

This safety data sheet was created pursuant to the requirements of:
UK REACH Regulations (SI 2019/758 as amended)

Supersedes date 02-Jun-2025

Revision date 20-Apr-2026

Revision Number 6

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

1.1. Product identifier

Product Code(s)	459
Safety data sheet number	459
Product Name	ETHANOL
Index No	603-002-00-5
EC Number	200-578-6
CAS No	64-17-5
Synonyms	TSDA 3, DRAA, ALCOHOL TO BURN 94 DEN, ALCOHOL DENATURED 23A, DEB 100, DEB 96, DRAA (INEOS) ABS ETOH, SDA 23A 190 PROOF PFIZER BLEND, ETHANOL 96% GPR RECTAPUR, ETHANOL UNDENATURED, ETHANOL PURE 99.9%, ETHANOL FERM 96% PHARMA PURE, ETHANOL 99.9 PHARMA, ETHANOL DENATURED 93% SOLUTION, ETHANOL 96%, ETHANOL ABS, ETHANOL 96% FERM ENA, ETHANOL 99.9% S, ETHANOL 96% F, ETHANOL 96% F PH, ETHANOL 99.9% S PH, ETHANOL 96% FERM BEV, PURSOL, ETHANOL 99.9% F, ETHANOL 99% F 100, ETHANOL 96% F AROM, ETHANOL ABSOLUTE NORMAPUR, ETHANOL 99.5 % (SCREENWASH), ABS ETHANOL 99.5% UNDEN, ETHANOL 99.9% PH, ABS FINSPRIT 99.5% 20 UNDEN, ETHANOL 96% PH, ETHANOL REK REN, ETHANOL REK, ETHANOL 95% F, ETHANOL 95% UNDEN, ETHANOL 96% F RECT, FINSPRIT WHEAT 96%, ETHANOL DEN TSDA COSMOS FFL ORG, ETHANOL DEB96 TSDA COSMOS ORG CT, ETHANOL 96% F ORG, ETHANOL 99.9% EP SYNTH, ETHANOL 96% F REN, MOLASSES ETHANOL 96% NEU, ALCOHOL 96% PURE, BIOETHANOL, DEB 96 FERM, TECH IND ETHANOL ABS PURE, DEHYDRATED ETHANOL, ABS FINSPRIT 99.5%, ETHANOL 96% F BEV ARC, ETHANOL 99.9% F TECH GRW, ETHANOL 95% S HRN, ETHANOL 99.9% F GRW, ETHANOL 96% MOLASSES NEU, ETHANOL 96% IND, ETHANOL 99.5% UNDEN, ABS ETHANOL 99.9%, ETANOL 99,5% ODEN, FINSPRIT 95% ODEN KML, FINSPRIT ETHYL 96%, ETHANOL SDA 40B 200 PROOF, ETHANOL DEN, ABSOLUTE ALCOHOL, ETHANOL 96% F PH BQC GRW, ETHANOL 99% IND, ETHANOL 96% F PH CRO, ALCOHOL ABS PURE KOSHER, ETHANOL 99.9% S PH HRN, ETHANOL 96% EAL, ETHANOL 96% ZW, PURE ABS ALCOHOL SURFIN AG, ETHANOL 99.9% F PH GREENFIELD, ETHANOL 96% F GRW, ETHANOL 96% F PH GRW, ETHANOL 99.9% S PH SASOL UHPE, ETHANOL 99.9% F PH GRW, ETHANOL 99,9% S PH HRN, ETHANOL 95% S
Pure substance/mixture	Substance
Molecular weight	46.07

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

Recommended use	Laboratory chemicals Chemical intermediate Cleaning agent Surface coating Additive for Agrochemicals
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Deicing
Fuel additive
Food industry
Pharmaceuticals
Antifreeze
paint
For further information, see attached Exposure Scenario

1.3. Details of the supplier of the safety data sheet

Supplier

Univar Solutions UK Ltd
Aquarius House
6 Mid Point Business Park
Bradford
GBR

For further information, please contact

E-mail address SDS.EMEA@univarsolutions.com
Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

1.4. Emergency telephone number

Emergency Telephone SGS - +32 (0)3 575 55 55 (24h)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Flammable liquids	Category 2 - (H225)
Serious eye damage/eye irritation	Category 2 - (H319)

2.2. Label elements



Signal word
Danger

Hazard statements

H319 - Causes serious eye irritation
H225 - Highly flammable liquid and vapour

Precautionary statements

P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking
P280 - Wear protective clothing/eye protection
P303 + P361 + P353 - IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P337 + P313 - If eye irritation persists: Get medical advice/attention

P403 + P235 - Store in a well-ventilated place. Keep cool

2.3. Other hazards

Vapours can form explosive mixtures with air.

SECTION 3: Composition/information on ingredients

3.1 Substances

Chemical name	Weight-%	EC No (EU Index No)	UK REACH registration number	Classification according to GB CLP (SI 2020/1567 as amended)	Specific concentration limit (SCL)	M-Factor	M-Factor (long-term)
ETHANOL 64-17-5	90 - 100%	200-578-6 (603-002-00-5)	-	Flam. Liq. 2 (H225) Eye Irrit. 2 (H319)	Eye Irrit. 2 (H319) :: C>=50%	-	-

Full text of H- and EUH-phrases: see section 16

This product does not contain candidate substances of very high concern at a concentration $\geq 0.1\%$ (UK REACH Article 59)

SECTION 4: First aid measures

4.1. Description of first aid measures

General advice	Show this safety data sheet to the doctor in attendance.
Inhalation	Remove to fresh air. Get medical attention if symptoms occur.
Eye contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Keep eye wide open while rinsing. Do not rub affected area. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists.
Skin contact	Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes.
Ingestion	Rinse mouth. Never give anything by mouth to an unconscious person. Do NOT induce vomiting. Call a doctor.
Self-protection of the first aider	Remove all sources of ignition. Use personal protective equipment as required. See section 8 for more information. Avoid contact with skin, eyes or clothing.

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

Symptoms	Causes serious eye irritation. Inhalation of high vapour concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea.
Eyes	Causes serious eye irritation.

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

Note to doctors	Treat symptomatically.
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SECTION 5: Firefighting measures**5.1. Extinguishing media**

Suitable Extinguishing Media Dry chemical. Alcohol resistant foam. Polyvalent powder extinguishers (ABC powder).

Large Fire

Unsuitable extinguishing media DO NOT USE WATER. Carbon dioxide (CO2).

5.2. Special hazards arising from the substance or mixture

Specific hazards arising from the chemical Risk of ignition. Keep product and empty container away from heat and sources of ignition. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

Hazardous combustion products Carbon oxides.

5.3. Advice for firefighters

Special protective equipment and precautions for fire-fighters Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Cool containers with flooding quantities of water until well after fire is out. Collect contaminated fire extinguishing water separately. Do not allow it to enter drains or surface water.

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

Personal precautions Ensure adequate ventilation. Avoid contact with skin, eyes and inhalation of vapours. Use personal protection recommended in Section 8. Keep unnecessary and unprotected personnel from entering. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Vapours may form explosive mixtures with air. Take precautionary measures against static discharge.

Other information Ventilate the area. Refer to protective measures listed in Sections 7 and 8.

For emergency responders Use personal protection recommended in Section 8.

6.2. Environmental precautions

Environmental precautions Refer to protective measures listed in Sections 7 and 8. Prevent further leakage or spillage if safe to do so. Prevent product from entering drains. Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

Methods for containment Stop leak if you can do it without risk. Do not touch or walk through spilled material. A vapour suppressing foam may be used to reduce vapours. Dyke far ahead of spill to collect run-off water. Keep out of drains, sewers, ditches and waterways. Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal.

Methods for cleaning up Ensure adequate ventilation. Take up with sand or other noncombustible absorbent material and place into containers for later disposal. Take action to prevent static discharges. Use spark-proof tools and explosion-proof equipment.

Prevention of secondary hazards Clean contaminated objects and areas thoroughly observing environmental regulations.

6.4. Reference to other sections

Reference to other sections See section 8 for more information. See section 13 for more information.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Advice on safe handling Use personal protection equipment. Avoid breathing vapours or mists. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use with local exhaust ventilation. Use according to package label instructions. Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Use personal protection recommended in Section 8. Ground and bond all lines and equipment associated with product system. All equipment should be non-sparking and explosion proof. Take precautionary measures against static discharge.

General hygiene considerations Do not eat, drink or smoke when using this product. Wash hands before breaks and immediately after handling the product. Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection. Ensure that eyewash stations and safety showers are close to the workstation location. Remove contaminated clothing and protective equipment before entering eating areas. Take off all contaminated clothing and wash it before reuse.

7.2. Conditions for safe storage, including any incompatibilities

Storage Conditions Keep containers tightly closed in a dry, cool and well-ventilated place. Keep in properly labelled containers. Do not store near combustible materials. Store in accordance with the particular national regulations. Ensure adequate ventilation. Ground and bond all lines and equipment associated with product system. All equipment should be non-sparking and explosion proof. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep away from food, drink and animal feedingstuffs. Avoid contact with: Oxidising agents. Acids. Peroxides.

7.3. Specific end use(s)

Specific use(s)
See section 1 for more information.

Risk Management Methods (RMM) The information required is contained in this Safety Data Sheet.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Exposure Limits

Chemical name	United Kingdom
ETHANOL 64-17-5	TWA: 1000 ppm TWA: 1920 mg/m ³ STEL: 3000 ppm STEL: 5760 mg/m ³

Biological occupational exposure limits This product, as supplied, does not contain any hazardous materials with biological limits established by the region specific regulatory bodies.

Derived No Effect Level (DNEL) - Workers

Chemical name	Oral	Dermal	Inhalation
ETHANOL 64-17-5		8238 mg/kg bw/day [4] [6]	380 mg/m ³ [4] [6] 1900 mg/m ³ [5] [7]

[4] Systemic health effects.
[6] Long term.

Derived No Effect Level (DNEL) - General Public

Chemical name	Oral	Dermal	Inhalation
ETHANOL 64-17-5	87 mg/kg bw/day [4] [6]	206 mg/kg bw/day [4] [6]	114 mg/m ³ [4] [6] 950 mg/m ³ [5] [7]

[4] Systemic health effects.
[6] Long term.

Predicted No Effect Concentration (PNEC)

Chemical name	Freshwater	Freshwater (intermittent release)	Marine water	Marine water (intermittent release)	Air
ETHANOL 64-17-5	0.96 mg/l		0.79 mg/l		

Chemical name	Freshwater sediment	Marine sediment	Sewage treatment	Soil	Food chain
ETHANOL 64-17-5	3.6 mg/kg dwt	2.9 mg/kg dwt	580 mg/l	0.63 mg/kg dwt	0.38 g/kg

8.2. Exposure controls**Engineering controls**

Ensure adequate ventilation. Local and General Ventilation. Use explosion-proof ventilating equipment. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal protective equipment**Eye/face protection**

Tight sealing safety goggles. Use eye protection according to EN 166.

Hand protection

Ensure that the breakthrough time of the glove material is not exceeded. Refer to glove supplier for information on breakthrough time for specific gloves. Gloves must conform to standard EN 374.

Gloves			
Duration of contact	PPE - Glove material	Glove thickness	Break through time
Long term (repeated)	Butyl rubber	0.7 mm	480 minutes

Skin and body protection

Wear suitable protective clothing. Long sleeved clothing. Chemical resistant apron. Antistatic boots.

Respiratory protection

No protective equipment is needed under normal use conditions. If exposure limits are

exceeded or irritation is experienced, ventilation and evacuation may be required. In case of inadequate ventilation wear respiratory protection.

General hygiene considerations

Do not eat, drink or smoke when using this product. Wash hands before breaks and immediately after handling the product. Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection. Ensure that eyewash stations and safety showers are close to the workstation location. Remove contaminated clothing and protective equipment before entering eating areas. Take off all contaminated clothing and wash it before reuse.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	Liquid
Appearance	Clear liquid
Colour	Colourless
Odour	Alcoholic.
Odour threshold	No information available

Property	Values	Remarks • Method
Melting point / freezing point	-114 °C	
Initial boiling point and boiling range	78.4 °C	
Flammability		No information available.
Flammability Limit in Air		No information available.
Upper flammability or explosive limits	13.5%	
Lower flammability or explosive limits	2.5%	
Flash point	12 °C	Closed cup.
Autoignition temperature	425 °C	
Decomposition temperature		No information available.
pH		No information available.
pH (as aqueous solution)		No information available.
Kinematic viscosity		No information available.
Dynamic viscosity	1.2 mPa s	@ 20 °C.
Water solubility	Soluble in water	
Solubility(ies)		No information available.
Partition coefficient	log Pow: - 0.31	
Vapour pressure	5.81 kPa	
Relative density	0.79 - 0.81	20 °C.
Bulk density		No information available
Liquid Density	No information available	No information available
Relative vapour density	1.59	
Particle characteristics		No information available.
Particle Size	No information available	
Particle Size Distribution	No information available	
Explosive properties	No information available	
Oxidising properties	No information available	

9.2. Other information

Molecular weight	46.07
VOC content	100
Refractive Index	1.3614 3.1

SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity Stable under recommended storage conditions.

10.2. Chemical stability

Stability Stable under normal conditions.

Explosion data

Sensitivity to mechanical impact None.

Sensitivity to static discharge Yes.

10.3. Possibility of hazardous reactions

Possibility of hazardous reactions Vapours may form explosive mixtures with air.

10.4. Conditions to avoid

Conditions to avoid Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharges.

10.5. Incompatible materials

Incompatible materials Oxidising agents. Acids. Peroxides.

10.6. Hazardous decomposition products

Hazardous decomposition products Thermal decomposition or combustion may liberate carbon oxides and other toxic gases or vapours.

SECTION 11: Toxicological information**11.1. Information on toxicological effects****Information on likely routes of exposure****Product Information**

Inhalation	May cause central nervous system depression with nausea, headache, dizziness, vomiting, and incoordination.
Eye contact	Causes serious eye irritation.
Skin contact	Prolonged contact may cause dryness of the skin.
Ingestion	May cause central nervous system depression with nausea, headache, dizziness, vomiting, and incoordination.

Symptoms related to the physical, chemical and toxicological characteristics

Symptoms Causes serious eye irritation.

Acute toxicity**Numerical measures of toxicity****Component Information**

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
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ETHANOL	= 7060 mg/kg (Rat)	> 15800 mg/kg (Rabbit)	= 116.9 mg/l (Rat)4h =133.8 mg/l (Rat) 4h
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Delayed and immediate effects as well as chronic effects from short and long-term exposure

Skin corrosion/irritation Based on available data the classification criteria are not met.

Serious eye damage/eye irritation Causes serious eye irritation.

Respiratory or skin sensitisation Based on available data the classification criteria are not met.

Germ cell mutagenicity No information available.

Carcinogenicity No information available.

Reproductive toxicity Based on available data the classification criteria are not met.

STOT - single exposure No information available.

STOT - repeated exposure No information available.

Aspiration hazard Not applicable.

Other adverse effects No information available.

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

Ecotoxicity The product components are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Chemical name	Algae/aquatic plants	Fish	Toxicity to microorganisms	Crustacea
ETHANOL	-	LC50: 12.0 - 16.0mL/L (96h, Oncorhynchus mykiss) LC50: >100mg/L (96h, Pimephales promelas) LC50: 13400 - 15100mg/L (96h, Pimephales promelas)	-	LC50: 9268 - 14221mg/L (48h, Daphnia magna) EC50: =2mg/L (48h, Daphnia magna)

12.2. Persistence and degradability

Persistence and degradability Readily biodegradable.

12.3. Bioaccumulative potential

Bioaccumulation Not likely to bioaccumulate.

Component Information

Chemical name	Partition coefficient
ETHANOL	-0.35

12.4. Mobility in soil

Mobility in soil Soluble in water.

12.5. Results of PBT and vPvB assessment

PBT and vPvB assessment The product does not contain any substance(s) classified as PBT or vPvB.

Chemical name	PBT and vPvB assessment
ETHANOL	The substance is not PBT / vPvB

12.6. Other adverse effects

No information available.

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

Waste from residues/unused products Waste is classified as hazardous waste. Disposal to licensed waste disposal site in accordance with the local Waste Disposal Authority. Avoid release to the environment.

Contaminated packaging Empty containers pose a potential fire and explosion hazard. Do not cut, puncture or weld containers.

SECTION 14: Transport information**IATA**

14.1 UN number or ID number UN1170
14.2 UN proper shipping name ETHANOL
14.3 Transport hazard class(es) 3
14.4 Packing group II
14.5 Environmental hazards No
14.6 Special precautions for user
Special Provisions A180, A3, A58
ERG Code 3L

IMDG

14.1 UN number or ID number UN1170
14.2 UN proper shipping name ETHANOL
14.3 Transport hazard class(es) 3
14.4 Packing group II
14.5 Environmental hazards No
14.6 Special precautions for user
Special Provisions 144
EmS-No F-E, S-D
14.7 Maritime transport in bulk according to IMO instruments No information available

RID

14.1 UN number or ID number	UN1170
14.2 UN proper shipping name	ETHANOL
14.3 Transport hazard class(es)	3
14.4 Packing group	II
14.5 Environmental hazards	No
14.6 Special precautions for user	
Special Provisions	144, 601
Classification code	F1

ADR

14.1 UN number or ID number	UN1170
14.2 UN proper shipping name	ETHANOL
14.3 Transport hazard class(es)	3
14.4 Packing group	II
14.5 Environmental hazards	No
14.6 Special precautions for user	
Special Provisions	144, 601
Classification code	F1
Tunnel restriction code	(D/E)

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

This product contains one or more substances subject to restriction (UK REACH - Annex XVII).

This product does not contain substances subject to authorisation (UK REACH - Annex XIV).

