.(PROC8b)
		Wear suitable gloves tested to EN374.(PROC8b)
		Use suitable eye protection.
		Avoid direct eye contact with product, also via contamination on hands.

### 3. Exposure estimation and reference to its source

#### Environment

No exposure assessment presented for the environment.

#### Workers

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.  
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.  
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.  
For scaling see: <http://www.ecetoc.org/tra>  
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

#### Additional good practice advice beyond the REACH Chemical Safety Assessment

PA100057\_001

68/115

EN

*SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006****Isopropanol***

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

Assumes a good basic standard of occupational hygiene is implemented.

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

### 1. Short title of Exposure Scenario 22: Use as lubricants

Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process categories	PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC10: Roller application or brushing PROC11: Non industrial spraying PROC13: Treatment of articles by dipping and pouring PROC17: Lubrication at high energy conditions and in partly open process PROC18: Greasing at high energy conditions PROC20: Heat and pressure transfer fluids in dispersive, professional use but closed systems
Environmental Release Categories	ERC8a: Wide dispersive indoor use of processing aids in open systems ERC9a: Wide dispersive indoor use of substances in closed systems ERC9b: Wide dispersive outdoor use of substances in closed systems ERC8d: Wide dispersive outdoor use of processing aids in open systems

### 2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8d, ERC9a, ERC9b

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

### 2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC17, PROC18, PROC20

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
	Frequency of use	4 hours/day (PROC8a, PROC11, PROC17, PROC18)
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion	General exposures (closed systems)	Handle substance within a closed system. (PROC1, PROC2, PROC3)

PA100057\_001

70/115

EN

## SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

### Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

from source towards the worker

Operation and lubrication of high energy open equipment Indoor	Restrict area of openings to equipment. Provide extraction ventilation at points where emissions occur.(PROC17, PROC18)
Operation and lubrication of high energy open equipment Outdoor.	Ensure operation is undertaken outdoors.(PROC17)
Maintenance (of larger plant items) and machine set up	Provide extract ventilation to emission points when contact with warm (>50oC) product is likely.(PROC8b)
Maintenance of small items	Retain drain downs in sealed storage pending disposal or for subsequent recycle.(PROC8a)
Spraying	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings.(PROC11)
Treatment by dipping and pouring	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings. Allow time for product to drain from workpiece.(PROC13)
Treatment by dipping and pouring	Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan. Allow time for product to drain from workpiece.(PROC13)
Storage	Store substance within a closed system.(PROC1, PROC2)

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

Maintenance of small items	Wear a respirator conforming to EN140 with Type A/P2 filter or better.(PROC8a)
Spraying	Wear a respirator conforming to EN140 with Type A/P2 filter or better.(PROC11)
Treatment by dipping and pouring	Wear a respirator conforming to EN140 with Type A/P2 filter or better.(PROC13)
Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.	

### 3. Exposure estimation and reference to its source

#### Environment

No exposure assessment presented for the environment.

#### Workers

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

PA100057\_001

71/115

EN



***SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006******Isopropanol***

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.

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

For scaling see: <http://www.ecetoc.org/tra>

Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

**Additional good practice advice beyond the REACH Chemical Safety Assessment**

Assumes a good basic standard of occupational hygiene is implemented.

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

### 1. Short title of Exposure Scenario 23: Use as lubricants

Main User Groups	SU 21: Consumer uses: Private households (= general public = consumers)
Chemical product category	PC1: Adhesives, sealants PC24: Lubricants, greases, release products PC31: Polishes and wax blends
Environmental Release Categories	ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8d: Wide dispersive outdoor use of processing aids in open systems ERC9a: Wide dispersive indoor use of substances in closed systems ERC9b: Wide dispersive outdoor use of substances in closed systems

### 2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8d, ERC9a, ERC9b

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

### 2.2 Contributing scenario controlling consumer exposure for: PC1: Glues, hobby use

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 30%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	9 g
Frequency and duration of use	Frequency of use	365 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	240 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 35,73 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	20 m <sup>3</sup>
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

