SAFETY DATA SHEET
ETHANOL

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

1.1. Product identifier

Product name ETHANOL

Product number 459

Synonyms; trade names 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 99.9% S 125, 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, RECYCLED ALCOHOL, 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

REACH registration number 01-2119457610-43-XXXX

CAS number 64-17-5

EU index number 603-002-00-5

EC number 200-578-6

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

Identified uses Lab Reagent Chemical Intermediate Cleaning agent. Surface coating Additive for Agrochemicals Deicing Fuel additive. For further information, see attached Exposure Scenario.

1.3. Details of the supplier of the safety data sheet

Supplier

Univar
Aquarius House
6 Mid Point Business Park
Bradford
BD3 7AY
+44 1274 267300
+44 1274 267306
sds@univar.com

1.4. Emergency telephone number

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

Sds No. 459

SECTION 2: Hazards identification

ETHANOL

2.1. Classification of the substance or mixture

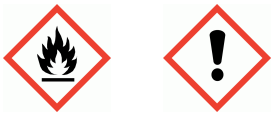
Classification (EC 1272/2008)

Physical hazards	Flam. Liq. 2 - H225
Health hazards	Eye Irrit. 2 - H319
Environmental hazards	Not Classified

2.2. Label elements

EC number 200-578-6

Pictogram



Signal word	Danger
Hazard statements	H225 Highly flammable liquid and vapour. H319 Causes serious eye irritation.
Precautionary statements	P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. P280 Wear protective gloves/ protective clothing/ eye protection/ face protection. P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P501 Dispose of contents/ container in accordance with national regulations.

2.3. Other hazards

This product does not contain any substances classified as PBT or vPvB.

SECTION 3: Composition/information on ingredients

3.1. Substances

Product name	ETHANOL
REACH registration number	01-2119457610-43-XXXX
EU index number	603-002-00-5
CAS number	64-17-5
EC number	200-578-6
Composition comments	The data shown are in accordance with the latest EC Directives.

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation	Move affected person to fresh air at once. Get medical attention.
Ingestion	Never give anything by mouth to an unconscious person. Do not induce vomiting. Do not induce vomiting. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention.
Skin contact	Remove contaminated clothing immediately and wash skin with soap and water. Get medical attention if any discomfort continues.
Eye contact	Rinse immediately with plenty of water. Remove any contact lenses and open eyelids wide apart. Continue to rinse for at least 15 minutes and get medical attention.

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

Inhalation Upper respiratory irritation. Vapours may cause headache, fatigue, dizziness and nausea.

Ingestion May cause discomfort if swallowed. May cause nausea, headache, dizziness and intoxication.

Skin contact Prolonged or repeated contact with skin may cause irritation, redness and dermatitis.

Eye contact May cause severe eye irritation. Prolonged contact may cause redness and/or tearing.

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

Notes for the doctor No specific recommendations. If in doubt, get medical attention promptly.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media Extinguish with alcohol-resistant foam, carbon dioxide, dry powder or water fog.

Unsuitable extinguishing media Do not use water jet as an extinguisher, as this will spread the fire.

5.2. Special hazards arising from the substance or mixture

Specific hazards The product is highly flammable. Vapours may form explosive mixtures with air.

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

5.3. Advice for firefighters

Special protective equipment for firefighters Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions Follow precautions for safe handling described in this safety data sheet. Provide adequate ventilation. Avoid inhalation of vapours and contact with skin and eyes. No smoking, sparks, flames or other sources of ignition near spillage. Take precautionary measures against static discharges.

6.2. Environmental precautions

Environmental precautions Spillages or uncontrolled discharges into watercourses must be reported immediately to the Environmental Agency or other appropriate regulatory body.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up Absorb spillage with non-combustible, absorbent material. Collect and place in suitable waste disposal containers and seal securely. Use only non-sparking tools. Use explosion-proof electrical equipment. For waste disposal, see Section 13.