Product restricted per REACH Annex XVII: 3

Chemical name	Restricted substance per REACH Annex XVII	Substance subject to authorisation per REACH Annex XIV
ETHANOL - 64-17-5	3, 40	-

Persistent Organic Pollutants

Not applicable

Export Notification requirements

Not applicable

Dangerous substance category per COMAH Regulations 2015 (as amended)

P5c - FLAMMABLE LIQUIDS

Named dangerous substances per COMAH Regulations 2015 (as amended)

Not applicable

The Ozone-Depleting Substances Regulations 2015

Not applicable

The Biocidal Products Regulations 2001 (as amended)

Chemical name	The Biocidal Products Regulations 2001 (as amended)
ETHANOL - 64-17-5	Product-type 2: Disinfectants and algacides not intended for direct application to humans or animals Product-type 4: Food and feed area Product-type 1: Human hygiene

The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (as amended)

Not applicable

Poisons Act 1972 (Explosive Precursors) Regulations (as Amended)

Not applicable

International Inventories

TSCA	Contact supplier for inventory compliance status
DSL/NDL	Contact supplier for inventory compliance status
EINECS/ELINCS	Contact supplier for inventory compliance status
ENCS	Contact supplier for inventory compliance status
IECSC	Contact supplier for inventory compliance status
KECI	Contact supplier for inventory compliance status
PICCS	Contact supplier for inventory compliance status
AIIC	Contact supplier for inventory compliance status
NZIoC	Contact supplier for inventory compliance status

Legend:

TSCA	- United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDL	- Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS	- European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS	- Japan Existing and New Chemical Substances
IECSC	- China Inventory of Existing Chemical Substances
KECI	- Korean Existing and Evaluated Chemical Substances
PICCS	- Philippines Inventory of Chemicals and Chemical Substances
AIIC	- Australian Inventory of Industrial Chemicals
NZIoC	- New Zealand Inventory of Chemicals

15.2. Chemical safety assessment

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

SECTION 16: Other information

Key or legend to abbreviations and acronyms used in the safety data sheet

Full text of H-Statements referred to under section 3

H225 - Highly flammable liquid and vapour

H319 - Causes serious eye irritation

Legend

SVHC: Substances of Very High Concern for Authorisation:

Legend Section 8: Exposure controls/personal protection

TWA	TWA (time-weighted average)	STEL	STEL (Short Term Exposure Limit)
Ceiling	Maximum limit value	*	Skin designation
+	Sensitisers		
Revision Note SDS sections updated 1 16			

Classification procedure

Classification according to Regulation (EC) No. 1272/2008 [CLP]	Method Used
Acute oral toxicity	Calculation method
Acute dermal toxicity	Calculation method
Acute inhalation toxicity - gas	Calculation method
Acute inhalation toxicity - vapour	Calculation method
Acute inhalation toxicity - dust/mist	Calculation method
Skin corrosion/irritation	Calculation method
Serious eye damage/eye irritation	Calculation method
Respiratory sensitisation	Calculation method

Skin sensitisation	Calculation method
Mutagenicity	Calculation method
Carcinogenicity	Calculation method
Reproductive toxicity	Calculation method
STOT - single exposure	Calculation method
STOT - repeated exposure	Calculation method
Acute aquatic toxicity	Calculation method
Chronic aquatic toxicity	Calculation method
Aspiration hazard	Calculation method
Ozone	Calculation method

Key literature references and sources for data used to compile the SDS

Agency for Toxic Substances and Disease Registry (ATSDR)
 U.S. Environmental Protection Agency ChemView Database
 European Food Safety Authority (EFSA)
 European Chemicals Agency (ECHA) Committee for Risk Assessment (ECHA_RAC)
 European Chemicals Agency (ECHA) (ECHA_API)
 Environmental Protection Agency
 Acute Exposure Guideline Level(s) (AEGl(s))
 U.S. Environmental Protection Agency Federal Insecticide, Fungicide, and Rodenticide Act
 U.S. Environmental Protection Agency High Production Volume Chemicals
 Food Research Journal
 Hazardous Substance Database
 International Uniform Chemical Information Database (IUCLID)
 National Institute of Technology and Evaluation (NITE)
 Australian National Industrial Chemicals Notification and Assessment Scheme (NICNAS)
 NIOSH (National Institute for Occupational Safety and Health)
 National Library of Medicine's ChemID Plus (NLM CIP)
 National Library of Medicine's PubMed database (NLM PUBMED)
 U.S. National Toxicology Program (NTP)
 New Zealand's Chemical Classification and Information Database (CCID)
 Organisation for Economic Co-operation and Development Environment, Health, and Safety Publications
 Organisation for Economic Co-operation and Development High Production Volume Chemicals Programme
 Organisation for Economic Co-operation and Development Screening Information Data Set
 World Health Organization

Prepared By Lisa Bland

Supersedes date 02-Jun-2025

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This material safety data sheet complies with the requirements of UK REACH Regulations (SI 2019/758 as amended)
 Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work

Disclaimer

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

End of Safety Data Sheet

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name Ethanol
Pure substance/mixture Substance
REACH registration number 01-2119457610-43-XXXX
CAS No 64-17-5
EC No (EU Index No) 200-578-6
Supplier Univar Solutions UK Ltd
 Aquarius House
 6 Mid Point Business Park
 Bradford
 GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

Section 1 - Title

Title Manufacture of substance
Type Worker
Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites
Environmental release category(ies) ERC1 - Manufacture of substances
Process category(ies) 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)
 PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
 PROC15 - Use as laboratory reagent
 PROC28 - Manual maintenance (cleaning and repair) of machinery
Sector(s) of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites SU8
 - Manufacture of bulk, large scale chemicals (including petroleum products)

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC1 - Manufacture of substances

Amounts used

Type	Annual amount per site
Value	200000
Units	t(ons)/year

Type	Fraction of EU tonnage used in region
Value	100%

Type	Fraction of regional tonnage used locally
Value	100%

Product characteristics

Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Miscible with water Not likely to bioaccumulate Readily biodegradable

Other operational conditions of use affecting environmental exposure

Type	Continuous use/release
Emission days	350

Release fraction to air from process (initial release prior to RMM)	226 kg/d
Release fraction to wastewater from process (initial release prior to RMM)	<2%, 11.3 kg/d
Release fraction to soil from process (initial release prior to RMM)	0%

Conditions and measures related to municipal sewage treatment plant

Type	Onsite STP
Assumed on-site sewage treatment plant flow	2000 m3/d
Removal efficiency fraction (onsite)	87%

Environmental factors not influenced by risk management

Local freshwater dilution factor	10
Local marine water dilution factor	100

Risk management measures

Technical onsite conditions and measures to reduce or limit discharges, air emissions	Onsite wastewater treatment required Bund storage facilities to prevent soil and water pollution in the event of spillage Prevent environmental discharge consistent with regulatory requirements Site should have a spill plan to ensure that adequate safeguards are in place to minimise the impact of episodic releases
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Control measures to prevent releases

Water	Ensure all waste water is collected and treated via a WWTP Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of 87%
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Conditions and measures related to external treatment of waste for disposal

Disposal	No waste from process
Efficiency of at least	>98%

Waste treatment methods	Incineration, disposal or recycling at specific offsite provider
Efficiency of at least	99.98%

Disposal	Dispose of waste cans and containers according to local regulations External treatment and disposal of waste should comply with applicable local and/or national regulations
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Control of worker exposure

Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 °C

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Remarks	350 Emission days Continuous release
Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 °C

Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation)
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 °C

Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 °C

Process category(ies)	PROC15 - Use as laboratory reagent
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Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 °C

Process category(ies)	PROC28 - Manual maintenance (cleaning and repair) of machinery
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 °C

Section 3 - Exposure estimation

Environmental release category(ies) - ERC1 - Manufacture of substances

Predicted No Effect Concentration (PNEC)

Freshwater	0.96 mg/l
Freshwater sediment	3.6 mg/kg
Marine water	0.79 mg/l
Marine sediment	2.9 mg/kg
Soil	0.63 mg/kg
Impact on Sewage Treatment	580 mg/kl

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.0735 mg/l	0.0766
Freshwater sediment	0.282 mg/kg dw	0.0783
Marine water	0.00817 mg/l	0.0103
Marine sediment	0.0313 mg/kg dw	0.0108
Soil	0.00988 mg/kg dw	0.0157
STP: Sewage Treatment Plant	0.714 mg/l	0.00123

Derived No Effect Level (DNEL):

Worker - dermal, long-term - systemic	343 mg/kg/bw/d
Worker - inhalative, long-term - local	1900 mg/m ³
Worker - inhalative, long-term - systemic	950 mg/m ³
Consumer - oral, long-term - systemic	87 mg/kg/bw/d
Consumer - dermal, long-term - systemic	206 mg/kg/bw/d
Consumer - inhalative, long-term - systemic	114 mg/m ³

Calculation method

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

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC1 - Use in closed process, no likelihood of exposure	Worker - inhalative, long-term - systemic	0.019 mg/m ³	<0.001
PROC1 - Use in closed process, no likelihood of exposure	Worker - dermal, long-term - systemic	0.03 mg/kg/d	<0.001
PROC1 - Use in closed process, no likelihood of exposure	Worker - combined, long-term - systemic		<0.001
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	9.6 mg/m ³	0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	1.4 mg/kg/d	0.004
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		0.0141
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - inhalative, long-term - systemic	19 mg/m ³	0.02
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - dermal, long-term - systemic	0.69 mg/kg/d	0.002
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - combined, long-term - systemic		0.0222
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - inhalative, long-term - systemic	48 mg/m ³	0.05
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - dermal, long-term - systemic	14 mg/kg/d	0.04
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - combined, long-term - systemic		0.0906
PROC15 - Use as laboratory reagent	Worker - inhalative, long-term - systemic	19 mg/m ³	0.02
PROC15 - Use as laboratory reagent	Worker - dermal, long-term - systemic	0.34 mg/kg/d	<0.001
PROC15 - Use as laboratory reagent	Worker - combined, long-term - systemic		0.0212
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - inhalative, long-term - systemic	96 mg/m ³	0.101
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - dermal, long-term - systemic	14 mg/kg/d	0.04
PROC28 - Manual maintenance	Worker - combined, long-term		0.141

(cleaning and repair) of machinery	- systemic		
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Section 4 - Guidance to check compliance with the exposure scenario

Used ECETOC TRA model. For scaling see. <http://www.ecetoc.org/tra>.
Msafe. 55300 t/d.

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name Ethanol
Pure substance/mixture Substance
REACH registration number 01-2119457610-43-XXXX
CAS No 64-17-5
EC No (EU Index No) 200-578-6
Supplier Univar Solutions UK Ltd
 Aquarius House
 6 Mid Point Business Park
 Bradford
 GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

Section 1 - Title

Title Use as an intermediate
Type Worker
Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites
Environmental release category(ies) ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)
Specific Environmental Release Category ESVOC SpERC 6.1a.v1
Process category(ies) 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
 PROC28 - Manual maintenance (cleaning and repair) of machinery
Sector(s) of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites SU8
 - Manufacture of bulk, large scale chemicals (including petroleum products) SU9 -
 Manufacture of fine chemicals

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)

Specific Environmental Release Category - ESVOC SpERC 6.1a.v1

Amounts used

Type	Annual amount per site
Value	12000
Units	t(ons)/year

Type	Fraction of EU tonnage used in region
Value	100%

Type	Fraction of regional tonnage used locally
Value	100%

Product characteristics

Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Miscible with water Not likely to bioaccumulate Readily biodegradable

Other operational conditions of use affecting environmental exposure

Type	Continuous use/release
Emission days	300
Release fraction to air from process (initial release prior to RMM)	0.2%, 80 kg/d
Release fraction to wastewater from process (initial release prior to RMM)	0.3%, 120 kg/d
Release fraction to soil from process (initial release prior to RMM)	0.1%

Conditions and measures related to municipal sewage treatment plant

Type	Onsite STP
Assumed domestic sewage treatment plant flow	2000 m3/d
Assumed on-site sewage treatment plant flow	2000 m3/d
Removal efficiency fraction (offsite; STP)	87%
Removal efficiency fraction (onsite)	87%
Remarks	If discharging to domestic sewage treatment plant, no onsite wastewater treatment required

Environmental factors not influenced by risk management

Local freshwater dilution factor	10
Local marine water dilution factor	100

Risk management measures

Technical onsite conditions and measures to reduce or limit discharges, air emissions	Onsite wastewater treatment required Bund storage facilities to prevent soil and water pollution in the event of spillage Prevent environmental discharge consistent with regulatory requirements Site should have a spill plan to ensure that adequate safeguards are in place to minimise the impact of episodic releases
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Control measures to prevent releases

Water	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of 87% If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of 87%
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Conditions and measures related to external treatment of waste for disposal

Disposal	No waste from process
Efficiency of at least	>98%

Waste treatment methods	Incineration, disposal or recycling at specific offsite provider
Efficiency of at least	99.98%

Disposal	Dispose of waste cans and containers according to local regulations External treatment and disposal of waste should comply with applicable local and/or national regulations
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Control of worker exposure

Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).

Remarks	Continuous release
Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 'C

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Remarks	300 Emission days Continuous release
Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 'C

Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation)
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 'C

Process category(ies)	PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards	Use in closed, continuous process with occasional controlled exposure

the worker	
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 °C

Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 °C

Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 °C

Process category(ies)	PROC15 - Use as laboratory reagent
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure
Conditions and measures related to	Use suitable eye protection

personal protection, hygiene and health evaluation	Avoid direct eye contact with product, also via contamination on hands
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 'C
Process category(ies)	PROC28 - Manual maintenance (cleaning and repair) of machinery
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 'C

Section 3 - Exposure estimation

Environmental release category(ies) - ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)

Specific Environmental Release Category - ESVOC SpERC 6.1a.v1

Predicted No Effect Concentration (PNEC)

Freshwater	0.96 mg/l
Freshwater sediment	3.6 mg/kg
Marine water	0.79 mg/l
Marine sediment	2.9 mg/kg
Soil	0.63 mg/kg
Impact on Sewage Treatment	580 mg/kl

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.698 mg/l	0.727
Freshwater sediment	2.67 mg/kg dw	0.742
Marine water	0.0768 mg/l	0.0972
Marine sediment	0.294 mg/kg dw	0.101
Soil	0.00523 mg/kg dw	0.0083
STP: Sewage Treatment Plant	7.58 mg/l	0.0131

Derived No Effect Level (DNEL):

Worker - dermal, long-term - systemic	343 mg/kg/bw/d
Worker - inhalative, long-term - local	1900 mg/m ³

Worker - inhalative, long-term - systemic	950 mg/m ³
Consumer - oral, long-term - systemic	87 mg/kg/bw/d
Consumer - dermal, long-term - systemic	206 mg/kg/bw/d
Consumer - inhalative, long-term - systemic	114 mg/m ³

Calculation method

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

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC1 - Use in closed process, no likelihood of exposure	Worker - inhalative, long-term - systemic	0.019 mg/m ³	<0.001
PROC1 - Use in closed process, no likelihood of exposure	Worker - dermal, long-term - systemic	0.03 mg/kg/d	<0.001
PROC1 - Use in closed process, no likelihood of exposure	Worker - combined, long-term - systemic		<0.001
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	9.6 mg/m ³	0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	1.4 mg/kg/d	0.004
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		0.0141
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - inhalative, long-term - systemic	19 mg/m ³	0.02
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - dermal, long-term - systemic	0.69 mg/kg/d	0.002
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - combined, long-term - systemic		0.0222
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - inhalative, long-term - systemic	38 mg/m ³	0.04
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - dermal, long-term - systemic	6.9 mg/kg/d	0.02
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - combined, long-term - systemic		0.0605
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - inhalative, long-term - systemic	96 mg/m ³	0.101
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - dermal, long-term - systemic	14 mg/kg/d	0.04
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - combined, long-term - systemic		0.141
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - inhalative, long-term - systemic	48 mg/m ³	0.05
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - dermal, long-term - systemic	14 mg/kg/d	0.04

dedicated facilities			
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - combined, long-term - systemic		0.0906
PROC15 - Use as laboratory reagent	Worker - inhalative, long-term - systemic	19 mg/m ³	0.02
PROC15 - Use as laboratory reagent	Worker - dermal, long-term - systemic	0.34 mg/kg/d	<0.001
PROC15 - Use as laboratory reagent	Worker - combined, long-term - systemic		0.0212
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - inhalative, long-term - systemic	96 mg/m ³	0.101
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - dermal, long-term - systemic	14 mg/kg/d	0.04
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - combined, long-term - systemic		0.141

Section 4 - Guidance to check compliance with the exposure scenario

Used ECETOC TRA model. For scaling see. <http://www.ecetoc.org/tra>.
Msafe. 412 t/d.

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name Ethanol
Pure substance/mixture Substance
REACH registration number 01-2119457610-43-XXXX
CAS No 64-17-5
EC No (EU Index No) 200-578-6
Supplier Univar Solutions UK Ltd
 Aquarius House
 6 Mid Point Business Park
 Bradford
 GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

Section 1 - Title

Title Use in process chemicals
Type Worker
Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites
Environmental release category(ies) ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles
Process category(ies) 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
 PROC28 - Manual maintenance (cleaning and repair) of machinery
Sector(s) of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites SU9
 - Manufacture of fine chemicals

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles

Amounts used

Type	Annual amount per site
Value	13000
Units	t(ons)/year

Type	Fraction of EU tonnage used in region
Value	100%

Type	Fraction of regional tonnage used locally
Value	100%

Product characteristics

Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Miscible with water

	Not likely to bioaccumulate Readily biodegradable
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Other operational conditions of use affecting environmental exposure

Type	Continuous use/release
Emission days	300
Release fraction to air from process (initial release prior to RMM)	0.2%, 83.4 kg/d
Release fraction to wastewater from process (initial release prior to RMM)	0.3%, 125 kg/d
Release fraction to soil from process (initial release prior to RMM)	0.1%

Conditions and measures related to municipal sewage treatment plant

Type	Onsite STP
Assumed domestic sewage treatment plant flow	2000 m3/d
Assumed on-site sewage treatment plant flow	2000 m3/d
Removal efficiency fraction (offsite; STP)	87%
Removal efficiency fraction (onsite)	87%
Remarks	If discharging to domestic sewage treatment plant, no onsite wastewater treatment required

Environmental factors not influenced by risk management

Local freshwater dilution factor	10
Local marine water dilution factor	100

Risk management measures

Technical onsite conditions and measures to reduce or limit discharges, air emissions	Onsite wastewater treatment required Bund storage facilities to prevent soil and water pollution in the event of spillage Prevent environmental discharge consistent with regulatory requirements Site should have a spill plan to ensure that adequate safeguards are in place to minimise the impact of episodic releases
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Control measures to prevent releases

Water	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of 87% If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of 87%
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Conditions and measures related to external recovery of waste

Method	All waste product is assumed to be collected and returned for re-processing or use as a fuel
Efficiency of at least	<95%

Conditions and measures related to external treatment of waste for disposal

Disposal	No waste from process
Efficiency of at least	>95%

Waste treatment methods	Incineration, disposal or recycling at specific offsite provider
Efficiency of at least	99.98%

Disposal	Dispose of waste cans and containers according to local regulations External treatment and disposal of waste should comply with applicable local and/or national regulations
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Control of worker exposure

Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Covers concentrations up to	25% - 100%

Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 'C

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Remarks	300 Emission days Continuous release
Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 'C

Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation)
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 'C

Process category(ies)	PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Use in closed, continuous process with occasional controlled exposure

control dispersion from source towards the worker	
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 °C

Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 °C

Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 °C

Process category(ies)	PROC15 - Use as laboratory reagent
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure

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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 'C

Process category(ies)	PROC28 - Manual maintenance (cleaning and repair) of machinery
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 'C

Section 3 - Exposure estimation

Environmental release category(ies) - ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles

Predicted No Effect Concentration (PNEC)

Freshwater	0.96 mg/l
Freshwater sediment	3.6 mg/kg
Marine water	0.79 mg/l
Marine sediment	2.9 mg/kg
Soil	0.63 mg/kg
Impact on Sewage Treatment	580 mg/kl

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.726 mg/l	0.756
Freshwater sediment	2.78 mg/kg dw	0.772
Marine water	0.08 mg/l	0.101
Marine sediment	0.306 mg/kg dw	0.106
Soil	0.00531 mg/kg dw	0.00843
STP: Sewage Treatment Plant	7.9 mg/l	0.0136

Derived No Effect Level (DNEL):

Worker - dermal, long-term - systemic	343 mg/kg/bw/d
Worker - inhalative, long-term - local	1900 mg/m ³

Worker - inhalative, long-term - systemic	950 mg/m ³
Consumer - oral, long-term - systemic	87 mg/kg/bw/d
Consumer - dermal, long-term - systemic	206 mg/kg/bw/d
Consumer - inhalative, long-term - systemic	114 mg/m ³

Calculation method

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

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC1 - Use in closed process, no likelihood of exposure	Worker - inhalative, long-term - systemic	0.019 mg/m ³	<0.001
PROC1 - Use in closed process, no likelihood of exposure	Worker - dermal, long-term - systemic	0.03 mg/kg/d	<0.001
PROC1 - Use in closed process, no likelihood of exposure	Worker - combined, long-term - systemic		<0.001
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	9.6 mg/m ³	0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	1.4 mg/kg/d	0.004
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		0.0141
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - inhalative, long-term - systemic	19 mg/m ³	0.02
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - dermal, long-term - systemic	0.69 mg/kg/d	0.002
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - combined, long-term - systemic		0.0222
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - inhalative, long-term - systemic	38 mg/m ³	0.04
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - dermal, long-term - systemic	6.9 mg/kg/d	0.02
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - combined, long-term - systemic		0.0605
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - inhalative, long-term - systemic	96 mg/m ³	0.101
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - dermal, long-term - systemic	14 mg/kg/d	0.04
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - combined, long-term - systemic		0.141
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - inhalative, long-term - systemic	48 mg/m ³	0.05
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - dermal, long-term - systemic	14 mg/kg/d	0.04

dedicated facilities			
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - combined, long-term - systemic		0.0906
PROC15 - Use as laboratory reagent	Worker - inhalative, long-term - systemic	19 mg/m ³	0.02
PROC15 - Use as laboratory reagent	Worker - dermal, long-term - systemic	0.34 mg/kg/d	<0.001
PROC15 - Use as laboratory reagent	Worker - combined, long-term - systemic		0.0212
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - inhalative, long-term - systemic	96 mg/m ³	0.101
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - dermal, long-term - systemic	14 mg/kg/d	0.04
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - combined, long-term - systemic		0.141

Section 4 - Guidance to check compliance with the exposure scenario

Used ECETOC TRA model. For scaling see. <http://www.ecetoc.org/tra>.
Msafe. 412 t/d.