### 2.3 Contributing scenario controlling consumer exposure for: PC1: Glues DIY-use (carpet glue, tile glue, wood parquet glue)

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 30%
	Physical Form (at time of use)	liquid

PA100057\_001

73/115

EN

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

	use)	
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	6390 g
Frequency and duration of use	Frequency of use	1 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	360 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 110 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

### 2.4 Contributing scenario controlling consumer exposure for: PC1: Glue from spray

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 30%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	85,05 g
Frequency and duration of use	Frequency of use	6 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	240 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 35,73 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

### 2.5 Contributing scenario controlling consumer exposure for: PC1: Sealants

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 30%
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PA100057\_001

74/115

EN

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	75 g
Frequency and duration of use	Frequency of use	365 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	60 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 35,73 cm²
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.
2.6 Contributing scenario controlling consumer exposure for: PC24: Liquids		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	2200 g
Frequency and duration of use	Frequency of use	4 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	10,2 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 468 cm²
Other given operational conditions affecting consumers exposure	Room size	34 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures., Covers use in a one car garage (34 m3) under typical ventilation.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.
2.7 Contributing scenario controlling consumer exposure for: PC24: Pastes		
Product characteristics	Concentration of the Substance in	Concentration of substance in product : 0% - 20%
PA100057_001		
75/115		EN

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

	Mixture/Article	
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	34 g
Frequency and duration of use	Frequency of use	10 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	360 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 468 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

### 2.8 Contributing scenario controlling consumer exposure for: PC24: Sprays

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 50%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	73 g
Frequency and duration of use	Frequency of use	6 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	10,2 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 428,75 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

### 2.9 Contributing scenario controlling consumer exposure for: PC31: Polishes, wax / cream (floor, furniture, shoes)

PA100057\_001

76/115

EN

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 50%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	142 g
Frequency and duration of use	Frequency of use	29 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	73,8 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 430 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

### 2.10 Contributing scenario controlling consumer exposure for: PC31: Polishes, spray (furniture, shoes)

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 50%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	35 g
Frequency and duration of use	Frequency of use	8 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	19,8 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 430 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

PA100057\_001

77/115

EN

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

protection and hygiene)

### 3. Exposure estimation and reference to its source

#### Environment

No exposure assessment presented for the environment.

#### Consumers

The ECETOC TRA tool has been used to estimate consumer exposures unless otherwise indicated. Predicted exposures are not expected to exceed the applicable exposure limits when the operational conditions/risk management measures given in section 2 are implemented.

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

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

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

### 1. Short title of Exposure Scenario 24: Use as Functional Fluids

Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
Environmental Release Categories	ERC7: Industrial use of substances in closed systems

### 2.1 Contributing scenario controlling environmental exposure for: ERC7

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

### 2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC4, PROC8a, PROC8b, PROC9

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	Bulk transfers (closed systems)	Transfer via enclosed lines. Clear transfer lines prior to de-coupling.(PROC1, PROC2)
	Filling / preparation of equipment from drums or containers	Carefully pour from containers.(PROC8a)
	Remanufacture of reject articles	Retain drain downs in sealed storage pending disposal or for subsequent recycle.(PROC9)
	Equipment maintenance	Retain drain downs in sealed storage pending disposal or for subsequent recycle.(PROC8a)
	Storage	Store substance within a closed system.(PROC1, PROC2)
Conditions and measures related	Use suitable eye protection.	

PA100057\_001

79/115

EN



# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

to personal protection, hygiene  
and health evaluation

Avoid direct eye contact with product, also via contamination on hands.

### 3. Exposure estimation and reference to its source

#### Environment

No exposure assessment presented for the environment.