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name Ethanol
Pure substance/mixture Substance
REACH registration number 01-2119457610-43-XXXX
CAS No 64-17-5
EC No (EU Index No) 200-578-6
Supplier Univar Solutions UK Ltd
 Aquarius House
 6 Mid Point Business Park
 Bradford
 GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

Section 1 - Title

Title Distribution of substance
Type Worker
Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites
Environmental release category(ies) ERC2 - Formulation of preparations (mixtures)
Specific Environmental Release Category ESVOC SpERC 1.1b.v1
Process category(ies) 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 (multi-stage 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
 PROC15 - Use as laboratory reagent
 PROC28 - Manual maintenance (cleaning and repair) of machinery
Sector(s) of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC2 - Formulation of preparations (mixtures)
Specific Environmental Release Category - ESVOC SpERC 1.1b.v1

Amounts used

Type	Annual amount per site
Value	180000
Units	t(ons)/year

Type	Fraction of EU tonnage used in region
Value	10%

Type	Fraction of regional tonnage used locally
Value	40%

Product characteristics

Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
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Remarks	Miscible with water Not likely to bioaccumulate Readily biodegradable
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Other operational conditions of use affecting environmental exposure

Type	Continuous use/release Batch process
Emission days	200
Release fraction to air from process (initial release prior to RMM)	0.01%, 3.5 kg/d
Release fraction to wastewater from process (initial release prior to RMM)	0.001%, 0.35 kg/d
Release fraction to soil from process (initial release prior to RMM)	0%

Conditions and measures related to municipal sewage treatment plant

Type	Onsite STP
Assumed domestic sewage treatment plant flow	2000 m3/d
Remarks	If discharging to domestic sewage treatment plant, no onsite wastewater treatment required

Environmental factors not influenced by risk management

Local freshwater dilution factor	10
Local marine water dilution factor	100

Risk management measures

Technical onsite conditions and measures to reduce or limit discharges, air emissions	Onsite wastewater treatment required Bund storage facilities to prevent soil and water pollution in the event of spillage Prevent environmental discharge consistent with regulatory requirements Site should have a spill plan to ensure that adequate safeguards are in place to minimise the impact of episodic releases
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Control measures to prevent releases

Water	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of 87% If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of 87%
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Conditions and measures related to external treatment of waste for disposal

Disposal	No waste from process
Efficiency of at least	>98%

Waste treatment methods	Incineration, disposal or recycling at specific offsite provider
Efficiency of at least	99.98%

Disposal	Dispose of waste cans and containers according to local regulations External treatment and disposal of waste should comply with applicable local and/or national regulations
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Control of worker exposure

Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure Batch process
Conditions and measures related to personal protection, hygiene and	Use suitable eye protection Avoid direct eye contact with product, also via contamination on hands

health evaluation	
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 °C

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Remarks	200 Emission days
Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure Batch process
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 °C

Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation)
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure Batch process
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 °C

Process category(ies)	PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure Batch process
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
Organisational measures to prevent /limit releases, dispersion and	Assumes a good basic standard of occupational hygiene is implemented

exposure	
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 'C

Process category(ies)	PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure Batch process
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 'C

Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure Batch process
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 'C

Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure Batch process
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented

Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 'C

Process category(ies)	PROC15 - Use as laboratory reagent
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure Batch process
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 'C

Process category(ies)	PROC28 - Manual maintenance (cleaning and repair) of machinery
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure Batch process
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 'C

Section 3 - Exposure estimation

Environmental release category(ies) - ERC2 - Formulation of preparations (mixtures)
Specific Environmental Release Category - ESVOC SpERC 1.1b.v1

Predicted No Effect Concentration (PNEC)

Freshwater	0.96 mg/l
Freshwater sediment	3.6 mg/kg
Marine water	0.79 mg/l
Marine sediment	2.9 mg/kg
Soil	0.63 mg/kg
Impact on Sewage Treatment	580 mg/kl

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.0106 mg/l	0.011
Freshwater sediment	0.0407 mg/kg dw	0.0113
Marine water	0.00125 mg/l	0.00158
Marine sediment	0.0048 mg/kg dw	0.00166
Soil	0.00326 mg/kg dw	0.00517
STP: Sewage Treatment Plant	0.0221 mg/l	3.81 E-05

Derived No Effect Level (DNEL):

Worker - dermal, long-term - systemic	343 mg/kg/bw/d
Worker - inhalative, long-term - local	1900 mg/m ³
Worker - inhalative, long-term - systemic	950 mg/m ³
Consumer - oral, long-term - systemic	87 mg/kg/bw/d
Consumer - dermal, long-term - systemic	206 mg/kg/bw/d
Consumer - inhalative, long-term - systemic	114 mg/m ³

Calculation method

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

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC1 - Use in closed process, no likelihood of exposure	Worker - inhalative, long-term - systemic	0.019 mg/m ³	<0.001
PROC1 - Use in closed process, no likelihood of exposure	Worker - dermal, long-term - systemic	0.03 mg/kg/d	<0.001
PROC1 - Use in closed process, no likelihood of exposure	Worker - combined, long-term - systemic		<0.001
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	9.6 mg/m ³	0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	1.4 mg/kg/d	0.004
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		0.0141
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - inhalative, long-term - systemic	19 mg/m ³	0.02
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - dermal, long-term - systemic	0.69 mg/kg/d	0.002
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - combined, long-term - systemic		0.0222
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - inhalative, long-term - systemic	38 mg/m ³	0.04
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - dermal, long-term - systemic	6.9 mg/kg/d	0.02
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - combined, long-term - systemic		0.0605
PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)	Worker - inhalative, long-term - systemic	96 mg/m ³	0.101
PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage	Worker - dermal, long-term - systemic	14 mg/kg/d	0.04

and/or significant contact)			
PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)	Worker - combined, long-term - systemic		0.141
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - inhalative, long-term - systemic	96 mg/m ³	0.101
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - dermal, long-term - systemic	14 mg/kg/d	0.04
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - combined, long-term - systemic		0.141
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - inhalative, long-term - systemic	48 mg/m ³	0.05
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - dermal, long-term - systemic	14 mg/kg/d	0.04
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - combined, long-term - systemic		0.0906
PROC15 - Use as laboratory reagent	Worker - inhalative, long-term - systemic	19 mg/m ³	0.02
PROC15 - Use as laboratory reagent	Worker - dermal, long-term - systemic	0.34 mg/kg/d	<0.001
PROC15 - Use as laboratory reagent	Worker - combined, long-term - systemic		0.0212
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - inhalative, long-term - systemic	96 mg/m ³	0.101
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - dermal, long-term - systemic	14 mg/kg/d	0.04
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - combined, long-term - systemic		0.141

Section 4 - Guidance to check compliance with the exposure scenario

Used ECETOC TRA model. For scaling see. <http://www.ecetoc.org/tra>.
Msafe. 22100 t/d.

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name Ethanol
Pure substance/mixture Substance
REACH registration number 01-2119457610-43-XXXX
CAS No 64-17-5
EC No (EU Index No) 200-578-6
Supplier Univar Solutions UK Ltd
 Aquarius House
 6 Mid Point Business Park
 Bradford
 GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

Section 1 - Title

Title Formulation & (re)packing of substances and mixtures
Type Worker
Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites
Environmental release category(ies) ERC2 - Formulation of preparations (mixtures)
Specific Environmental Release Category ESVOC SpERC 2.2.v1
Process category(ies) 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 (multi-stage 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)
 PROC15 - Use as laboratory reagent
 PROC28 - Manual maintenance (cleaning and repair) of machinery
Sector(s) of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC2 - Formulation of preparations (mixtures)
Specific Environmental Release Category - ESVOC SpERC 2.2.v1

Amounts used

Type	Annual amount per site
Value	160000
Units	t(ons)/year

Type	Fraction of EU tonnage used in region
Value	100%

Type	Fraction of regional tonnage used locally
Value	18.75%

Product characteristics

Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Miscible with water Not likely to bioaccumulate Readily biodegradable

Other operational conditions of use affecting environmental exposure

Type	Continuous use/release
Emission days	300
Release fraction to air from process (initial release prior to RMM)	2.5%, 2500 kg/d
Release fraction to wastewater from process (initial release prior to RMM)	0.1%, 100kg/d
Release fraction to soil from process (initial release prior to RMM)	0.01%

Conditions and measures related to municipal sewage treatment plant

Type	Onsite STP
Assumed domestic sewage treatment plant flow	2000 m3/d
Assumed on-site sewage treatment plant flow	2000 m3/d
Removal efficiency fraction (offsite; STP)	87%
Removal efficiency fraction (onsite)	87%
Remarks	If discharging to domestic sewage treatment plant, no onsite wastewater treatment required

Environmental factors not influenced by risk management

Local freshwater dilution factor	10
Local marine water dilution factor	100

Risk management measures

Technical onsite conditions and measures to reduce or limit discharges, air emissions	Bund storage facilities to prevent soil and water pollution in the event of spillage Prevent environmental discharge consistent with regulatory requirements Site should have a spill plan to ensure that adequate safeguards are in place to minimise the impact of episodic releases
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Control measures to prevent releases

Water	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of 87% If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of 87%
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Conditions and measures related to external treatment of waste for disposal

Disposal	No waste from process
Efficiency of at least	>95%

Waste treatment methods	Incineration, disposal or recycling at specific offsite provider
Efficiency of at least	99.98%

Disposal	Dispose of waste cans and containers according to local regulations External treatment and disposal of waste should comply with applicable local and/or national regulations
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Control of worker exposure

Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).

Technical conditions and measures to control dispersion from source towards the worker	Handle substance within a closed system Formulate in enclosed or ventilated mixing vessels
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 °C

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Remarks	300 Emission days Continuous release
Technical conditions and measures to control dispersion from source towards the worker	Handle substance within a closed system Formulate in enclosed or ventilated mixing vessels
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 °C

Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation)
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Handle substance within a closed system Formulate in enclosed or ventilated mixing vessels
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 °C

Process category(ies)	PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Handle substance within a closed system Formulate in enclosed or ventilated mixing vessels

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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 °C

Process category(ies)	PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Handle substance within a closed system Formulate in enclosed or ventilated mixing vessels
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 °C

Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Handle substance within a closed system Formulate in enclosed or ventilated mixing vessels
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 °C

Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Handle substance within a closed system Formulate in enclosed or ventilated mixing vessels
Conditions and measures related to	Use suitable eye protection

personal protection, hygiene and health evaluation	Avoid direct eye contact with product, also via contamination on hands
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 °C

Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Handle substance within a closed system Formulate in enclosed or ventilated mixing vessels
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 °C

Process category(ies)	PROC15 - Use as laboratory reagent
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Handle substance within a closed system Formulate in enclosed or ventilated mixing vessels
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 °C

Process category(ies)	PROC28 - Manual maintenance (cleaning and repair) of machinery
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Handle substance within a closed system Formulate in enclosed or ventilated mixing vessels
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
Organisational measures to prevent	Assumes a good basic standard of occupational hygiene is implemented

/limit releases, dispersion and exposure	
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 °C

Section 3 - Exposure estimation

Environmental release category(ies) - ERC2 - Formulation of preparations (mixtures)
Specific Environmental Release Category - ESVOC SpERC 2.2.v1

Predicted No Effect Concentration (PNEC)

Freshwater	0.96 mg/l
Freshwater sediment	3.6 mg/kg
Marine water	0.79 mg/l
Marine sediment	2.9 mg/kg
Soil	0.63 mg/kg
Impact on Sewage Treatment	580 mg/kl

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.583 mg/l	0.607
Freshwater sediment	2.23 mg/kg dw	0.619
Marine water	0.0642 mg/l	0.0813
Marine sediment	0.246 mg/kg dw	0.0848
Soil	0.0665 mg/kg dw	0.106
STP: Sewage Treatment Plant	6.23 mg/l	0.0109

Derived No Effect Level (DNEL):

Worker - dermal, long-term - systemic	343 mg/kg/bw/d
Worker - inhalative, long-term - local	1900 mg/m ³
Worker - inhalative, long-term - systemic	950 mg/m ³
Consumer - oral, long-term - systemic	87 mg/kg/bw/d
Consumer - dermal, long-term - systemic	206 mg/kg/bw/d
Consumer - inhalative, long-term - systemic	114 mg/m ³

Calculation method

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

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC1 - Use in closed process, no likelihood of exposure	Worker - inhalative, long-term - systemic	0.019 mg/m ³	<0.001
PROC1 - Use in closed process, no likelihood of exposure	Worker - dermal, long-term - systemic	0.03 mg/kg/d	<0.001
PROC1 - Use in closed process, no likelihood of exposure	Worker - combined, long-term - systemic		<0.001
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	9.6 mg/m ³	0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	1.4 mg/kg/d	0.004

PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		0.0141
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - inhalative, long-term - systemic	19 mg/m ³	0.02
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - dermal, long-term - systemic	0.69 mg/kg/d	0.002
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - combined, long-term - systemic		0.0222
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - inhalative, long-term - systemic	38 mg/m ³	0.04
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - dermal, long-term - systemic	6.9 mg/kg/d	0.02
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - combined, long-term - systemic		0.0605
PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)	Worker - inhalative, long-term - systemic	96 mg/m ³	0.101
PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)	Worker - dermal, long-term - systemic	14 mg/kg/d	0.04
PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)	Worker - combined, long-term - systemic		0.141
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - inhalative, long-term - systemic	96 mg/m ³	0.101
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - dermal, long-term - systemic	14 mg/kg/d	0.04
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - combined, long-term - systemic		0.141
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - inhalative, long-term - systemic	48 mg/m ³	0.05
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - dermal, long-term - systemic	14 mg/kg/d	0.04
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - combined, long-term - systemic		0.0906
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - inhalative, long-term - systemic	96 mg/m ³	0.101
PROC9 - Transfer of substance or	Worker - dermal, long-term -	6.9 mg/kg/d	0.02

preparation into small containers (dedicated filling line, including weighing)	systemic		
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - combined, long-term - systemic		0.121
PROC15 - Use as laboratory reagent	Worker - inhalative, long-term - systemic	19 mg/m ³	0.02
PROC15 - Use as laboratory reagent	Worker - dermal, long-term - systemic	0.34 mg/kg/d	<0.001
PROC15 - Use as laboratory reagent	Worker - combined, long-term - systemic		0.0212
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - inhalative, long-term - systemic	96 mg/m ³	0.101
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - dermal, long-term - systemic	14 mg/kg/d	0.04
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - combined, long-term - systemic		0.141

Section 4 - Guidance to check compliance with the exposure scenario

Used ECETOC TRA model. For scaling see. <http://www.ecetoc.org/tra>.
Msafe. 1230 t/d.

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name Ethanol
Pure substance/mixture Substance
REACH registration number 01-2119457610-43-XXXX
CAS No 64-17-5
EC No (EU Index No) 200-578-6
Supplier Univar Solutions UK Ltd
 Aquarius House
 6 Mid Point Business Park
 Bradford
 GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

Section 1 - Title

Title Process solvent.
Type Worker
Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites
Environmental release category(ies) ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles
Specific Environmental Release Category ESVOC SpERC 4.3a.v1
Process category(ies) 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 (multi-stage 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
 PROC10 - Roller application or brushing
 PROC13 - Treatment of articles by dipping and pouring
 PROC15 - Use as laboratory reagent
 PROC28 - Manual maintenance (cleaning and repair) of machinery

Product category(ies) PC13 - Fuels
Sector(s) of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles
Specific Environmental Release Category - ESVOC SpERC 4.3a.v1

Amounts used

Type	Annual amount per site
Value	25000
Units	t(ons)/year

Type	Fraction of EU tonnage used in region
Value	100%

Type	Fraction of regional tonnage used locally
Value	20%

Product characteristics

Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Miscible with water Not likely to bioaccumulate Readily biodegradable

Other operational conditions of use affecting environmental exposure

Type	Continuous use/release
Emission days	300
Release fraction to air from process (initial release prior to RMM)	9.8%, 1640 kg/d
Release fraction to wastewater from process (initial release prior to RMM)	0.5%, 83.5 kg/d
Release fraction to soil from process (initial release prior to RMM)	0%

Conditions and measures related to municipal sewage treatment plant

Type	Onsite STP
Assumed domestic sewage treatment plant flow	2000 m3/d
Assumed on-site sewage treatment plant flow	2000 m3/d
Removal efficiency fraction (offsite; STP)	87%
Removal efficiency fraction (onsite)	87%
Remarks	If discharging to domestic sewage treatment plant, no onsite wastewater treatment required

Environmental factors not influenced by risk management

Local freshwater dilution factor	10
Local marine water dilution factor	100

Risk management measures

Technical onsite conditions and measures to reduce or limit discharges, air emissions	Bund storage facilities to prevent soil and water pollution in the event of spillage Prevent environmental discharge consistent with regulatory requirements Site should have a spill plan to ensure that adequate safeguards are in place to minimise the impact of episodic releases
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Control measures to prevent releases

Air	Treat air emission to provide a typical removal efficiency of 90%
Water	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of 87% If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of 87%

Conditions and measures related to external treatment of waste for disposal

Disposal	No waste from process
Efficiency of at least	>95%

Waste treatment methods	Incineration, disposal or recycling at specific offsite provider
Efficiency of at least	99.98%

Disposal	Dispose of waste cans and containers according to local regulations External treatment and disposal of waste should comply with applicable local and/or national regulations
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Control of worker exposure

Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 °C

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Remarks	300 Emission days Continuous release
Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 °C

Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation)
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 °C

Process category(ies)	PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).

Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 °C

Process category(ies)	PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 °C

Process category(ies)	PROC7 - Industrial spraying
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure Provide a good standard of controlled ventilation (10 to 15 air changes per hour) Efficiency of at least 70%
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 °C

Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure

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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 °C

Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 °C

Process category(ies)	PROC10 - Roller application or brushing
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 °C

Process category(ies)	PROC13 - Treatment of articles by dipping and pouring
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure
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
Organisational measures to prevent	Assumes a good basic standard of occupational hygiene is implemented

/limit releases, dispersion and exposure	
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 °C

Process category(ies)	PROC15 - Use as laboratory reagent
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 °C

Process category(ies)	PROC28 - Manual maintenance (cleaning and repair) of machinery
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 °C

Section 3 - Exposure estimation

Environmental release category(ies) - ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles

Specific Environmental Release Category - ESVOC SpERC 4.3a.v1

Predicted No Effect Concentration (PNEC)

Freshwater	0.96 mg/l
Freshwater sediment	3.6 mg/kg
Marine water	0.79 mg/l
Marine sediment	2.9 mg/kg
Soil	0.63 mg/kg

Impact on Sewage Treatment 580 mg/l

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.487 mg/l	0.507
Freshwater sediment	1.87 mg/kg dw	0.519
Marine water	0.0537 mg/l	0.068
Marine sediment	0.0206 mg/kg dw	0.071
Soil	0.0661 mg/kg dw	0.105
STP: Sewage Treatment Plant	5.26 mg/l	0.00997

Derived No Effect Level (DNEL):

Worker - dermal, long-term - systemic	343 mg/kg/bw/d
Worker - inhalative, long-term - local	1900 mg/m ³
Worker - inhalative, long-term - systemic	950 mg/m ³
Consumer - oral, long-term - systemic	87 mg/kg/bw/d
Consumer - dermal, long-term - systemic	206 mg/kg/bw/d
Consumer - inhalative, long-term - systemic	114 mg/m ³

Calculation method

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

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC1 - Use in closed process, no likelihood of exposure	Worker - inhalative, long-term - systemic	0.019 mg/m ³	<0.001
PROC1 - Use in closed process, no likelihood of exposure	Worker - dermal, long-term - systemic	0.03 mg/kg/d	<0.001
PROC1 - Use in closed process, no likelihood of exposure	Worker - combined, long-term - systemic		<0.001
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	9.6 mg/m ³	0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	1.4 mg/kg/d	0.004
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		0.0141
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - inhalative, long-term - systemic	19 mg/m ³	0.02
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - dermal, long-term - systemic	0.69 mg/kg/d	0.002
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - combined, long-term - systemic		0.0222
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - inhalative, long-term - systemic	38 mg/m ³	0.04
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - dermal, long-term - systemic	6.9 mg/kg/d	0.02
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - combined, long-term - systemic		0.0605
PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)	Worker - inhalative, long-term - systemic	96 mg/m ³	0.101
PROC5 - Mixing or blending in batch processes for formulation of	Worker - dermal, long-term - systemic	14 mg/kg/d	0.04

preparations and articles (multi-stage and/or significant contact)			
PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)	Worker - combined, long-term - systemic		0.141
PROC7 - Industrial spraying	Worker - inhalative, long-term - systemic	140 mg/m ³	0.151
PROC7 - Industrial spraying	Worker - dermal, long-term - systemic	43 mg/kg/d	0.126
PROC7 - Industrial spraying	Worker - combined, long-term - systemic		0.277
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - inhalative, long-term - systemic	96 mg/m ³	0.101
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - dermal, long-term - systemic	14 mg/kg/d	0.04
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - combined, long-term - systemic		0.141
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - inhalative, long-term - systemic	48 mg/m ³	0.05
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - dermal, long-term - systemic	14 mg/kg/d	0.04
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - combined, long-term - systemic		0.0906
PROC10 - Roller application or brushing	Worker - inhalative, long-term - systemic	96 mg/m ³	0.101
PROC10 - Roller application or brushing	Worker - dermal, long-term - systemic	27 mg/kg/d	0.08
PROC10 - Roller application or brushing	Worker - combined, long-term - systemic		0.181
PROC13 - Treatment of articles by dipping and pouring	Worker - inhalative, long-term - systemic	96 mg/m ³	0.101
PROC13 - Treatment of articles by dipping and pouring	Worker - dermal, long-term - systemic	14 mg/kg/d	0.04
PROC13 - Treatment of articles by dipping and pouring	Worker - combined, long-term - systemic		0.141
PROC15 - Use as laboratory reagent	Worker - inhalative, long-term - systemic	19 mg/m ³	0.02
PROC15 - Use as laboratory reagent	Worker - dermal, long-term - systemic	0.34 mg/kg/d	<0.001
PROC15 - Use as laboratory reagent	Worker - combined, long-term - systemic		0.0212
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - inhalative, long-term - systemic	96 mg/m ³	0.101
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - dermal, long-term - systemic	14 mg/kg/d	0.04
PROC28 - Manual maintenance	Worker - combined, long-term		0.141

(cleaning and repair) of machinery	- systemic		
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Section 4 - Guidance to check compliance with the exposure scenario

Used ECETOC TRA model. For scaling see. <http://www.ecetoc.org/tra>.
Msafe. 246 t/d.

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name Ethanol
Pure substance/mixture Substance
REACH registration number 01-2119457610-43-XXXX
CAS No 64-17-5
EC No (EU Index No) 200-578-6
Supplier Univar Solutions UK Ltd
 Aquarius House
 6 Mid Point Business Park
 Bradford
 GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

Section 1 - Title

Title Process solvent.
Type Worker
Main user group Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Environmental release category(ies) ERC8a - Wide dispersive indoor use of processing aids in open systems ERC8d - Wide dispersive outdoor use of processing aids in open systems
Specific Environmental Release Category ESVOC SpERC 8.3b.v1
Process category(ies) 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 (multi-stage and/or significant contact)
 PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
 PROC10 - Roller application or brushing
 PROC11 - Non industrial spraying
 PROC13 - Treatment of articles by dipping and pouring
 PROC19 - Hand-mixing with intimate contact and only PPE available
 PROC28 - Manual maintenance (cleaning and repair) of machinery

Product category(ies) PC13 - Fuels
Sector(s) of use SU22 - Professional uses

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC8a - Wide dispersive indoor use of processing aids in open systems
 - ERC8d - Wide dispersive outdoor use of processing aids in open systems
Specific Environmental Release Category - ESVOC SpERC 8.3b.v1

Amounts used

Type	Annual amount per site
Value	2000
Units	t(ons)/year
Type	Fraction of EU tonnage used in region
Value	10%

Type	Fraction of regional tonnage used locally
Value	0.05%

Product characteristics

Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Miscible with water Not likely to bioaccumulate Readily biodegradable

Other operational conditions of use affecting environmental exposure

Type	Continuous use/release
Emission days	365
Release fraction to air from wide dispersive use (regional only)	98%
Release fraction to wastewater from wide dispersive use	1%, 0.00274
Release fraction to soil from wide dispersive use (regional only)	1%

Conditions and measures related to municipal sewage treatment plant

Assumed domestic sewage treatment plant flow	2000 m3/d
Removal efficiency fraction (offsite; STP)	87%

Environmental factors not influenced by risk management

Local freshwater dilution factor	10
Local marine water dilution factor	100

Risk management measures

Technical onsite conditions and measures to reduce or limit discharges, air emissions	Prevent environmental discharge consistent with regulatory requirements
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Conditions and measures related to external treatment of waste for disposal

Disposal	No waste from process
Efficiency of at least	>90%

Waste treatment methods	Incineration, disposal or recycling at specific offsite provider
Efficiency of at least	99.98%

Disposal	Dispose of waste cans and containers according to local regulations External treatment and disposal of waste should comply with applicable local and/or national regulations
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Control of worker exposure

Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Covers concentrations up to	15% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Handling of product in tightly closed containers
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond	Avoid splashing

the REACH Chemical Safety Report	
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 °C

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Handling of product in tightly closed containers
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 °C

Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation)
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Handling of product in tightly closed containers
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 °C

Process category(ies)	PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Handling of product in tightly closed containers
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 °C

Process category(ies)	PROC5 - Mixing or blending in batch processes for formulation of preparations and articles
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	(multi-stage and/or significant contact)
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Handling of product in tightly closed containers
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 °C

Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Handling of product in tightly closed containers
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 °C

Process category(ies)	PROC10 - Roller application or brushing
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Handling of product in tightly closed containers
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 °C

Process category(ies)	PROC11 - Non industrial spraying
Title	Indoor use
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP

Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Handling of product in tightly closed containers Provide a good standard of controlled ventilation (10 to 15 air changes per hour) Efficiency of at least 70%
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 °C

Process category(ies)	PROC11 - Non industrial spraying
Title	Outdoor use
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Handling of product in tightly closed containers General ventilation Efficiency of at least 30%
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 Wear a respirator conforming to EN 140 with Type A filter or better Change filter cartridge on respirator daily Wear a respirator providing a minimum efficiency of 90%
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented Ensure operation is undertaken outdoors
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Outdoor
Assumes process temperature up to	40 °C

Process category(ies)	PROC13 - Treatment of articles by dipping and pouring
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Handling of product in tightly closed containers
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 °C

Process category(ies)	PROC19 - Hand-mixing with intimate contact and only PPE available
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards	Handling of product in tightly closed containers

the worker	
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 °C

Process category(ies)	PROC28 - Manual maintenance (cleaning and repair) of machinery
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Handling of product in tightly closed containers
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 °C

Section 3 - Exposure estimation

Environmental release category(ies) - ERC8a - Wide dispersive indoor use of processing aids in open systems
- ERC8d - Wide dispersive outdoor use of processing aids in open systems
Specific Environmental Release Category - ESVOC SpERC 8.3b.v1

Predicted No Effect Concentration (PNEC)

Freshwater	0.96 mg/l
Freshwater sediment	3.6 mg/kg
Marine water	0.79 mg/l
Marine sediment	2.9 mg/kg
Soil	0.63 mg/kg
Impact on Sewage Treatment	580 mg/kl

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.00875 mg/l	0.00911
Freshwater sediment	0.0335 mg/kg dw	0.00931
Marine water	0.00104 mg/l	0.00132
Marine sediment	0.004 mg/kg dw	0.00138
Soil	0.00321 mg/kg dw	0.00508
STP: Sewage Treatment Plant	0.0013 mg/l	2.24E-06

Derived No Effect Level (DNEL):

Worker - dermal, long-term - systemic	343 mg/kg/bw/d
Worker - inhalative, long-term - local	1900 mg/m ³
Worker - inhalative, long-term - systemic	950 mg/m ³
Consumer - oral, long-term - systemic	87 mg/kg/bw/d
Consumer - dermal, long-term - systemic	206 mg/kg/bw/d
Consumer - inhalative, long-term - systemic	114 mg/m ³

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

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC1 - Use in closed process, no likelihood of exposure	Worker - inhalative, long-term - systemic	0.019 mg/m ³	<0.001
PROC1 - Use in closed process, no likelihood of exposure	Worker - dermal, long-term - systemic	0.03 mg/kg/d	<0.001
PROC1 - Use in closed process, no likelihood of exposure	Worker - combined, long-term - systemic		<0.001
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	38 mg/m ³	0.04
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	1.4 mg/kg/d	0.004
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		0.0444
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - inhalative, long-term - systemic	48 mg/m ³	0.05
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - dermal, long-term - systemic	0.69 mg/kg/d	0.002
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - combined, long-term - systemic		0.0524
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - inhalative, long-term - systemic	96 mg/m ³	0.101
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - dermal, long-term - systemic	6.9 mg/kg/d	0.02
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - combined, long-term - systemic		0.121
PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)	Worker - inhalative, long-term - systemic	190 mg/m ³	0.202
PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)	Worker - dermal, long-term - systemic	14 mg/kg/d	0.04
PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)	Worker - combined, long-term - systemic		0.242
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - inhalative, long-term - systemic	190 mg/m ³	0.202
PROC8a - Transfer of substance or preparation (charging/discharging)	Worker - dermal, long-term - systemic	14 mg/kg/d	0.04

from/to vessels/large containers at non dedicated facilities			
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - combined, long-term - systemic		0.242
PROC10 - Roller application or brushing	Worker - inhalative, long-term - systemic	190 mg/m ³	0.202
PROC10 - Roller application or brushing	Worker - dermal, long-term - systemic	27 mg/kg/d	0.08
PROC10 - Roller application or brushing	Worker - combined, long-term - systemic		0.282
PROC11 - Non industrial spraying	Worker - inhalative, long-term - systemic	290 mg/m ³	0.303
PROC11 - Non industrial spraying	Worker - dermal, long-term - systemic	110 mg/kg/d	0.314
PROC11 - Non industrial spraying	Worker - combined, long-term - systemic		0.617
PROC11 - Non industrial spraying	Worker - inhalative, long-term - systemic	67 mg/m ³	0.071
PROC11 - Non industrial spraying	Worker - dermal, long-term - systemic	110 mg/kg/d	0.314
PROC11 - Non industrial spraying	Worker - combined, long-term - systemic		0.385
PROC13 - Treatment of articles by dipping and pouring	Worker - inhalative, long-term - systemic	190 mg/m ³	0.202
PROC13 - Treatment of articles by dipping and pouring	Worker - dermal, long-term - systemic	14 mg/kg/d	0.04
PROC13 - Treatment of articles by dipping and pouring	Worker - combined, long-term - systemic		0.242
PROC19 - Hand-mixing with intimate contact and only PPE available	Worker - inhalative, long-term - systemic	190 mg/m ³	0.202
PROC19 - Hand-mixing with intimate contact and only PPE available	Worker - dermal, long-term - systemic	140 mg/kg/d	0.415
PROC19 - Hand-mixing with intimate contact and only PPE available	Worker - combined, long-term - systemic		0.617
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - inhalative, long-term - systemic	190 mg/m ³	0.202
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - dermal, long-term - systemic	14 mg/kg/d	0.04
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - combined, long-term - systemic		0.242

Section 4 - Guidance to check compliance with the exposure scenario

Used ECETOC TRA model. For scaling see. <http://www.ecetoc.org/tra>.
Msafe. 1560 kg/d.

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name Ethanol
Pure substance/mixture Substance
REACH registration number 01-2119457610-43-XXXX
CAS No 64-17-5
EC No (EU Index No) 200-578-6
Supplier Univar Solutions UK Ltd
 Aquarius House
 6 Mid Point Business Park
 Bradford
 GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

Section 1 - Title

Title Functional fluids
Type Worker
Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites
Environmental release category(ies) ERC7 - Industrial use of substances in closed systems
Specific Environmental Release Category ESVOC SpERC 7.13a.v1
Process category(ies) PROC1 - Use in closed process, no likelihood of exposure
 PROC2 - Use in closed, continuous process with occasional controlled exposure
 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
 PROC28 - Manual maintenance (cleaning and repair) of machinery
Product category(ies) PC16 - Heat transfer fluids
Sector(s) of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC7 - Industrial use of substances in closed systems
Specific Environmental Release Category - ESVOC SpERC 7.13a.v1

Amounts used

Type	Annual amount per site
Value	1000
Units	t(ons)/year

Type	Fraction of EU tonnage used in region
Value	100%

Type	Fraction of regional tonnage used locally
Value	1%

Product characteristics

Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Miscible with water Not likely to bioaccumulate Readily biodegradable

Other operational conditions of use affecting environmental exposure

Type	Intermittent release Batch process
Emission days	20
Release fraction to air from process (initial release prior to RMM)	1%, 5kg/d
Release fraction to wastewater from process (initial release prior to RMM)	0.1%, 0.5 kg/d
Release fraction to soil from process (initial release prior to RMM)	0.1%

Conditions and measures related to municipal sewage treatment plant

Assumed domestic sewage treatment plant flow	2000 m3/d
Remarks	If discharging to domestic sewage treatment plant, no onsite wastewater treatment required

Environmental factors not influenced by risk management

Local freshwater dilution factor	10
Local marine water dilution factor	100

Risk management measures

Technical onsite conditions and measures to reduce or limit discharges, air emissions	Bund storage facilities to prevent soil and water pollution in the event of spillage Prevent environmental discharge consistent with regulatory requirements
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Control measures to prevent releases

Water	If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of 87%
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Conditions and measures related to external recovery of waste

Method	All waste product is assumed to be collected and returned for re-processing or use as a fuel
Efficiency of at least	<95%

Conditions and measures related to external treatment of waste for disposal

Disposal	No waste from process
Efficiency of at least	>95%

Waste treatment methods	Incineration, disposal or recycling at specific offsite provider
Efficiency of at least	99.98%

Disposal	Dispose of waste cans and containers according to local regulations External treatment and disposal of waste should comply with applicable local and/or national regulations
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Control of worker exposure

Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure > 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Handling of product in tightly closed containers Batch process
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing

Indoor/Outdoor use	Indoor
Assumes process temperature up to	60 °C

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Remarks	20 Emission days Intermittent release
Technical conditions and measures to control dispersion from source towards the worker	Handling of product in tightly closed containers
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 °C

Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Handling of product in tightly closed containers
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 °C

Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Handling of product in tightly closed containers
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 °C

Process category(ies)	PROC28 - Manual maintenance (cleaning and repair) of machinery
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Handling of product in tightly closed containers
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 °C

Section 3 - Exposure estimation

Environmental release category(ies) - ERC7 - Industrial use of substances in closed systems
Specific Environmental Release Category - ESVOC SpERC 7.13a.v1

Predicted No Effect Concentration (PNEC)

Freshwater	0.96 mg/l
Freshwater sediment	3.6 mg/kg
Marine water	0.79 mg/l
Marine sediment	2.9 mg/kg
Soil	0.63 mg/kg
Impact on Sewage Treatment	580 mg/kl

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.0118 mg/l	0.0123
Freshwater sediment	0.0451 mg/kg dw	0.0125
Marine water	0.0135 mg/l	0.00171
Marine sediment	0.00516 mg/kg dw	0.00178
Soil	0.00334 mg/kg dw	0.00530
STP: Sewage Treatment Plant	0.0316 mg/l	5.45E-05

Derived No Effect Level (DNEL):

Worker - dermal, long-term - systemic	343 mg/kg/bw/d
Worker - inhalative, long-term - local	1900 mg/m ³
Worker - inhalative, long-term - systemic	950 mg/m ³
Consumer - oral, long-term - systemic	87 mg/kg/bw/d
Consumer - dermal, long-term - systemic	206 mg/kg/bw/d
Consumer - inhalative, long-term - systemic	114 mg/m ³

Calculation method

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

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC1 - Use in closed process, no	Worker - inhalative, long-term	0.019 mg/m ³	<0.001

likelihood of exposure	- systemic		
PROC1 - Use in closed process, no likelihood of exposure	Worker - dermal, long-term - systemic	0.03 mg/kg/d	<0.001
PROC1 - Use in closed process, no likelihood of exposure	Worker - combined, long-term - systemic		<0.001
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	9.6 mg/m ³	0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	1.4 mg/kg/d	0.004
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		0.0141
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - inhalative, long-term - systemic	96 mg/m ³	0.101
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - dermal, long-term - systemic	14 mg/kg/d	0.04
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - combined, long-term - systemic		0.141
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - inhalative, long-term - systemic	48 mg/m ³	0.05
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - dermal, long-term - systemic	14 mg/kg/d	0.04
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - combined, long-term - systemic		0.0906
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - inhalative, long-term - systemic	96 mg/m ³	0.101
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - dermal, long-term - systemic	14 mg/kg/d	0.04
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - combined, long-term - systemic		0.141

Section 4 - Guidance to check compliance with the exposure scenario

Used ECETOC TRA model. For scaling see. <http://www.ecetoc.org/tra>.
Msafe. 294 t/d.