#### Workers

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.  
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.  
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.  
For scaling see: <http://www.ecetoc.org/tra>  
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

### Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

### 1. Short title of Exposure Scenario 25: Use as Functional Fluids

Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process categories	PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC20: Heat and pressure transfer fluids in dispersive, professional use but closed systems
Environmental Release Categories	ERC9a: Wide dispersive indoor use of substances in closed systems ERC9b: Wide dispersive outdoor use of substances in closed systems

### 2.1 Contributing scenario controlling environmental exposure for: ERC9a, ERC9b

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

### 2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC8a, PROC9, PROC20

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	Transfer from/pouring from containers	Avoid spillage when withdrawing pump.(PROC9)
	Remanufacture of reject articles	Retain drain downs in sealed storage pending disposal or for subsequent recycle.(PROC9)
	Equipment maintenance	Retain drain downs in sealed storage pending disposal or for subsequent recycle.(PROC8a)
	Storage	Store substance within a closed system.(PROC1, PROC2)
Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection.	
	Avoid direct eye contact with product, also via contamination on hands.	

### 3. Exposure estimation and reference to its source

PA100057\_001 81/115 EN

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

### Environment

No exposure assessment presented for the environment.

### Workers

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.  
 Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.  
 Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.  
 For scaling see: <http://www.ecetoc.org/tra>  
 Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

### Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

### 1. Short title of Exposure Scenario 26: Use as Functional Fluids

Main User Groups	SU 21: Consumer uses: Private households (= general public = consumers)
Chemical product category	PC16: Heat transfer fluids PC17: Hydraulic fluids
Environmental Release Categories	ERC9a: Wide dispersive indoor use of substances in closed systems ERC9b: Wide dispersive outdoor use of substances in closed systems

### 2.1 Contributing scenario controlling environmental exposure for: ERC9a, ERC9b

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

### 2.2 Contributing scenario controlling consumer exposure for: PC16, PC17

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	2200 g
Frequency and duration of use	Frequency of use	4 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	10,2 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 468 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	34 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures., Covers use in a one car garage (34 m3) under typical ventilation.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

### 3. Exposure estimation and reference to its source

#### Environment

No exposure assessment presented for the environment.

#### Consumers

PA100057\_001

83/115

EN

*SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006***Isopropanol**

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

The ECETOC TRA tool has been used to estimate consumer exposures unless otherwise indicated. Predicted exposures are not expected to exceed the applicable exposure limits when the operational conditions/risk management measures given in section 2 are implemented.

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

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

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

### 1. Short title of Exposure Scenario 27: Use in laboratories

Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	PROC10: Roller application or brushing PROC15: Use as laboratory reagent
Environmental Release Categories	ERC2: Formulation of preparations ERC4: Industrial use of processing aids in processes and products, not becoming part of articles

### 2.1 Contributing scenario controlling environmental exposure for: ERC2, ERC4

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

### 2.2 Contributing scenario controlling worker exposure for: PROC10, PROC15

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
	Frequency of use	< 4 hours/day(PROC15)
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	Laboratory activities	Automate activity where possible. Restrict area of openings to equipment. Handle substance within a closed system. Clear spills immediately. Remotely vent displaced vapours. Use dedicated equipment.(PROC15)
	cleaning	Drain down system prior to equipment break-in or maintenance. Retain drain downs in sealed storage pending disposal or for subsequent recycle. Automate activity where possible. Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour).(PROC10)
Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection.	
	Avoid direct eye contact with product, also via contamination on hands.	

### 3. Exposure estimation and reference to its source

#### Environment

PA100057\_001

85/115

EN

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

No exposure assessment presented for the environment.