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name Ethanol
Pure substance/mixture Substance
REACH registration number 01-2119457610-43-XXXX
CAS No 64-17-5
EC No (EU Index No) 200-578-6
Supplier Univar Solutions UK Ltd
 Aquarius House
 6 Mid Point Business Park
 Bradford
 GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

Section 1 - Title

Title Functional fluids
Type Worker
Main user group Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Environmental release category(ies) ERC9a - Wide dispersive indoor use of substances in closed systems ERC9b - Wide dispersive outdoor use of substances in closed systems
Specific Environmental Release Category ESVOC SpERC 7.13a.v1
Process category(ies) PROC1 - Use in closed process, no likelihood of exposure
 PROC2 - Use in closed, continuous process with occasional controlled exposure
 PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
 PROC20 - Heat and pressure transfer fluids in dispersive, professional use but closed systems
 PROC28 - Manual maintenance (cleaning and repair) of machinery
Product category(ies) PC16 - Heat transfer fluids
Sector(s) of use SU22 - Professional uses

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC9a - Wide dispersive indoor use of substances in closed systems
 - ERC9b - Wide dispersive outdoor use of substances in closed systems
Specific Environmental Release Category - ESVOC SpERC 7.13a.v1

Amounts used

Type	Annual amount per site
Value	2000
Units	t(ons)/year

Type	Fraction of EU tonnage used in region
Value	10%

Type	Fraction of regional tonnage used locally
Value	0.05%

Product characteristics

Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Miscible with water

	Not likely to bioaccumulate Readily biodegradable
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Other operational conditions of use affecting environmental exposure

Type	Continuous use/release
Emission days	365
Release fraction to air from process (initial release prior to RMM)	5%
Release fraction to wastewater from process (initial release prior to RMM)	2.5%, 0.00685 kg/d
Release fraction to soil from process (initial release prior to RMM)	2.5%

Conditions and measures related to municipal sewage treatment plant

Assumed domestic sewage treatment plant flow	2000 m3/d
Removal efficiency fraction (offsite; STP)	87%

Environmental factors not influenced by risk management

Local freshwater dilution factor	10
Local marine water dilution factor	100

Risk management measures

Technical onsite conditions and measures to reduce or limit discharges, air emissions	Prevent environmental discharge consistent with regulatory requirements
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Control measures to prevent releases

Water	If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of 87%
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Conditions and measures related to external recovery of waste

Method	All waste product is assumed to be collected and returned for re-processing or use as a fuel
Efficiency of at least	<80%

Conditions and measures related to external treatment of waste for disposal

Disposal	No waste from process
Efficiency of at least	>80%

Waste treatment methods	Incineration, disposal or recycling at specific offsite provider
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Disposal	Dispose of waste cans and containers according to local regulations External treatment and disposal of waste should comply with applicable local and/or national regulations
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Control of worker exposure

Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure > 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure Handling of product in tightly closed containers
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented

Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 °C

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure Handling of product in tightly closed containers
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 °C

Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure Handling of product in tightly closed containers
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 °C

Process category(ies)	PROC20 - Heat and pressure transfer fluids in dispersive, professional use but closed systems
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure Handling of product in tightly closed containers
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor

Assumes process temperature up to	40 'C
Process category(ies)	PROC28 - Manual maintenance (cleaning and repair) of machinery
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure Handling of product in tightly closed containers
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 'C

Section 3 - Exposure estimation

Environmental release category(ies) - ERC9a - Wide dispersive indoor use of substances in closed systems

- ERC9b - Wide dispersive outdoor use of substances in closed systems

Specific Environmental Release Category - ESVOC SpERC 7.13a.v1

Predicted No Effect Concentration (PNEC)

Freshwater	0.96 mg/l
Freshwater sediment	3.6 mg/kg
Marine water	0.79 mg/l
Marine sediment	2.9 mg/kg
Soil	0.63 mg/kg
Impact on Sewage Treatment	580 mg/kl

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.00867 mg/l	0.00903
Freshwater sediment	0.0332 mg/kg dw	0.00922
Marine water	0.00103 mg/l	0.0013
Marine sediment	0.00397 mg/kg dw	0.00137
Soil	0.0032 mg/kg dw	0.00508
STP: Sewage Treatment Plant	0.000433 mg/l	7.47E-07

Derived No Effect Level (DNEL):

Worker - dermal, long-term - systemic	343 mg/kg/bw/d
Worker - inhalative, long-term - local	1900 mg/m ³
Worker - inhalative, long-term - systemic	950 mg/m ³
Consumer - oral, long-term - systemic	87 mg/kg/bw/d
Consumer - dermal, long-term - systemic	206 mg/kg/bw/d
Consumer - inhalative, long-term - systemic	114 mg/m ³

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

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio
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			(RCR)
PROC1 - Use in closed process, no likelihood of exposure	Worker - inhalative, long-term - systemic	0.019 mg/m ³	<0.001
PROC1 - Use in closed process, no likelihood of exposure	Worker - dermal, long-term - systemic	0.03 mg/kg/d	<0.001
PROC1 - Use in closed process, no likelihood of exposure	Worker - combined, long-term - systemic		<0.001
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	38 mg/m ³	0.04
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	1.4 mg/kg/d	0.004
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		0.0444
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - inhalative, long-term - systemic	190 mg/m ³	0.202
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - dermal, long-term - systemic	14 mg/kg/d	0.04
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - combined, long-term - systemic		0.242
PROC20 - Heat and pressure transfer fluids in dispersive, professional use but closed systems	Worker - inhalative, long-term - systemic	38 mg/m ³	0.04
PROC20 - Heat and pressure transfer fluids in dispersive, professional use but closed systems	Worker - dermal, long-term - systemic	1.7 mg/kg/d	0.005
PROC20 - Heat and pressure transfer fluids in dispersive, professional use but closed systems	Worker - combined, long-term - systemic		0.0454
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - inhalative, long-term - systemic	190 mg/m ³	0.202
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - dermal, long-term - systemic	14 mg/kg/d	0.04
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - combined, long-term - systemic		0.242

Section 4 - Guidance to check compliance with the exposure scenario

Used ECETOC TRA model. For scaling see. <http://www.ecetoc.org/tra>.
Msafe. 209 kg/d.

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name Ethanol
Pure substance/mixture Substance
REACH registration number 01-2119457610-43-XXXX
CAS No 64-17-5
EC No (EU Index No) 200-578-6
Supplier Univar Solutions UK Ltd
 Aquarius House
 6 Mid Point Business Park
 Bradford
 GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

Section 1 - Title

Title Laboratory activities
Type Worker
Main user group Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Environmental release category(ies) ERC8a - Wide dispersive indoor use of processing aids in open systems
Specific Environmental Release Category ESVOC SpERC 8.17.v1
Process category(ies) PROC10 - Roller application or brushing
 PROC15 - Use as laboratory reagent
Product category(ies) PC16 - Heat transfer fluids
Sector(s) of use SU22 - Professional uses

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC8a - Wide dispersive indoor use of processing aids in open systems
Specific Environmental Release Category - ESVOC SpERC 8.17.v1

Amounts used

Type	Annual amount per site
Value	600
Units	t(ons)/year

Type	Fraction of EU tonnage used in region
Value	10%

Type	Fraction of regional tonnage used locally
Value	0.05%

Product characteristics

Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Miscible with water Not likely to bioaccumulate Readily biodegradable

Other operational conditions of use affecting environmental exposure

Type	Continuous use/release
Emission days	365
Release fraction to air from process	50%

(initial release prior to RMM)	
Release fraction to wastewater from process (initial release prior to RMM)	50%, 0.0411 kg/d
Release fraction to soil from process (initial release prior to RMM)	0%

Conditions and measures related to municipal sewage treatment plant

Assumed domestic sewage treatment plant flow	2000 m3/d
Removal efficiency fraction (offsite; STP)	87%

Environmental factors not influenced by risk management

Local freshwater dilution factor	10
Local marine water dilution factor	100

Risk management measures

Technical onsite conditions and measures to reduce or limit discharges, air emissions	Prevent environmental discharge consistent with regulatory requirements
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Control measures to prevent releases

Water	If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of 87%
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Conditions and measures related to external treatment of waste for disposal

Disposal	No waste from process
Efficiency of at least	<90%

Waste treatment methods	Incineration, disposal or recycling at specific offsite provider
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Disposal	Dispose of waste cans and containers according to local regulations
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Control of worker exposure

Process category(ies)	PROC10 - Roller application or brushing
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure Handling of product in tightly closed containers
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 °C

Process category(ies)	PROC15 - Use as laboratory reagent
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Handling of product in tightly closed containers

control dispersion from source towards the worker	
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 °C

Section 3 - Exposure estimation

Environmental release category(ies) - ERC8a - Wide dispersive indoor use of processing aids in open systems
Specific Environmental Release Category - ESVOC SpERC 8.17.v1

Predicted No Effect Concentration (PNEC)

Freshwater	0.96 mg/l
Freshwater sediment	3.6 mg/kg
Marine water	0.79 mg/l
Marine sediment	2.9 mg/kg
Soil	0.63 mg/kg
Impact on Sewage Treatment	580 mg/kg

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.00884 mg/l	0.00921
Freshwater sediment	0.0339 mg/kg dw	0.00942
Marine water	0.00105 mg/l	0.00133
Marine sediment	0.00403 mg/kg dw	0.00139
Soil	0.00321 mg/kg dw	0.00508
STP: Sewage Treatment Plant	0.00216 mg/l	3.72E-06

Derived No Effect Level (DNEL):

Worker - dermal, long-term - systemic	343 mg/kg/bw/d
Worker - inhalative, long-term - local	1900 mg/m ³
Worker - inhalative, long-term - systemic	950 mg/m ³
Consumer - oral, long-term - systemic	87 mg/kg/bw/d
Consumer - dermal, long-term - systemic	206 mg/kg/bw/d
Consumer - inhalative, long-term - systemic	114 mg/m ³

Calculation method

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

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC10 - Roller application or brushing	Worker - inhalative, long-term - systemic	190 mg/m ³	0.202
PROC10 - Roller application or brushing	Worker - dermal, long-term - systemic	27 mg/kg/d	0.08
PROC10 - Roller application or brushing	Worker - combined, long-term - systemic		0.282

PROC15 - Use as laboratory reagent	Worker - inhalative, long-term - systemic	19 mg/m ³	0.02
PROC15 - Use as laboratory reagent	Worker - dermal, long-term - systemic	0.34 mg/kg/d	<0.001
PROC15 - Use as laboratory reagent	Worker - combined, long-term - systemic		0.0212

Section 4 - Guidance to check compliance with the exposure scenario

Used ECETOC TRA model. For scaling see. <http://www.ecetoc.org/tra>.
Msafe. 51.5 kg/d.

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name Ethanol
Pure substance/mixture Substance
REACH registration number 01-2119457610-43-XXXX
CAS No 64-17-5
EC No (EU Index No) 200-578-6
Supplier Univar Solutions UK Ltd
 Aquarius House
 6 Mid Point Business Park
 Bradford
 GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

Section 1 - Title

Title Use in fuel
Type Consumer
Main user group Consumer uses: Private households (= general public = consumers)
Environmental release category(ies) ERC9a - Wide dispersive indoor use of substances in closed systems ERC9b - Wide dispersive outdoor use of substances in closed systems
Product category(ies) PC13 - Fuels
Sector(s) of use SU21 - Consumer uses

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC9a - Wide dispersive indoor use of substances in closed systems
 - ERC9b - Wide dispersive outdoor use of substances in closed systems

Amounts used

Type	Annual amount per site
Value	5000
Units	t(ons)/year

Type	Fraction of EU tonnage used in region
Value	0.2%

Type	Fraction of regional tonnage used locally
Value	10%

Product characteristics

Remarks	Miscible with water Not likely to bioaccumulate Readily biodegradable
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Other operational conditions of use affecting environmental exposure

Type	Continuous use/release
Emission days	365
Release fraction to air from process (initial release prior to RMM)	1%, 0.273 kg/d
Release fraction to wastewater from process (initial release prior to RMM)	0.001%, 0.000273 kg/d
Release fraction to soil from process (initial release prior to RMM)	0.001%

Environmental factors not influenced by risk management

Local freshwater dilution factor	10
Local marine water dilution factor	100

Control measures to prevent releases

Water	Not applicable as there is no release to wastewater
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Conditions and measures related to external treatment of waste for disposal

Disposal	This substance is consumed during use and no waste of the substance is generated
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Control of consumer exposure

Product categories [PC]	PC13 - Fuels
Product (sub) category(ies)	Liquid: home space heater fuel
Covers concentrations up to	100%
Physical form of product	Liquid
Vapour pressure	5726 Pa
Amounts used	3945 g Amount per use
Exposure duration	0.03 hr/event
Use frequency	1 events per day
Risk management measures	Avoid contact with eyes Inhalation exposure 0.125 %, max. 5mL
Covers skin contact area up to	210 cm ²
Use in room with a volume of minimum	20 m ³
Operational conditions	Covers use at ambient temperatures

Product categories [PC]	PC13 - Fuels
Product (sub) category(ies)	Liquid: lamp oil
Covers concentrations up to	100%
Physical form of product	Liquid
Vapour pressure	5726 Pa
Amounts used	255 g Amount per use
Exposure duration	0.017 hr/event
Use frequency	51 days per year
Risk management measures	Avoid contact with eyes Inhalation exposure 0.5%
Covers skin contact area up to	210 cm ²
Use in room with a volume of minimum	20 m ³
Operational conditions	Covers use at ambient temperatures

Section 3 - Exposure estimation**Environmental release category(ies) - ERC9a - Wide dispersive indoor use of substances in closed systems
- ERC9b - Wide dispersive outdoor use of substances in closed systems****Predicted No Effect Concentration (PNEC)**

Freshwater	0.96 mg/l
Freshwater sediment	3.6 mg/kg
Marine water	0.79 mg/l
Marine sediment	2.9 mg/kg
Soil	0.63 mg/kg
Impact on Sewage Treatment	580 mg/kl

Environment	predicted exposure level	Risk characterisation ratio (RCR)
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Freshwater	0.00862 mg/l	0.00898
Freshwater sediment	0.033 mg/kg dw	0.00917
Marine water	0.00103 mg/l	0.00130
Marine sediment	0.00394 mg/kg dw	0.00136
Soil	0.0032 mg/kg dw	0.00508
STP: Sewage Treatment Plant	4.32E-07 mg/l	7.45E-10

Derived No Effect Level (DNEL):

Worker - dermal, long-term - systemic	343 mg/kg/bw/d
Worker - inhalative, long-term - local	1900 mg/m ³
Worker - inhalative, long-term - systemic	950 mg/m ³
Consumer - oral, long-term - systemic	87 mg/kg/bw/d
Consumer - dermal, long-term - systemic	206 mg/kg/bw/d
Consumer - inhalative, long-term - systemic	114 mg/m ³

Calculation method

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

Product category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PC13 - Fuels	Consumer - inhalative, long-term - systemic	0.305 mg/m ³	0.00207
PC13 - Fuels	Consumer - inhalative, short-term - systemic	0.305 mg/m ³	0.00267
PC13 - Fuels	Consumer - dermal, short-term - local	0.0276 mg/kg/d	0.000133
PC13 - Fuels	Consumer - combined, long-term - systemic		0.028
PC13 - Fuels	Consumer - inhalative, long-term - systemic	0.00642 mg/m ³	5.63 E-05
PC13 - Fuels	Consumer - inhalative, short-term - systemic	0.0449 mg/m ³	0.000393
PC13 - Fuels	Consumer - dermal, short-term - local	0.138 mg/kg/d	9.56 E-05
PC13 - Fuels	Consumer - combined, long-term - systemic		0.000489

Section 4 - Guidance to check compliance with the exposure scenario

Used ECETOC TRA model. For scaling see. <http://www.ecetoc.org/tra>.

Predicted exposures are not expected to exceed the applicable consumer reference values when the operational conditions/risk management measures given 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. Risk management measures are based on qualitative risk characterization.