### Workers

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.  
 Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.  
 Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.  
 For scaling see: <http://www.ecetoc.org/tra>  
 Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

### Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

### 1. Short title of Exposure Scenario 28: Use in laboratories

Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process categories	PROC10: Roller application or brushing PROC15: Use as laboratory reagent
Environmental Release Categories	ERC8a: Wide dispersive indoor use of processing aids in open systems

### 2.1 Contributing scenario controlling environmental exposure for: ERC8a

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

### 2.2 Contributing scenario controlling worker exposure for: PROC10, PROC15

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
	Frequency of use	< 4 hours/day(PROC15)
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	Laboratory activities	Handle substance within a closed system. Clear transfer lines prior to de-coupling. Clear spills immediately. Remotely vent displaced vapours. Use dedicated equipment. Restrict area of openings to equipment. Allow time for product to drain from workpiece. Automate activity where possible.(PROC15)
	cleaning	Automate activity where possible. Retain drain downs in sealed storage pending disposal or for subsequent recycle.(PROC10)
Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection.	
	Avoid direct eye contact with product, also via contamination on hands.	

### 3. Exposure estimation and reference to its source

#### Environment

No exposure assessment presented for the environment.

PA100057\_001

87/115

EN



**SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006****Isopropanol**

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

**Workers**

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.  
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.  
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.  
For scaling see: <http://www.ecetoc.org/tra>  
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

**Additional good practice advice beyond the REACH Chemical Safety Assessment**

Assumes a good basic standard of occupational hygiene is implemented.

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

### 1. Short title of Exposure Scenario 29: Use in metal working fluids / rolling oils

Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC7: Industrial spraying PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC10: Roller application or brushing PROC13: Treatment of articles by dipping and pouring PROC17: Lubrication at high energy conditions and in partly open process
Environmental Release Categories	ERC4: Industrial use of processing aids in processes and products, not becoming part of articles

### 2.1 Contributing scenario controlling environmental exposure for: ERC4

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

### 2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC17

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	General exposures (closed systems)	Handle substance within a closed system.(PROC1, PROC2, PROC3)
	Bulk transfers	Clear transfer lines prior to de-coupling. Clear spills immediately. Remotely vent displaced vapours.(PROC8b)
	Process sampling	Use dedicated equipment.(PROC8b)

PA100057\_001

89/115

EN

## SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

### Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

Metal machining operations	Restrict area of openings to equipment.(PROC17)
Treatment by dipping and pouring	Allow time for product to drain from workpiece. Automate activity where possible.(PROC13)
Spraying	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings. Automate activity where possible.(PROC7)
Rolling, Brushing Manual	Avoid splashing.(PROC10)
Semi-automated metal rolling/forming	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings. Automate activity where possible.(PROC17)
Equipment cleaning and maintenance Dedicated facility	Retain drain downs in sealed storage pending disposal or for subsequent recycle.(PROC8b)
Equipment cleaning and maintenance Non-dedicated facility	Retain drain downs in sealed storage pending disposal or for subsequent recycle.(PROC8a)
Storage	Store substance within a closed system.(PROC1, PROC2)

Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection.
	Avoid direct eye contact with product, also via contamination on hands.

### 3. Exposure estimation and reference to its source

#### Environment

No exposure assessment presented for the environment.

#### Workers

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.  
 Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.  
 Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.  
 For scaling see: <http://www.ecetoc.org/tra>  
 Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are

*SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006***Isopropanol**

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

within the boundaries set by the ES

**Additional good practice advice beyond the REACH Chemical Safety Assessment**

Assumes a good basic standard of occupational hygiene is implemented.

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

### 1. Short title of Exposure Scenario 30: Use in metal working fluids / rolling oils

Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process categories	PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC10: Roller application or brushing PROC11: Non industrial spraying PROC13: Treatment of articles by dipping and pouring PROC17: Lubrication at high energy conditions and in partly open process
Environmental Release Categories	ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8d: Wide dispersive outdoor use of processing aids in open systems

### 2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8d

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

### 2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC17

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
	Frequency of use	< 1 hours/day(PROC8a)
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	General exposures (closed systems)	Handle substance within a closed system.(PROC1, PROC2, PROC3)
	Bulk transfers	Clear transfer lines prior to de-coupling.(PROC8b)
	Filling / preparation of equipment from drums or containers Dedicated facility	Clear transfer lines prior to de-coupling.(PROC8b)
	Metal machining operations	Provide enhanced general ventilation by mechanical means.(PROC17)