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name Ethanol
Pure substance/mixture Substance
REACH registration number 01-2119457610-43-XXXX
CAS No 64-17-5
EC No (EU Index No) 200-578-6
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Section 1 - Title

Title Consumer use
Type Consumer
Main user group Consumer uses: Private households (= general public = consumers)
Environmental release category(ies) ERC8a - Wide dispersive indoor use of processing aids in open systems ERC8d - Wide dispersive outdoor use of processing aids in open systems
Product category(ies) PC1 - Adhesives, sealants PC3 - Air care products PC8 - Biocidal Products (e.g. disinfectants, pest control) PC18 - Ink and toners PC23 - Leather tanning, dye, finishing, impregnation and care products PC24 - Lubricants, greases, release products PC27 - Plant protection products PC31 - Polishes and wax blends PC34 - Textile dyes, finishing and impregnating products; including bleaches and other processing aids
Sector(s) of use SU21 - Consumer uses

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC8a - Wide dispersive indoor use of processing aids in open systems
 - ERC8d - Wide dispersive outdoor use of processing aids in open systems

Amounts used

Type	Annual amount for wide dispersive uses
Value	12000
Units	t(ons)/year

Type	Fraction of EU tonnage used in region
Value	0.2%

Type	Fraction of regional tonnage used locally
Value	10%

Product characteristics

Remarks	Miscible with water Not likely to bioaccumulate Readily biodegradable
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Other operational conditions of use affecting environmental exposure

Type	Continuous use/release
Emission days	365
Release fraction to air from wide dispersive use (regional only)	100%, 65.7 kg/d

Release fraction to wastewater from wide dispersive use	100%, 65.7 kg/d
Release fraction to soil from wide dispersive use (regional only)	0%

Conditions and measures related to municipal sewage treatment plant

Assumed domestic sewage treatment plant flow	2000 m3/d
Removal efficiency fraction (offsite; STP)	87%

Environmental factors not influenced by risk management

Local freshwater dilution factor	10
Local marine water dilution factor	100

Conditions and measures related to external treatment of waste for disposal

Efficiency of at least	>90%
Waste treatment methods	Landfill
Waste treatment methods	Incineration, disposal or recycling at specific offsite provider
Efficiency of at least	99.98%
Disposal	Dispose of waste cans and containers according to local regulations

Control of consumer exposure

Product categories [PC]	PC1 - Adhesives, sealants
Product (sub) category(ies)	Glues, hobby use
Covers concentrations up to	70%
Physical form of product	Liquid
Vapour pressure	5726 Pa
Amounts used	50 g/event
Exposure duration	240 minutes per day
Use frequency	1 events per day
Risk management measures	Avoid contact with eyes
Covers skin contact area up to	35 cm2
Use in room with a volume of minimum	20 m2
Operational conditions	Covers use under typical household ventilation. Covers use at ambient temperatures

Product categories [PC]	PC1 - Adhesives, sealants
Product (sub) category(ies)	Glue from spray
Covers concentrations up to	30%
Physical form of product	Liquid
Vapour pressure	5726 Pa
Amounts used	50 g/event
Exposure duration	240 minutes per day
Use frequency	6 times per year
Risk management measures	Avoid contact with eyes
Covers skin contact area up to	35 cm2
Use in room with a volume of minimum	20 m2
Operational conditions	Covers use under typical household ventilation. Covers use at ambient temperatures

Product categories [PC]	PC1 - Adhesives, sealants
Product (sub) category(ies)	Sealant

Covers concentrations up to	30%
Physical form of product	Liquid
Vapour pressure	5726 Pa
Amounts used	50 g/event
Exposure duration	Avoid carrying out operation for more than 1 hour
Use frequency	1 events per day
Risk management measures	Avoid contact with eyes
Covers skin contact area up to	35 cm ²
Use in room with a volume of minimum	20 m ³
Operational conditions	Covers use under typical household ventilation. Covers use at ambient temperatures

Product categories [PC]	PC3 - Air care products
Product (sub) category(ies)	Air care, instant action (aerosol sprays)
Covers concentrations up to	85%
Physical form of product	Liquid
Vapour pressure	5726 Pa
Amounts used	10 g/event
Exposure duration	0.3 hr/event
Use frequency	4 events per day
Risk management measures	Avoid contact with eyes
Covers skin contact area up to	35 cm ²
Use in room with a volume of minimum	20 m ³
Operational conditions	Covers use under typical household ventilation. Covers use at ambient temperatures

Product categories [PC]	PC3 - Air care products
Product (sub) category(ies)	Air care, continuous action (solid and liquid)
Covers concentrations up to	85%
Physical form of product	Liquid
Vapour pressure	5726 Pa
Amounts used	0.48 g/event
Exposure duration	24 hr/event
Use frequency	1 events per day
Risk management measures	Avoid contact with eyes
Covers skin contact area up to	35 cm ²
Use in room with a volume of minimum	20 m ³
Operational conditions	Covers use under typical household ventilation. Covers use at ambient temperatures

Product categories [PC]	PC8 - Biocidal Products (e.g. disinfectants, pest control)
Product (sub) category(ies)	Laundry and dish washing products
Covers concentrations up to	5%
Physical form of product	Liquid
Vapour pressure	5726 Pa
Amounts used	50 g/event
Exposure duration	0.5 hr/event
Use frequency	1 events per day
Risk management measures	Avoid contact with eyes
Covers skin contact area up to	857 cm ²
Use in room with a volume of minimum	20 m ³
Operational conditions	Covers use under typical household ventilation. Covers use at ambient temperatures

Product categories [PC]	PC8 - Biocidal Products (e.g. disinfectants, pest control)
Product (sub) category(ies)	Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners)
Covers concentrations up to	5%
Physical form of product	Liquid
Vapour pressure	5726 Pa

Amounts used	50 g/event
Exposure duration	0.3 hr/event
Use frequency	125 times per year
Risk management measures	Avoid contact with eyes
Covers skin contact area up to	857 cm ²
Use in room with a volume of minimum	20 m ³
Operational conditions	Covers use under typical household ventilation. Covers use at ambient temperatures

Product categories [PC]	PC8 - Biocidal Products (e.g. disinfectants, pest control)
Product (sub) category(ies)	Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)
Covers concentrations up to	90%
Physical form of product	Liquid
Vapour pressure	5726 Pa
Amounts used	16.7 g/event
Exposure duration	0.2 hr/event
Use frequency	3 events per day
Risk management measures	Avoid contact with eyes
Covers skin contact area up to	428 cm ²
Use in room with a volume of minimum	20 m ³
Operational conditions	Covers use under typical household ventilation. Covers use at ambient temperatures

Product categories [PC]	PC18 - Ink and toners
Covers concentrations up to	50%
Physical form of product	Liquid
Vapour pressure	5726 Pa
Amounts used	16.7 g/event
Exposure duration	8 hr/event
Use frequency	1 events per day
Risk management measures	Avoid contact with eyes
Covers skin contact area up to	71 cm ²
Use in room with a volume of minimum	20 m ³
Operational conditions	Covers use under typical household ventilation. Covers use at ambient temperatures

Product categories [PC]	PC23 - Leather tanning, dye, finishing, impregnation and care products
Product (sub) category(ies)	Polishes, wax / cream (floor, furniture, shoes)
Covers concentrations up to	50%
Physical form of product	Liquid
Vapour pressure	5726 Pa
Amounts used	50 g/event
Exposure duration	1.2 hr/event
Use frequency	29 times per year
Risk management measures	Avoid contact with eyes
Covers skin contact area up to	430 cm ²
Use in room with a volume of minimum	20 m ³
Operational conditions	Covers use under typical household ventilation. Covers use at ambient temperatures

Product categories [PC]	PC23 - Leather tanning, dye, finishing, impregnation and care products
Product (sub) category(ies)	Polishes, spray (furniture, shoes)
Covers concentrations up to	20%
Physical form of product	Liquid
Vapour pressure	5726 Pa
Amounts used	50 g/event
Exposure duration	0.3 hr/event
Use frequency	8 times per year
Risk management measures	Avoid contact with eyes
Covers skin contact area up to	430 cm ²

Use in room with a volume of minimum	20 m2
Operational conditions	Covers use under typical household ventilation. Covers use at ambient temperatures

Product categories [PC]	PC24 - Lubricants, greases, release products
Covers concentrations up to	20%
Physical form of product	Liquid
Vapour pressure	5726 Pa
Amounts used	50 g/event
Exposure duration	0.2 hr/event
Use frequency	4 times per year
Risk management measures	Avoid contact with eyes
Covers skin contact area up to	468 cm2
Use in room with a volume of minimum	20 m2
Operational conditions	Covers use under typical household ventilation. Covers use at ambient temperatures

Product categories [PC]	PC27 - Plant protection products
Covers concentrations up to	10%
Physical form of product	Liquid
Vapour pressure	5726 Pa
Amounts used	50 g/event
Exposure duration	4 hr/event
Use frequency	1 events per day
Risk management measures	Avoid contact with eyes
Covers skin contact area up to	867 cm2
Use in room with a volume of minimum	20 m2
Operational conditions	Covers use under typical household ventilation. Covers use at ambient temperatures

Product categories [PC]	PC31 - Polishes and wax blends
Product (sub) category(ies)	Polishes, wax / cream (floor, furniture, shoes)
Covers concentrations up to	50%
Physical form of product	Liquid
Vapour pressure	5726 Pa
Amounts used	50 g/event
Exposure duration	1.2 hr/event
Use frequency	29 times per year
Risk management measures	Avoid contact with eyes
Covers skin contact area up to	430 cm2
Use in room with a volume of minimum	20 m2
Operational conditions	Covers use under typical household ventilation. Covers use at ambient temperatures

Product categories [PC]	PC31 - Polishes and wax blends
Product (sub) category(ies)	Polishes, spray (furniture, shoes)
Covers concentrations up to	20%
Physical form of product	Liquid
Vapour pressure	5726 Pa
Amounts used	50 g/event
Exposure duration	0.3 hr/event
Use frequency	8 times per year
Risk management measures	Avoid contact with eyes
Covers skin contact area up to	430 cm2
Use in room with a volume of minimum	20 m2
Operational conditions	Covers use under typical household ventilation. Covers use at ambient temperatures

Product categories [PC]	PC34 - Textile dyes, finishing and impregnating products
Covers concentrations up to	10%
Physical form of product	Liquid

Vapour pressure	5726 Pa
Amounts used	50 g/event
Exposure duration	1 hr/event
Use frequency	1 events per day
Risk management measures	Avoid contact with eyes
Covers skin contact area up to	857 cm ²
Use in room with a volume of minimum	20 m ³
Operational conditions	Covers use under typical household ventilation. Covers use at ambient temperatures

Section 3 - Exposure estimation

Environmental release category(ies) - ERC8a - Wide dispersive indoor use of processing aids in open systems - ERC8d - Wide dispersive outdoor use of processing aids in open systems

Predicted No Effect Concentration (PNEC)

Freshwater	0.96 mg/l
Freshwater sediment	3.6 mg/kg
Marine water	0.79 mg/l
Marine sediment	2.9 mg/kg
Soil	0.63 mg/kg
Impact on Sewage Treatment	580 mg/kl

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.337 mg/l	0.351
Freshwater sediment	1.29 mg/kg dw	0.358
Marine water	0.0339 mg/l	0.0429
Marine sediment	0.129 mg/kg dw	0.0445
Soil	0.0032 mg/kg dw	0.00508
STP: Sewage Treatment Plant	3.28 mg/l	0.00566

Derived No Effect Level (DNEL):

Worker - dermal, long-term - systemic	343 mg/kg/bw/d
Worker - inhalative, long-term - local	1900 mg/m ³
Worker - inhalative, long-term - systemic	950 mg/m ³
Consumer - oral, long-term - systemic	87 mg/kg/bw/d
Consumer - dermal, long-term - systemic	206 mg/kg/bw/d
Consumer - inhalative, long-term - systemic	114 mg/m ³

Calculation method

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

Product category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PC1 - Adhesives, sealants	Consumer - inhalative	111 mg/m ³	0.973
PC1 - Adhesives, sealants	Consumer - dermal, long-term - systemic	3.28 mg/kg/d	0.0159
PC1 - Adhesives, sealants	Consumer - inhalative	47.3 mg/m ³	0.414
PC1 - Adhesives, sealants	Consumer - dermal, long-term - systemic	1.4 mg/kg/d	0.00679
PC1 - Adhesives, sealants	Consumer - inhalative	23.5 mg/m ³	0.206
PC1 - Adhesives, sealants	Consumer - dermal, long-term	1.4 mg/kg/d	0.00679

	- systemic		
PC3 - Air care products	Consumer - inhalative	16.4 mg/m ³	0.143
PC3 - Air care products	Consumer - dermal, long-term - systemic	15.9 mg/kg/d	0.0771
PC3 - Air care products	Consumer - inhalative	1.41 mg/m ³	0.0123
PC3 - Air care products	Consumer - dermal, long-term - systemic	3.99 mg/kg/d	0.0193
PC8 - Biocidal Products (e.g. disinfectants, pest control)	Consumer - inhalative	2.25 mg/m ³	0.0197
PC8 - Biocidal Products (e.g. disinfectants, pest control)	Consumer - dermal, long-term - systemic	0.0563 mg/kg/d	0.000273
PC8 - Biocidal Products (e.g. disinfectants, pest control)	Consumer - inhalative	1.55 mg/m ³	0.0135
PC8 - Biocidal Products (e.g. disinfectants, pest control)	Consumer - dermal, long-term - systemic	5.63 mg/kg/d	0.00956
PC8 - Biocidal Products (e.g. disinfectants, pest control)	Consumer - inhalative	15.1 mg/m ³	0.132
PC8 - Biocidal Products (e.g. disinfectants, pest control)	Consumer - dermal, long-term - systemic	152 mg/kg/d	0.737
PC18 - Ink and toners	Consumer - inhalative	86 mg/m ³	0.754
PC18 - Ink and toners	Consumer - dermal, long-term - systemic	4.69 mg/kg/d	0.0227
PC23 - Leather tanning, dye, finishing, impregnation and care products	Consumer - inhalative	45.3 mg/m ³	0.397
PC23 - Leather tanning, dye, finishing, impregnation and care products	Consumer - dermal, long-term - systemic	28.2 mg/kg/d	0.408
PC23 - Leather tanning, dye, finishing, impregnation and care products	Consumer - inhalative	6.24 mg/m ³	0.0547
PC23 - Leather tanning, dye, finishing, impregnation and care products	Consumer - dermal, long-term - systemic	11.3 mg/kg/d	0.00119
PC24 - Lubricants, greases, release products	Consumer - inhalative	3.36 mg/m ³	0.0294
PC24 - Lubricants, greases, release products	Consumer - dermal, long-term - systemic	1.23 mg/kg/d	0.000065
PC27 - Plant protection products	Consumer - inhalative	15.7 mg/m ³	0.137
PC27 - Plant protection products	Consumer - dermal, long-term - systemic	3 mg/kg/d	0.0543
PC31 - Polishes and wax blends	Consumer - inhalative	45.3 mg/m ³	0.397
PC31 - Polishes and wax blends	Consumer - dermal, long-term - systemic	28.2 mg/kg/d	0.408
PC31 - Polishes and wax blends	Consumer - inhalative	6.24 mg/m ³	0.0547
PC31 - Polishes and wax blends	Consumer - dermal, long-term - systemic	11.3 mg/kg/d	0.00119

PC34 - Textile dyes, finishing and impregnating products	Consumer - inhalative	7.83 mg/m ³	0.0686
PC34 - Textile dyes, finishing and impregnating products	Consumer - dermal, long-term - systemic	7.83 mg/kg/d	0.000543

Section 4 - Guidance to check compliance with the exposure scenario

Predicted exposures are not expected to exceed the applicable consumer reference values when the operational conditions/risk management measures given 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. Risk management measures are based on qualitative risk characterization.

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name Ethanol
Pure substance/mixture Substance
REACH registration number 01-2119457610-43-XXXX
CAS No 64-17-5
EC No (EU Index No) 200-578-6
Supplier Univar Solutions UK Ltd
 Aquarius House
 6 Mid Point Business Park
 Bradford
 GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

Section 1 - Title

Title Consumer use Functional fluids
Type Consumer
Main user group Consumer uses: Private households (= general public = consumers)
Environmental release category(ies) ERC9b - Wide dispersive outdoor use of substances in closed systems
Specific Environmental Release Category ESVOC SpERC 9.13c.v1
Product category(ies) PC16 - Heat transfer fluids
Sector(s) of use SU21 - Consumer uses

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC9b - Wide dispersive outdoor use of substances in closed systems

Specific Environmental Release Category - ESVOC SpERC 9.13c.v1

Amounts used

Type	Annual amount for wide dispersive uses
Value	2000
Units	t(ons)/year

Type	Fraction of EU tonnage used in region
Value	10 %

Type	Fraction of regional tonnage used locally
Value	0.05 %

Product characteristics

Remarks	Miscible with water Not likely to bioaccumulate Readily biodegradable
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Other operational conditions of use affecting environmental exposure

Type	Continuous use/release
Emission days	365
Release fraction to air from wide dispersive use (regional only)	5 %, 0.136 kg/d
Release fraction to wastewater from wide dispersive use	2.5 %, 0.0684 kg/d
Release fraction to soil from wide	2.5 %

dispersive use (regional only)	
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Environmental factors not influenced by risk management

Local freshwater dilution factor	10
Local marine water dilution factor	100

Conditions and measures related to external treatment of waste for disposal

Efficiency of at least	>90%
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Waste treatment methods	Landfill
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Waste treatment methods	Incineration, disposal or recycling at specific offsite provider
Efficiency of at least	99.98%

Disposal	Dispose of waste cans and containers according to local regulations
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Control of consumer exposure

Product categories [PC]	PC16 - Heat transfer fluids
Covers concentrations up to	100 %
Physical form of product	Liquid
Vapour pressure	5726 Pa
Amounts used	2200 g/event
Exposure duration	0.17 hr/event
Use frequency	4 times per year
Covers skin contact area up to	468 cm ²
Indoor/Outdoor use	Covers outdoor use
Operational conditions	Covers use at ambient temperatures

Section 3 - Exposure estimation

Environmental release category(ies) - ERC9b - Wide dispersive outdoor use of substances in closed systems
Specific Environmental Release Category - ESVOC SpERC 9.13c.v1

Predicted No Effect Concentration (PNEC)

Freshwater	0.96 mg/l
Freshwater sediment	3.6 mg/kg
Marine water	0.79 mg/l
Marine sediment	2.9 mg/kg
Soil	0.63 mg/kg
Impact on Sewage Treatment	580 mg/kl

Remarks Risk from environmental exposure is driven by freshwater sediment

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.00905 mg/l	0.00943
Freshwater sediment	0.0347 mg/kg dw	0.00964
Marine water	0.00107 mg/l	0.00135
Marine sediment	0.0041 mg/kg dw	0.00141
Soil	0.00321 mg/kg dw	0.00510
STP: Sewage Treatment Plant	0.000432 mg/l	0

Derived No Effect Level (DNEL):

Worker - dermal, long-term - systemic	343 mg/kg/bw/d
Worker - inhalative, long-term - local	1900 mg/m ³
Worker - inhalative, long-term - systemic	950 mg/m ³
Consumer - oral, long-term - systemic	87 mg/kg/bw/d
Consumer - dermal, long-term - systemic	206 mg/kg/bw/d
Consumer - inhalative, long-term - systemic	114 mg/m ³

Calculation method The ECETOC TRA tool has been used to estimate consumer exposures unless otherwise indicated

Product category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PC16 - Heat transfer fluids	Consumer - inhalative	1.48 mg/m ³	0.0129
PC16 - Heat transfer fluids	Consumer - dermal, long-term - systemic	6.15 mg/kg/d	0.00327

Section 4 - Guidance to check compliance with the exposure scenario

Predicted exposures are not expected to exceed the applicable consumer reference values when the operational conditions/risk management measures given 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. Risk management measures are based on qualitative risk characterization.