PA100057\_001

92/115

EN

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

	Spraying	Provide enhanced general ventilation by mechanical means.(PROC11)
	Treatment by dipping and pouring	Allow time for product to drain from workpiece.(PROC13)
	Equipment cleaning and maintenance Non-dedicated facility	Retain drain downs in sealed storage pending disposal or for subsequent recycle.(PROC8a)
	Equipment cleaning and maintenance Dedicated facility	Clear transfer lines prior to de-coupling.(PROC8b)
	Storage	Handle substance within a closed system.(PROC1, PROC2)
Conditions and measures related to personal protection, hygiene and health evaluation	Spraying	Wear a respirator conforming to EN140 with Type A/P2 filter or better.(PROC11)
	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.	

### 3. Exposure estimation and reference to its source

#### Environment

No exposure assessment presented for the environment.

#### Workers

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.  
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.  
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.  
For scaling see: <http://www.ecetoc.org/tra>  
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

### Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

### 1. Short title of Exposure Scenario 31: Blowing agents

Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	PROC1: Use in closed process, no likelihood of exposure PROC3: Use in closed batch process (synthesis or formulation) PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC12: use of blowing agents in manufacture of foam
Environmental Release Categories	ERC4: Industrial use of processing aids in processes and products, not becoming part of articles

### 2.1 Contributing scenario controlling environmental exposure for: ERC4

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

### 2.2 Contributing scenario controlling worker exposure for: PROC1, PROC3, PROC8b, PROC12

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	Bulk transfers	Use vapour recovery units when necessary Clear transfer lines prior to de-coupling.(PROC8b)
	Extrusion and expansion of polymer mass	Normal safe operations. Regular testing for fugitive emissions.(PROC12)
Organisational measures to prevent /limit releases, dispersion and exposure		

### 3. Exposure estimation and reference to its source

#### Environment

No exposure assessment presented for the environment.

#### Workers

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

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

PA100057\_001

94/115

EN

**SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006****Isopropanol**

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.  
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.  
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.  
For scaling see: <http://www.ecetoc.org/tra>  
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

**Additional good practice advice beyond the REACH Chemical Safety Assessment**

Assumes a good basic standard of occupational hygiene is implemented.



## SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

### Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

#### 1. Short title of Exposure Scenario 32: Use in de-icing and anti-icing applications

Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process categories	PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC11: Non industrial spraying
Environmental Release Categories	ERC8d: Wide dispersive outdoor use of processing aids in open systems

#### 2.1 Contributing scenario controlling environmental exposure for: ERC8d

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

#### 2.2 Contributing scenario controlling worker exposure for: PROC8b, PROC11

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
	Frequency of use	< 1 hours/day(PROC11)
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	Bulk transfers	Clear transfer lines prior to de-coupling.(PROC8b)
	Material transfers	Clear transfer lines prior to de-coupling.(PROC8b)
	Spraying/fogging by machine application	Ensure operation is undertaken outdoors.(PROC11)
Organisational measures to prevent /limit releases, dispersion and exposure	Spraying/fogging by machine application	Stay upwind/ keep distance from source.(PROC11)
Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection.	
	Avoid direct eye contact with product, also via contamination on hands.	

#### 3. Exposure estimation and reference to its source

##### Environment

No exposure assessment presented for the environment.

##### Workers

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

PA100057\_001

96/115

EN

***SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006******Isopropanol***

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.

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

For scaling see: <http://www.ecetoc.org/tra>

Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

**Additional good practice advice beyond the REACH Chemical Safety Assessment**

Assumes a good basic standard of occupational hygiene is implemented.

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

### 1. Short title of Exposure Scenario 33: Use in de-icing and anti-icing applications

Main User Groups	SU 21: Consumer uses: Private households (= general public = consumers)
Chemical product category	PC4: Anti-freeze and de-icing products
Environmental Release Categories	ERC8d: Wide dispersive outdoor use of processing aids in open systems

### 2.1 Contributing scenario controlling environmental exposure for: ERC8d

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

### 2.2 Contributing scenario controlling consumer exposure for: PC4: Washing car window

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 1 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	0,5 g
Frequency and duration of use	Frequency of use	365 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	1,2 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 428 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	34 m <sup>3</sup>
		Covers use under typical household ventilation., Covers use at ambient temperatures., Covers use in a one car garage (34 m <sup>3</sup> ) under typical ventilation.
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

### 2.3 Contributing scenario controlling consumer exposure for: PC4: Pouring into radiator

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 10%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	2000 g

PA100057\_001

98/115

EN

## SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

### Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

Frequency and duration of use	Frequency of use	365 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	10,2 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 428 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	34 m <sup>3</sup>
	Covers use under typical household ventilation., Covers use at ambient temperatures., Covers use in a one car garage (34 m <sup>3</sup> ) under typical ventilation.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

### 2.4 Contributing scenario controlling consumer exposure for: PC4: Lock de-icer

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 40%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	4 g
Frequency and duration of use	Frequency of use	365 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	15 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 214,4 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	34 m <sup>3</sup>
	Covers use under typical household ventilation., Covers use at ambient temperatures., Covers use in a one car garage (34 m <sup>3</sup> ) under typical ventilation.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

### 3. Exposure estimation and reference to its source

#### Environment

No exposure assessment presented for the environment.

#### Consumers

PA100057\_001

99/115

EN

*SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006***Isopropanol**

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

The ECETOC TRA tool has been used to estimate consumer exposures unless otherwise indicated. Predicted exposures are not expected to exceed the applicable exposure limits when the operational conditions/risk management measures given in section 2 are implemented.

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

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

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

### 1. Short title of Exposure Scenario 34: Use in road and construction applications

Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process categories	PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC10: Roller application or brushing PROC11: Non industrial spraying PROC13: Treatment of articles by dipping and pouring
Environmental Release Categories	ERC8d: Wide dispersive outdoor use of processing aids in open systems ERC8f: Wide dispersive outdoor use resulting in inclusion into or onto a matrix

### 2.1 Contributing scenario controlling environmental exposure for: ERC8d, ERC8f

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

### 2.2 Contributing scenario controlling worker exposure for: PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Other operational conditions affecting workers exposure	Operation is carried out at elevated temperature (> 20°C above ambient temperature).(PROC8b)	
Technical conditions and measures to control dispersion from source towards the worker	Drum/batch transfers Dedicated facility	Use dedicated equipment. Clear transfer lines prior to de-coupling.(PROC8b)
	Spraying/fogging by machine application	Automate activity where possible.(PROC11)
	Equipment cleaning and maintenance	Retain drain downs in sealed storage pending disposal or for subsequent recycle.(PROC8a)
Organisational measures to prevent /limit releases, dispersion and exposure	Spraying/fogging by machine application	Stay upwind/ keep distance from source.(PROC11)
Conditions and measures related to personal protection, hygiene		
	Drum/batch transfers	Wear a respirator conforming to EN140 with Type A

PA100057\_001

101/115

EN

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

and health evaluation

Dedicated facility	filter or better.(PROC8b)
Spraying/fogging by machine application	Wear a respirator conforming to EN140 with Type A filter or better.(PROC11)

### 3. Exposure estimation and reference to its source

#### Environment

No exposure assessment presented for the environment.