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name Ethanol
Pure substance/mixture Substance
REACH registration number 01-2119457610-43-XXXX
CAS No 64-17-5
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 6 Mid Point Business Park
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Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

Section 1 - Title

Title Consumer application of coatings
Type Consumer
Main user group Consumer uses: Private households (= general public = consumers)
Environmental release category(ies) ERC8a - Wide dispersive indoor use of processing aids in open systems ERC8d - Wide dispersive outdoor use of processing aids in open systems
Specific Environmental Release Category ESVOC SpERC 8.3c.v1
Product category(ies) PC9a - Coatings and paints, thinners, paint removers PC9b - Fillers, putties, plasters, modelling clay PC9c - Finger paints
Sector(s) of use SU21 - Consumer uses

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC8a - Wide dispersive indoor use of processing aids in open systems
 - ERC8d - Wide dispersive outdoor use of processing aids in open systems
Specific Environmental Release Category - ESVOC SpERC 8.3c.v1

Amounts used

Type	Annual amount for wide dispersive uses
Value	2500
Units	t(ons)/year

Type	Fraction of EU tonnage used in region
Value	10 %

Type	Fraction of regional tonnage used locally
Value	0.05 %

Product characteristics

Remarks	Miscible with water Not likely to bioaccumulate Readily biodegradable
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Other operational conditions of use affecting environmental exposure

Type	Continuous use/release
Emission days	365
Release fraction to air from wide dispersive use (regional only)	98.5 %, 3.37 kg/d

Release fraction to wastewater from wide dispersive use	1 %, 0.0342 kg/d
Release fraction to soil from wide dispersive use (regional only)	0.5 %

Conditions and measures related to municipal sewage treatment plant

Assumed domestic sewage treatment plant flow	2000 m3/d
Removal efficiency fraction (offsite; STP)	87 %

Environmental factors not influenced by risk management

Local freshwater dilution factor	10
Local marine water dilution factor	100

Conditions and measures related to external treatment of waste for disposal

Efficiency of at least	>90%
Waste treatment methods	Landfill
Waste treatment methods	Incineration, disposal or recycling at specific offsite provider
Efficiency of at least	99.98%
Disposal	Dispose of waste cans and containers according to local regulations

Control of consumer exposure

Product categories [PC]	PC9 - Coatings and paints, fillers, putties, thinners
Product (sub) category(ies)	Waterborne latex wall paint
Covers concentrations up to	1 %
Physical form of product	Liquid
Vapour pressure	5726 Pa
Amounts used	2760 g/event
Exposure duration	2.2 hr/event
Use frequency	4 times per year
Covers skin contact area up to	428 cm2
Indoor/Outdoor use	Indoor
Use in room with a volume of minimum	20 m3
Operational conditions	Covers use at ambient temperatures Covers use under typical household ventilation.

Product categories [PC]	PC9 - Coatings and paints, fillers, putties, thinners
Product (sub) category(ies)	Solvent rich, high solid, water borne paint
Covers concentrations up to	10 %
Physical form of product	Liquid
Vapour pressure	5726 Pa
Amounts used	744 g/event
Exposure duration	2.2 hr/event
Use frequency	6 times per year
Covers skin contact area up to	428 cm2
Indoor/Outdoor use	Indoor
Use in room with a volume of minimum	20 m3
Operational conditions	Covers use at ambient temperatures Covers use under typical household ventilation.

Product categories [PC]	PC9 - Coatings and paints, fillers, putties, thinners
Product (sub) category(ies)	Aerosol spray can
Covers concentrations up to	20 %

Physical form of product	Liquid
Vapour pressure	5726 Pa
Amounts used	215 g/event
Exposure duration	0.5 hr/event
Use frequency	2 times per year
Covers skin contact area up to	254 cm2
Indoor/Outdoor use	Indoor
Use in room with a volume of minimum	34 m3
Operational conditions	Covers use at ambient temperatures Covers use under typical household ventilation.

Product categories [PC]	PC9 - Coatings and paints, fillers, putties, thinners
Product (sub) category(ies)	Removers (paint-, glue-, wall paper-, sealant-remover)
Covers concentrations up to	20 %
Physical form of product	Liquid
Vapour pressure	5726 Pa
Amounts used	491 g/event
Exposure duration	2.5 hr/event
Use frequency	3 times per year
Covers skin contact area up to	857 cm2
Indoor/Outdoor use	Indoor
Use in room with a volume of minimum	20 m3
Operational conditions	Covers use at ambient temperatures Covers use under typical household ventilation.

Product categories [PC]	PC9b - Fillers, putties, plasters, modelling clay
Product (sub) category(ies)	Fillers and putty
Covers concentrations up to	2 %
Physical form of product	Liquid
Vapour pressure	5726 Pa
Amounts used	85 g/event
Exposure duration	4 hr/event
Use frequency	12 times per year
Covers skin contact area up to	35 cm2
Indoor/Outdoor use	Indoor
Use in room with a volume of minimum	20 m3
Operational conditions	Covers use at ambient temperatures Covers use under typical household ventilation.

Product categories [PC]	PC9b - Fillers, putties, plasters, modelling clay
Product (sub) category(ies)	Plasters and floor equalisers
Covers concentrations up to	2 %
Physical form of product	Liquid
Vapour pressure	5726 Pa
Amounts used	4140 g/event
Exposure duration	2.5 hr/event
Use frequency	12 times per year
Covers skin contact area up to	857 cm2
Indoor/Outdoor use	Indoor
Use in room with a volume of minimum	20 m3
Operational conditions	Covers use at ambient temperatures Covers use under typical household ventilation.

Product categories [PC]	PC9b - Fillers, putties, plasters, modelling clay
Product (sub) category(ies)	Modelling clay
Covers concentrations up to	1 %
Physical form of product	Liquid
Vapour pressure	5726 Pa
Amounts used	100 g/event
Exposure duration	2 hr/event
Use frequency	events per day 1

Covers skin contact area up to	254 cm2
Indoor/Outdoor use	Indoor
Use in room with a volume of minimum	20 m3
Operational conditions	Covers use at ambient temperatures Covers use under typical household ventilation.

Product categories [PC]	PC9c - Finger paints
Covers concentrations up to	10 %
Physical form of product	Liquid
Vapour pressure	5726 Pa
Amounts used	100 g/event
Exposure duration	2 hr/event
Use frequency	events per day 1
Covers skin contact area up to	254 cm2
Indoor/Outdoor use	Indoor
Use in room with a volume of minimum	20 m3
Operational conditions	Covers use at ambient temperatures Covers use under typical household ventilation.

Section 3 - Exposure estimation

Environmental release category(ies) - ERC8a - Wide dispersive indoor use of processing aids in open systems
- ERC8d - Wide dispersive outdoor use of processing aids in open systems
Specific Environmental Release Category - ESVOC SpERC 8.3c.v1

Predicted No Effect Concentration (PNEC)

Freshwater	0.96 mg/l
Freshwater sediment	3.6 mg/kg
Marine water	0.79 mg/l
Marine sediment	2.9 mg/kg
Soil	0.63 mg/kg
Impact on Sewage Treatment	580 mg/kl

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.00236 mg/l	0.00246
Freshwater sediment	0.00907 mg/kg dw	0.00252
Marine water	0.000301 mg/l	0.000381
Marine sediment	0.00115 mg/kg dw	0.000397
Soil	0.00115 mg/kg dw	0.00183
STP: Sewage Treatment Plant	0.0000865 mg/l	0.000000149

Derived No Effect Level (DNEL):

Worker - dermal, long-term - systemic	343 mg/kg/bw/d
Worker - inhalative, long-term - local	1900 mg/m ³
Worker - inhalative, long-term - systemic	950 mg/m ³
Consumer - oral, long-term - systemic	87 mg/kg/bw/d
Consumer - dermal, long-term - systemic	206 mg/kg/bw/d
Consumer - inhalative, long-term - systemic	114 mg/m ³

Calculation method

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

Product category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PC9a - Coatings and paints, thinners, paint removers	Consumer - inhalative	70.2 mg/m ³	0.615

PC9a - Coatings and paints, thinners, paint removers	Consumer - dermal, long-term - systemic	0.563 mg/kg/d	0.00003
PC9a - Coatings and paints, thinners, paint removers	Consumer - inhalative	61.7 mg/m ³	0.541
PC9a - Coatings and paints, thinners, paint removers	Consumer - dermal, long-term - systemic	5.63 mg/kg/d	0.000437
PC9a - Coatings and paints, thinners, paint removers	Consumer - inhalative	18.5 mg/m ³	0.162
PC9a - Coatings and paints, thinners, paint removers	Consumer - dermal, long-term - systemic	6.69 mg/kg/d	0.000162
PC9a - Coatings and paints, thinners, paint removers	Consumer - inhalative	81.6 mg/m ³	0.715
PC9a - Coatings and paints, thinners, paint removers	Consumer - dermal, long-term - systemic	22.5 mg/kg/d	0.000898
PC9b - Fillers, putties, plasters, modelling clay	Consumer - inhalative	5.36 mg/m ³	0.047
PC9b - Fillers, putties, plasters, modelling clay	Consumer - dermal, long-term - systemic	0.0939 mg/kg/d	0.0000149
PC9b - Fillers, putties, plasters, modelling clay	Consumer - inhalative	68.7 mg/m ³	0.603
PC9b - Fillers, putties, plasters, modelling clay	Consumer - dermal, long-term - systemic	2.25 mg/kg/d	0.000359
PC9b - Fillers, putties, plasters, modelling clay	Consumer - inhalative	2.42 mg/m ³	0.0212
PC9b - Fillers, putties, plasters, modelling clay	Consumer - dermal, long-term - systemic	2 mg/kg/d	0.0097
PC9c - Finger paints	Consumer - inhalative	25.4 mg/m ³	0.222
PC9c - Finger paints	Consumer - dermal, long-term - systemic	10 mg/kg/d	0.0485

Section 4 - Guidance to check compliance with the exposure scenario

Predicted exposures are not expected to exceed the applicable consumer reference values when the operational conditions/risk management measures given 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. Risk management measures are based on qualitative risk characterization.

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name Ethanol
Pure substance/mixture Substance
REACH registration number 01-2119457610-43-XXXX
CAS No 64-17-5
EC No (EU Index No) 200-578-6
Supplier Univar Solutions UK Ltd
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 GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

Section 1 - Title

Title Consumer use Anti-freeze and de-icing products
Type Consumer
Main user group Consumer uses: Private households (= general public = consumers)
Environmental release category(ies) ERC8d - Wide dispersive outdoor use of processing aids in open systems
Specific Environmental Release Category ESVOC SpERC 8.14b.v1
Product category(ies) PC4 - Anti-freeze and de-icing products
Sector(s) of use SU21 - Consumer uses

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC8d - Wide dispersive outdoor use of processing aids in open systems

Specific Environmental Release Category - ESVOC SpERC 8.14b.v1

Amounts used

Type	Annual amount for wide dispersive uses
Value	40000
Units	t(ons)/year

Type	Fraction of EU tonnage used in region
Value	10 %

Type	Fraction of regional tonnage used locally
Value	0.2 %

Product characteristics

Remarks	Miscible with water Not likely to bioaccumulate Readily biodegradable
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Other operational conditions of use affecting environmental exposure

Type	Continuous use/release
Emission days	365
Release fraction to air from wide dispersive use (regional only)	90 %, 197 kg/d
Release fraction to wastewater from wide dispersive use	5 %, 10.9 kg/d
Release fraction to soil from wide	5 %

dispersive use (regional only)	
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Environmental factors not influenced by risk management

Local freshwater dilution factor	10
Local marine water dilution factor	100

Conditions and measures related to external treatment of waste for disposal

Disposal	Dispose of waste cans and containers according to local regulations
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Control of consumer exposure

Product categories [PC]	PC4 - Anti-freeze and de-icing products
Product (sub) category(ies)	Washing car window
Covers concentrations up to	1 %
Physical form of product	Liquid
Vapour pressure	5726 Pa
Amounts used	0.5 g/event
Exposure duration	0.17 hr/event
Use frequency	1 events per day
Risk management measures	Avoid contact with eyes
Indoor/Outdoor use	Indoor
Use in room with a volume of minimum	34 m3
Operational conditions	Covers use at ambient temperatures Covers use under typical household ventilation.

Product categories [PC]	PC4 - Anti-freeze and de-icing products
Product (sub) category(ies)	Pouring into radiator
Covers concentrations up to	80%
Physical form of product	Liquid
Vapour pressure	5726 Pa
Amounts used	2000 g/event
Exposure duration	0.1 hr/event
Use frequency	1 events per day
Risk management measures	Avoid contact with eyes
Covers skin contact area up to	428 cm2
Indoor/Outdoor use	Indoor
Use in room with a volume of minimum	34 m3
Operational conditions	Covers use at ambient temperatures Covers use under typical household ventilation.

Product categories [PC]	PC4 - Anti-freeze and de-icing products
Product (sub) category(ies)	Lock de-icer
Covers concentrations up to	50%
Physical form of product	Liquid
Vapour pressure	5726 Pa
Amounts used	4 g/event
Exposure duration	0.25 hr/event
Use frequency	1 events per day
Risk management measures	Avoid contact with eyes
Covers skin contact area up to	214 cm2
Indoor/Outdoor use	Indoor
Use in room with a volume of minimum	34 m3
Operational conditions	Covers use at ambient temperatures Covers use under typical household ventilation.

Section 3 - Exposure estimation

Environmental release category(ies) - ERC8d - Wide dispersive outdoor use of processing aids in open systems
Specific Environmental Release Category - ESVOC SpERC 8.14b.v1

Predicted No Effect Concentration (PNEC)

Freshwater	0.96 mg/l
Freshwater sediment	3.6 mg/kg
Marine water	0.79 mg/l
Marine sediment	2.9 mg/kg
Soil	0.63 mg/kg
Impact on Sewage Treatment	580 mg/kl

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.0159 mg/l	0.0166
Freshwater sediment	0.061 mg/kg dw	0.0169
Marine water	0.00175 mg/l	0.00222
Marine sediment	0.00674 mg/kg dw	0.00232
Soil	0.00349 mg/kg dw	0.00554
STP: Sewage Treatment Plant	0.0692 mg/l	0

Derived No Effect Level (DNEL):

Worker - dermal, long-term - systemic	343 mg/kg/bw/d
Worker - inhalative, long-term - local	1900 mg/m ³
Worker - inhalative, long-term - systemic	950 mg/m ³
Consumer - oral, long-term - systemic	87 mg/kg/bw/d
Consumer - dermal, long-term - systemic	206 mg/kg/bw/d
Consumer - inhalative, long-term - systemic	114 mg/m ³

Calculation method

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

Product category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PC4 - Anti-freeze and de-icing products	Consumer - inhalative	0.000102 mg/m ³	0.000000894
PC4 - Anti-freeze and de-icing products	Consumer - dermal, long-term - systemic	0 mg/kg/d	0
PC4 - Anti-freeze and de-icing products	Consumer - inhalative	3.06 mg/m ³	0.0268
PC4 - Anti-freeze and de-icing products	Consumer - dermal, long-term - systemic	45 mg/kg/d	0.218
PC4 - Anti-freeze and de-icing products	Consumer - inhalative	0.51 mg/m ³	0.00447
PC4 - Anti-freeze and de-icing products	Consumer - dermal, long-term - systemic	14 mg/kg/d	0.0679

Section 4 - Guidance to check compliance with the exposure scenario

Predicted exposures are not expected to exceed the applicable consumer reference values when the operational conditions/risk management measures given 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. Risk management measures are based on qualitative risk characterization.

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name Ethanol
Pure substance/mixture Substance
REACH registration number 01-2119457610-43-XXXX
CAS No 64-17-5
EC No (EU Index No) 200-578-6
Supplier Univar Solutions UK Ltd
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Section 1 - Title

Title Consumer Use in cleaning agents
Type Consumer
Main user group Consumer uses: Private households (= general public = consumers)
Environmental release category(ies) ERC8a - Wide dispersive indoor use of processing aids in open systems ERC8d - Wide dispersive outdoor use of processing aids in open systems
Specific Environmental Release Category ESVOC SpERC 8.4c.v1
Product category(ies) PC35 - Washing and cleaning products (including solvent based products)
Sector(s) of use SU21 - Consumer uses

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC8a - Wide dispersive indoor use of processing aids in open systems
 - ERC8d - Wide dispersive outdoor use of processing aids in open systems
Specific Environmental Release Category - ESVOC SpERC 8.4c.v1

Amounts used

Type	Annual amount for wide dispersive uses
Value	10000
Units	t(ons)/year

Type	Fraction of EU tonnage used in region
Value	10 %

Type	Fraction of regional tonnage used locally
Value	0.05 %

Product characteristics

Remarks	Miscible with water Not likely to bioaccumulate Readily biodegradable
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Other operational conditions of use affecting environmental exposure

Type	Continuous use/release
Emission days	365
Release fraction to air from wide dispersive use (regional only)	95 %, 13 kg/d
Release fraction to wastewater from	2.5 %, 0.342 kg/d

wide dispersive use	
Release fraction to soil from wide dispersive use (regional only)	2.5 %

Conditions and measures related to municipal sewage treatment plant

Type	Municipal STP
Assumed domestic sewage treatment plant flow	2000 m3/d
Removal efficiency fraction (offsite; STP)	87 %

Environmental factors not influenced by risk management

Local freshwater dilution factor	10
Local marine water dilution factor	100

Conditions and measures related to external treatment of waste for disposal

Disposal	Dispose of waste cans and containers according to local regulations
Waste treatment methods	Landfill

Control of consumer exposure

Product categories [PC]	PC35 - Washing and cleaning products (including solvent based products)
Product (sub) category(ies)	Laundry and dish washing products
Covers concentrations up to	5 %
Physical form of product	Liquid
Vapour pressure	5726 Pa
Amounts used	15 g/event
Exposure duration	0.5 hr/event
Use frequency	1 events per day
Risk management measures	Avoid contact with eyes
Covers skin contact area up to	857 cm2
Indoor/Outdoor use	Indoor
Use in room with a volume of minimum	20 m3
Operational conditions	Covers use at ambient temperatures Covers use under typical household ventilation.