#### Workers

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.  
 Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.  
 Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.  
 For scaling see: <http://www.ecetoc.org/tra>  
 Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

#### Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

### 1. Short title of Exposure Scenario 35: Use as water treatment chemicals

Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC13: Treatment of articles by dipping and pouring
Environmental Release Categories	ERC3: Formulation in materials ERC4: Industrial use of processing aids in processes and products, not becoming part of articles

### 2.1 Contributing scenario controlling environmental exposure for: ERC3, ERC4

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

### 2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC13

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	Bulk transfers	Handle substance within a closed system. Clear transfer lines prior to de-coupling.(PROC2)
	Drum/batch transfers	Avoid spillage when withdrawing pump.(PROC8b)
	General exposures (open systems)	Restrict area of openings to equipment.(PROC4)
	Pouring from small containers	Use drum pumps or carefully pour from container.(PROC13)
	Batch process	Retain drain downs in sealed storage pending disposal or for subsequent recycle.(PROC8a)
	Storage	Store substance within a closed system.(PROC1)
Conditions and measures related	Use suitable eye protection.	

PA100057\_001

103/115

EN



# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

to personal protection, hygiene  
and health evaluation

Avoid direct eye contact with product, also via contamination on hands.

### 3. Exposure estimation and reference to its source

#### Environment

No exposure assessment presented for the environment.

#### Workers

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.  
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.  
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.  
For scaling see: <http://www.ecetoc.org/tra>  
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

### Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

### 1. Short title of Exposure Scenario 36: Use as water treatment chemicals

Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process categories	PROC1: Use in closed process, no likelihood of exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC13: Treatment of articles by dipping and pouring
Environmental Release Categories	ERC8f: Wide dispersive outdoor use resulting in inclusion into or onto a matrix

### 2.1 Contributing scenario controlling environmental exposure for: ERC8f

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

### 2.2 Contributing scenario controlling worker exposure for: PROC1, PROC3, PROC4, PROC8a, PROC8b, PROC13

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	Drum/batch transfers	Avoid spillage when withdrawing pump. Clear transfer lines prior to de-coupling. Use drum pumps or carefully pour from container.(PROC8b)
	General exposures (open systems)	Restrict area of openings to equipment.(PROC4)
	Pouring from small containers	Carefully pour from containers. Avoid spillage when withdrawing pump.(PROC13)
	Equipment maintenance	Retain drain downs in sealed storage pending disposal or for subsequent recycle.(PROC8a)
	Storage	Store substance within a closed system.(PROC1)
Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection.	
	Avoid direct eye contact with product, also via contamination on hands.	

PA100057\_001

105/115

EN

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

### 3. Exposure estimation and reference to its source

#### Environment

No exposure assessment presented for the environment.

#### Workers

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.  
 Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.  
 Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.  
 For scaling see: <http://www.ecetoc.org/tra>  
 Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

### Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

### 1. Short title of Exposure Scenario 37: Use as water treatment chemicals

Main User Groups	SU 21: Consumer uses: Private households (= general public = consumers)
Chemical product category	PC36: Water softeners PC37: Water treatment chemicals
Environmental Release Categories	ERC8f: Wide dispersive outdoor use resulting in inclusion into or onto a matrix

### 2.1 Contributing scenario controlling environmental exposure for: ERC8f

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

### 2.2 Contributing scenario controlling consumer exposure for: PC36

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 20%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	10 g
	Amount used per event (oral exposure)	0,000015 g
Frequency and duration of use	Frequency of use	365 days/year
	Frequency of use	1 Times per day
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 6600 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	20 m <sup>3</sup>
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

### 2.3 Contributing scenario controlling consumer exposure for: PC37

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 20%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa

PA100057\_001

107/115

EN

## SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

### Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

Amount used	Amount used per event	10 g
	Amount used per event (oral exposure)	0,000154 g
Frequency and duration of use	Frequency of use	365 days/year
	Frequency of use	1 Times per day
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 6600 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	20 m <sup>3</sup>
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

### 3. Exposure estimation and reference to its source

#### Environment

No exposure assessment presented for the environment.

#### Consumers

The ECETOC TRA tool has been used to estimate consumer exposures unless otherwise indicated. Predicted exposures are not expected to exceed the applicable exposure limits when the operational conditions/risk management measures given in section 2 are implemented.

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

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

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

### 1. Short title of Exposure Scenario 38: Use in Oil and Gas field drilling and production operations

Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Environmental Release Categories	ERC4: Industrial use of processing aids in processes and products, not becoming part of articles

### 2.1 Contributing scenario controlling environmental exposure for: ERC4

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

### 2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	Bulk transfers from tote tanks and supply vessels	Handle substance within a closed system.(PROC8b)
	Filling / preparation of equipment from drums or containers	Handle substance within a closed system.(PROC8b)
	Drilling mud (re-)formulation	Handle substance within a closed system.(PROC3)
	Process sampling	Clear transfer lines prior to de-coupling. Clear spills immediately. Remotely vent displaced vapours.(PROC3)

### 3. Exposure estimation and reference to its source

PA100057_001	109/115	EN
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# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

### Environment

No exposure assessment presented for the environment.

### Workers

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.  
 Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.  
 Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.  
 For scaling see: <http://www.ecetoc.org/tra>  
 Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

### Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

### 1. Short title of Exposure Scenario 39: Use as mining chemicals

Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
Environmental Release Categories	ERC4: Industrial use of processing aids in processes and products, not becoming part of articles

### 2.1 Contributing scenario controlling environmental exposure for: ERC4

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

### 2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	Bulk transfers	Handle substance within a closed system. Clear transfer lines prior to de-coupling.(PROC2)
	Drum/batch transfers	Avoid spillage when withdrawing pump.(PROC8b)
	Pouring from small containers	Handle all packages and containers carefully to minimise spills.(PROC9)
	Equipment cleaning and maintenance	Retain drain downs in sealed storage pending disposal or for subsequent recycle.(PROC8a)
	Storage	Store substance within a closed system.(PROC1)

### 3. Exposure estimation and reference to its source

PA100057_001	111/115	EN
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# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

### Environment

No exposure assessment presented for the environment.

### Workers

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.  
 Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.  
 Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.  
 For scaling see: <http://www.ecetoc.org/tra>  
 Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

### Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

## SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

### Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

#### 1. Short title of Exposure Scenario 40: Explosives manufacture & use

Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process categories	PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Environmental Release Categories	ERC8d: Wide dispersive outdoor use of processing aids in open systems

#### 2.1 Contributing scenario controlling environmental exposure for: ERC8d

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

#### 2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC5, PROC8a, PROC8b

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	Bulk transfers	Handle substance within a closed system. Clear transfer lines prior to de-coupling. Remotely vent displaced vapours.(PROC3)
	Transfer from/pouring from containers Non-dedicated facility	Avoid spillage when withdrawing pump.(PROC8a)
	Storage	Store substance within a closed system.(PROC1, PROC2)

#### 3. Exposure estimation and reference to its source

##### Environment

No exposure assessment presented for the environment.

PA100057\_001

113/115

EN

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

### Workers

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.  
 Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.  
 Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.  
 For scaling see: <http://www.ecetoc.org/tra>  
 Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

### Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

# SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

## Isopropanol

Version 1.2

Print Date 14.01.2013

Revision Date 03.07.2012

### 1. Short title of Exposure Scenario 41: Other consumer uses

Main User Groups	SU 21: Consumer uses: Private households (= general public = consumers)
Chemical product category	PC28: Perfumes, fragrances PC39: Cosmetics, personal care products
Environmental Release Categories	ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8d: Wide dispersive outdoor use of processing aids in open systems

### 2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8d

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

### 2.2 Contributing scenario controlling consumer exposure for: PC28, PC39

Consumer uses e.g. as a carrier in cosmetics/personal care products, perfumes and fragrances. Note: For cosmetic and personal care products, risk assessment only required for the environment under REACH as human health is covered by alternative legislation.

### 3. Exposure estimation and reference to its source

#### Environment

No exposure assessment presented for the environment.

#### Consumers

Predicted exposures are not expected to exceed the applicable exposure limits when the operational conditions/risk management measures given in section 2 are implemented.

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

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

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