Product categories [PC]	PC35 - Washing and cleaning products (including solvent based products)
Product (sub) category(ies)	Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners)
Covers concentrations up to	5 %
Physical form of product	Liquid
Vapour pressure	5726 Pa
Amounts used	27 g/event
Exposure duration	0.33 hr/event
Use frequency	125 days per year
Risk management measures	Avoid contact with eyes
Covers skin contact area up to	857 cm2
Indoor/Outdoor use	Indoor
Use in room with a volume of minimum	20 m3
Operational conditions	Covers use at ambient temperatures Covers use under typical household ventilation.

Product categories [PC]	PC35 - Washing and cleaning products (including solvent based products)
Product (sub) category(ies)	Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)
Covers concentrations up to	15 %
Physical form of product	Liquid
Vapour pressure	5726 Pa

Amounts used	35 g/event
Exposure duration	0.17 hr/event
Use frequency	125 days per year
Risk management measures	Avoid contact with eyes
Covers skin contact area up to	428 cm2
Indoor/Outdoor use	Indoor
Use in room with a volume of minimum	20 m3
Operational conditions	Covers use at ambient temperatures Covers use under typical household ventilation.

Section 3 - Exposure estimation

Environmental release category(ies) - ERC8a - Wide dispersive indoor use of processing aids in open systems
- ERC8d - Wide dispersive outdoor use of processing aids in open systems
Specific Environmental Release Category - ESVOC SpERC 8.4c.v1

Predicted No Effect Concentration (PNEC)

Freshwater	0.96 mg/l
Freshwater sediment	3.6 mg/kg
Marine water	0.79 mg/l
Marine sediment	2.9 mg/kg
Soil	0.63 mg/kg
Impact on Sewage Treatment	580 mg/kl

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.00923 mg/l	0.00961
Freshwater sediment	0.0353 mg/kg dw	0.00981
Marine water	0.00108 mg/l	0.00137
Marine sediment	0.00417 mg/kg dw	0.00144
Soil	0.00321 mg/kg dw	0.00510
STP: Sewage Treatment Plant	0.00216 mg/l	0.00000372

Derived No Effect Level (DNEL):

Worker - dermal, long-term - systemic	343 mg/kg/bw/d
Worker - inhalative, long-term - local	1900 mg/m ³
Worker - inhalative, long-term - systemic	950 mg/m ³
Consumer - oral, long-term - systemic	87 mg/kg/bw/d
Consumer - dermal, long-term - systemic	206 mg/kg/bw/d
Consumer - inhalative, long-term - systemic	114 mg/m ³

Calculation method

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

Product category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PC35 - Washing and cleaning products (including solvent based products)	Consumer - inhalative	0.672 mg/m ³	0.00589
PC35 - Washing and cleaning products (including solvent based products)	Consumer - dermal, long-term - systemic	0.0563 mg/kg/d	0.000273
PC35 - Washing and cleaning products (including solvent based products)	Consumer - inhalative	0.841 mg/m ³	0.00737
PC35 - Washing and cleaning products (including solvent based products)	Consumer - dermal, long-term - systemic	5.63 mg/kg/d	0.00956

PC35 - Washing and cleaning products (including solvent based products)	Consumer - inhalative	1.77 mg/m ³	0.0155
PC35 - Washing and cleaning products (including solvent based products)	Consumer - dermal, long-term - systemic	8.43 mg/kg/d	0.0143

Section 4 - Guidance to check compliance with the exposure scenario

Predicted exposures are not expected to exceed the applicable consumer reference values when the operational conditions/risk management measures given 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. Risk management measures are based on qualitative risk characterization.

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name Ethanol
Pure substance/mixture Substance
REACH registration number 01-2119457610-43-XXXX
CAS No 64-17-5
EC No (EU Index No) 200-578-6
Supplier Univar Solutions UK Ltd
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Section 1 - Title

Title Consumer use Cosmetics, personal care products
Type Consumer
Main user group Consumer uses: Private households (= general public = consumers)
Environmental release category(ies) ERC8a - Wide dispersive indoor use of processing aids in open systems
Specific Environmental Release Category COLIPA SPERC 8a.1.b.v1
Product category(ies) PC28 - Perfumes, fragrances PC35 - Washing and cleaning products (including solvent based products)
Sector(s) of use SU21 - Consumer uses

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC8a - Wide dispersive indoor use of processing aids in open systems
Specific Environmental Release Category - COLIPA SPERC 8a.1.b.v1

Amounts used

Type	Annual amount per site
Value	60000
Units	t(ons)/year

Type	Fraction of EU tonnage used in region
Value	10 %

Type	Fraction of regional tonnage used locally
Value	0.05 %

Product characteristics

Remarks	Miscible with water Not likely to bioaccumulate Readily biodegradable
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Other operational conditions of use affecting environmental exposure

Type	Continuous use/release
Emission days	365
Release fraction to air from wide dispersive use (regional only)	100%, 82.1 kg/d
Release fraction to wastewater from wide dispersive use	0%, 0 kg/d

Release fraction to soil from wide dispersive use (regional only)	0%
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Environmental factors not influenced by risk management

Local freshwater dilution factor	10
Local marine water dilution factor	100

Conditions and measures related to external treatment of waste for disposal

Disposal	Dispose of waste cans and containers according to local regulations
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Section 3 - Exposure estimation

Environmental release category(ies) - ERC8a - Wide dispersive indoor use of processing aids in open systems

Specific Environmental Release Category - COLIPA SPERC 8a.1.b.v1

Predicted No Effect Concentration (PNEC)

Freshwater	0.96 mg/l
Freshwater sediment	3.6 mg/kg
Marine water	0.79 mg/l
Marine sediment	2.9 mg/kg
Soil	0.63 mg/kg
Impact on Sewage Treatment	580 mg/kl

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.00901 mg/l	0.00939
Freshwater sediment	0.0345 mg/kg dw	0.00958
Marine water	0.00106 mg/l	0.00134
Marine sediment	0.00408 mg/kg dw	0.00141
Soil	0.00321 mg/kg dw	0.00510

Derived No Effect Level (DNEL):

Worker - dermal, long-term - systemic	343 mg/kg/bw/d
Worker - inhalative, long-term - local	1900 mg/m ³
Worker - inhalative, long-term - systemic	950 mg/m ³
Consumer - oral, long-term - systemic	87 mg/kg/bw/d
Consumer - dermal, long-term - systemic	206 mg/kg/bw/d
Consumer - inhalative, long-term - systemic	114 mg/m ³

Calculation method Not applicable

Section 4 - Guidance to check compliance with the exposure scenario

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

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Section 1 - Title

Title Disposal of wastes Hazardous waste incineration
Type Worker
Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites
Environmental release category(ies) ERC7 - Industrial use of substances in closed systems ERC1 - Manufacture of substances
Process category(ies) 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)
 PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
 PROC15 - Use as laboratory reagent
Sector(s) of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC7 - Industrial use of substances in closed systems
 - ERC1 - Manufacture of substances

Amounts used

Type	Annual amount per site
Value	20000
Units	t(ons)/year

Type	Fraction of EU tonnage used in region
Value	100%

Type	Fraction of regional tonnage used locally
Value	100%

Product characteristics

Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Miscible with water Not likely to bioaccumulate Readily biodegradable

Other operational conditions of use affecting environmental exposure

Type	Continuous use/release
Emission days	330
Release fraction to air from wide dispersive use (regional only)	0.01 %
Release fraction to wastewater from wide dispersive use	0.02 %
Release fraction to soil from wide dispersive use (regional only)	0 %

Conditions and measures related to municipal sewage treatment plant

Type	Onsite STP
Assumed on-site sewage treatment plant flow	2000 m3/d
Removal efficiency fraction (onsite)	87%

Environmental factors not influenced by risk management

Local freshwater dilution factor	10
Local marine water dilution factor	100

Risk management measures

Technical onsite conditions and measures to reduce or limit discharges, air emissions	Onsite wastewater treatment required Bund storage facilities to prevent soil and water pollution in the event of spillage Prevent environmental discharge consistent with regulatory requirements Site should have a spill plan to ensure that adequate safeguards are in place to minimise the impact of episodic releases
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Control measures to prevent releases

Water	Ensure all waste water is collected and treated via a WWTP Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of 87%
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Control of worker exposure

Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 °C

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Remarks	350 Emission days Continuous release
Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond	Avoid splashing

the REACH Chemical Safety Report	
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 'C

Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation)
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 'C

Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 'C

Process category(ies)	PROC15 - Use as laboratory reagent
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 'C

Section 3 - Exposure estimation

Environmental release category(ies) - ERC7 - Industrial use of substances in closed systems
- ERC1 - Manufacture of substances

Predicted No Effect Concentration (PNEC)

Freshwater	0.96 mg/l
Freshwater sediment	3.6 mg/kg
Marine water	0.79 mg/l
Marine sediment	2.9 mg/kg
Soil	0.63 mg/kg
Impact on Sewage Treatment	580 mg/kl

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.0786 mg/l	0.0819
Freshwater sediment	0.301 mg/kg dw	0.0836
Marine water	0.00872 mg/l	0.0110
Marine sediment	0.0334 mg/kg dw	0.0115
Soil	0.00338 mg/kg dw	0.00537
STP: Sewage Treatment Plant	0.766 mg/l	0.00132

Derived No Effect Level (DNEL):

Worker - dermal, long-term - systemic	343 mg/kg/bw/d
Worker - inhalative, long-term - local	1900 mg/m ³
Worker - inhalative, long-term - systemic	950 mg/m ³
Consumer - oral, long-term - systemic	87 mg/kg/bw/d
Consumer - dermal, long-term - systemic	206 mg/kg/bw/d
Consumer - inhalative, long-term - systemic	114 mg/m ³

Calculation method

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

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC1 - Use in closed process, no likelihood of exposure	Worker - inhalative, long-term - systemic	0.019 mg/m ³	<0.001
PROC1 - Use in closed process, no likelihood of exposure	Worker - dermal, long-term - systemic	0.03 mg/kg/d	<0.001
PROC1 - Use in closed process, no likelihood of exposure	Worker - combined, long-term - systemic		<0.001
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	9.6 mg/m ³	0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	1.4 mg/kg/d	0.004
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		0.0141
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - inhalative, long-term - systemic	19 mg/m ³	0.02
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - dermal, long-term - systemic	0.69 mg/kg/d	0.002

PROC3 - Use in closed batch process (synthesis or formulation)	Worker - combined, long-term - systemic		0.0222
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - inhalative, long-term - systemic	48 mg/m ³	0.05
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - dermal, long-term - systemic	14 mg/kg/d	0.04
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - combined, long-term - systemic		0.0906
PROC15 - Use as laboratory reagent	Worker - inhalative, long-term - systemic	19 mg/m ³	0.02
PROC15 - Use as laboratory reagent	Worker - dermal, long-term - systemic	0.34 mg/kg/d	<0.001
PROC15 - Use as laboratory reagent	Worker - combined, long-term - systemic		0.0212

Section 4 - Guidance to check compliance with the exposure scenario

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

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Section 1 - Title

Title Disposal of wastes Landfill
Type Worker
Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites
Environmental release category(ies) ERC8d - Wide dispersive outdoor use of processing aids in open systems
Process category(ies) 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
Sector(s) of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC8d - Wide dispersive outdoor use of processing aids in open systems

Amounts used

Type	Annual amount for wide dispersive uses
Value	10000
Units	t(ons)/year

Type	Fraction of EU tonnage used in region
Value	10%

Type	Fraction of regional tonnage used locally
Value	5%

Product characteristics

Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Miscible with water Not likely to bioaccumulate Readily biodegradable

Other operational conditions of use affecting environmental exposure

Type	Continuous use/release
Emission days	330
Release fraction to air from wide dispersive use (regional only)	0.05 %
Release fraction to wastewater from wide dispersive use	3.2 %
Release fraction to soil from wide dispersive use (regional only)	0.16 %

Conditions and measures related to municipal sewage treatment plant

Type	Onsite STP
Assumed on-site sewage treatment plant flow	2000 m3/d
Removal efficiency fraction (onsite)	87%

Environmental factors not influenced by risk management

Local freshwater dilution factor	10
Local marine water dilution factor	100

Risk management measures

Technical onsite conditions and measures to reduce or limit discharges, air emissions	Prevent environmental discharge consistent with regulatory requirements
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Control of worker exposure

Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 'C

Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation)
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 'C

Process category(ies)	PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Remarks	350 Emission days Continuous release
Technical conditions and measures to	Use in closed, continuous process with occasional controlled exposure

control dispersion from source towards the worker	
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 'C

Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 'C

Section 3 - Exposure estimation

Environmental release category(ies) - ERC8d - Wide dispersive outdoor use of processing aids in open systems

Predicted No Effect Concentration (PNEC)

Freshwater	0.96 mg/l
Freshwater sediment	3.6 mg/kg
Marine water	0.79 mg/l
Marine sediment	2.9 mg/kg
Soil	0.63 mg/kg
Impact on Sewage Treatment	580 mg/kl

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.0309 mg/l	0.0322
Freshwater sediment	0.119 mg/kg dw	0.0331
Marine water	0.00326 mg/l	0.00413
Marine sediment	0.0125 mg/kg dw	0.00431
Soil	0.00321 mg/kg dw	0.0051
STP: Sewage Treatment Plant	0.219 mg/l	0.000378

Derived No Effect Level (DNEL):

Worker - dermal, long-term - systemic	343 mg/kg/bw/d
Worker - inhalative, long-term - local	1900 mg/m ³
Worker - inhalative, long-term - systemic	950 mg/m ³
Consumer - oral, long-term - systemic	87 mg/kg/bw/d
Consumer - dermal, long-term - systemic	206 mg/kg/bw/d
Consumer - inhalative, long-term - systemic	114 mg/m ³

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

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC1 - Use in closed process, no likelihood of exposure	Worker - inhalative, long-term - systemic	0.019 mg/m ³	<0.001
PROC1 - Use in closed process, no likelihood of exposure	Worker - dermal, long-term - systemic	0.03 mg/kg/d	<0.001
PROC1 - Use in closed process, no likelihood of exposure	Worker - combined, long-term - systemic		<0.001
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - inhalative, long-term - systemic	48 mg/m ³	0.05
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - dermal, long-term - systemic	0.69 mg/kg/d	0.002
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - combined, long-term - systemic		0.0524
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - inhalative, long-term - systemic	96 mg/m ³	0.101
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - dermal, long-term - systemic	6.9 mg/kg/d	0.02
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - combined, long-term - systemic		0.121
PROC15 - Use as laboratory reagent	Worker - inhalative, long-term - systemic	19 mg/m ³	0.02
PROC15 - Use as laboratory reagent	Worker - dermal, long-term - systemic	0.34 mg/kg/d	<0.001
PROC15 - Use as laboratory reagent	Worker - combined, long-term - systemic		0.0212
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - inhalative, long-term - systemic	190 mg/m ³	0.202
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - dermal, long-term - systemic	14 mg/kg/d	0.04
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - combined, long-term - systemic		0.242

Section 4 - Guidance to check compliance with the exposure scenario

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

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Section 1 - Title

Title Disposal of wastes Distillation of used process solvent
Type Worker
Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites
Environmental release category(ies) ERC1 - Manufacture of substances
Process category(ies) 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)
 PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
 PROC15 - Use as laboratory reagent
Sector(s) of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC1 - Manufacture of substances

Amounts used

Type	Annual amount per site
Value	15000
Units	t(ons)/year

Type	Fraction of EU tonnage used in region
Value	100%

Type	Fraction of regional tonnage used locally
Value	80%

Product characteristics

Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Miscible with water Not likely to bioaccumulate Readily biodegradable

Other operational conditions of use affecting environmental exposure

Type	Continuous use/release
Emission days	220
Release fraction to air from wide dispersive use (regional only)	0.7 %
Release fraction to wastewater from wide dispersive use	0%
Release fraction to soil from wide dispersive use (regional only)	0 %

Environmental factors not influenced by risk management

Local freshwater dilution factor	10
Local marine water dilution factor	100

Risk management measures

Technical onsite conditions and measures to reduce or limit discharges, air emissions	Onsite wastewater treatment required Bund storage facilities to prevent soil and water pollution in the event of spillage Prevent environmental discharge consistent with regulatory requirements Site should have a spill plan to ensure that adequate safeguards are in place to minimise the impact of episodic releases
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Control measures to prevent releases

Water	Not applicable as there is no release to wastewater
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Control of worker exposure

Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 'C

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Remarks	350 Emission days Continuous release
Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 'C

Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation)
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Use in closed, continuous process with occasional controlled exposure

control dispersion from source towards the worker	
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 'C

Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 'C

Process category(ies)	PROC15 - Use as laboratory reagent
Covers concentrations up to	25% - 100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure
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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Avoid splashing
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 'C

Section 3 - Exposure estimation

Environmental release category(ies) - ERC1 - Manufacture of substances

Predicted No Effect Concentration

(PNEC)

Freshwater	0.96 mg/l
Freshwater sediment	3.6 mg/kg
Marine water	0.79 mg/l
Marine sediment	2.9 mg/kg
Soil	0.63 mg/kg
Impact on Sewage Treatment	580 mg/kl

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.00901 mg/l	0.00939
Freshwater sediment	0.0345 mg/kg dw	0.00958
Marine water	0.00107 mg/l	0.00135
Marine sediment	0.00409 mg/kg dw	0.00141
Soil	0.0103 mg/kg dw	0.0163

Derived No Effect Level (DNEL):

Worker - dermal, long-term - systemic	343 mg/kg/bw/d
Worker - inhalative, long-term - local	1900 mg/m ³
Worker - inhalative, long-term - systemic	950 mg/m ³
Consumer - oral, long-term - systemic	87 mg/kg/bw/d
Consumer - dermal, long-term - systemic	206 mg/kg/bw/d
Consumer - inhalative, long-term - systemic	114 mg/m ³

Calculation method

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

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC1 - Use in closed process, no likelihood of exposure	Worker - inhalative, long-term - systemic	0.019 mg/m ³	<0.001
PROC1 - Use in closed process, no likelihood of exposure	Worker - dermal, long-term - systemic	0.03 mg/kg/d	<0.001
PROC1 - Use in closed process, no likelihood of exposure	Worker - combined, long-term - systemic		<0.001
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	9.6 mg/m ³	0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	1.4 mg/kg/d	0.004
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		0.0141
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - inhalative, long-term - systemic	19 mg/m ³	0.02
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - dermal, long-term - systemic	0.69 mg/kg/d	0.002
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - combined, long-term - systemic		0.0222
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - inhalative, long-term - systemic	48 mg/m ³	0.05
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - dermal, long-term - systemic	14 mg/kg/d	0.04
PROC8b - Transfer of substance or	Worker - combined, long-term		0.0906

preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	- systemic		
PROC15 - Use as laboratory reagent	Worker - inhalative, long-term - systemic	19 mg/m ³	0.02
PROC15 - Use as laboratory reagent	Worker - dermal, long-term - systemic	0.34 mg/kg/d	<0.001
PROC15 - Use as laboratory reagent	Worker - combined, long-term - systemic		0.0212

Section 4 - Guidance to check compliance with the exposure scenario