6.4. Reference to other sections

Reference to other sections Wear protective clothing as described in Section 8 of this safety data sheet.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Usage precautions Avoid inhalation of vapours and contact with skin and eyes. Avoid heat, flames and other sources of ignition. Take precautionary measures against static discharge. Provide adequate ventilation. Use only non-sparking tools. Use explosion-proof electrical equipment.

7.2. Conditions for safe storage, including any incompatibilities

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Storage precautions Keep away from heat, sparks and open flame. Store in tightly-closed, original container in a dry, cool and well-ventilated place. Use containers made of the following materials: Stainless steel. Glass. Avoid contact with the following materials: Strong oxidising agents. Strong acids.

7.3. Specific end use(s)

Specific end use(s) The identified uses for this product are detailed in Section 1.2.

SECTION 8: Exposure Controls/personal protection

8.1. Control parameters

Occupational exposure limits

Long-term exposure limit (8-hour TWA): WEL 1000 ppm 1920 mg/m³

WEL = Workplace Exposure Limit

Ingredient comments WEL = Workplace Exposure Limits

DNEL

Workers - Inhalation; Long term systemic effects: 950 mg/m³
Workers - Inhalation; Short term local effects: 1900 mg/m³
Workers - Dermal; Long term systemic effects: 343 mg/kg/day
General population - Inhalation; Long term systemic effects: 114 mg/m³
General population - Inhalation; Short term local effects: 950 mg/m³
General population - Dermal; Long term systemic effects: 206 mg/kg/day
General population - Oral; Long term systemic effects: 87 mg/kg/day

PNEC

- Fresh water; 0.96 mg/l
- Marine water; 0.79 mg/l
- Intermittent release; 2.75 mg/l
- STP; 580 mg/l
- Sediment (Freshwater); 3.6 mg/kg
- Sediment (Marinewater); 2.9 mg/kg
- Soil; 0.63 mg/kg

8.2. Exposure controls

Protective equipment

Appropriate engineering controls Observe any occupational exposure limits for the product or ingredients. Provide adequate ventilation.

Eye/face protection Eyewear complying with an approved standard should be worn if a risk assessment indicates eye contact is possible. Unless the assessment indicates a higher degree of protection is required, the following protection should be worn: Wear chemical splash goggles. EN 166

Hand protection The most suitable glove should be chosen in consultation with the glove supplier/manufacturer, who can provide information about the breakthrough time of the glove material. It is recommended that gloves are made of the following material: Butyl rubber. Protective gloves should have a minimum thickness of 0.7 mm. The selected gloves should have a breakthrough time of at least 8 hours. To protect hands from chemicals, gloves should comply with European Standard EN374.

Other skin and body protection Wear appropriate clothing to prevent any possibility of liquid contact and repeated or prolonged vapour contact.

Hygiene measures Wash at the end of each work shift and before eating, smoking and using the toilet. When using do not eat, drink or smoke. Take off immediately all contaminated clothing and wash it before reuse.

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Respiratory protection	Respiratory protection must be used if the airborne contamination exceeds the recommended occupational exposure limit. EN 136/140/141/145/143/149

SECTION 9: Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Appearance	Clear liquid.
Colour	Colourless.
Odour	Alcoholic.
Odour threshold	No information available.
pH	No information available.
Melting point	-114°C
Initial boiling point and range	78.4°C @ 760 mm Hg
Flash point	12°C Closed cup.
Evaporation rate	3.1
Evaporation factor	No information available.
Flammability (solid, gas)	No information available.
Upper/lower flammability or explosive limits	Lower flammable/explosive limit: 3.5 % Upper flammable/explosive limit: 19 %
Other flammability	No information available.
Vapour pressure	5.81 kPa
Vapour density	1.59
Relative density	0.79 - 0.81 @ 20°C
Bulk density	No information available.
Solubility(ies)	Soluble in water.
Partition coefficient	: - 0.31
Auto-ignition temperature	425°C
Decomposition Temperature	No information available.
Viscosity	1.2 mPa s @ 20°C
Explosive properties	No information available.
Explosive under the influence of a flame	No information available.
Oxidising properties	No information available.

9.2. Other information

Refractive index	1.3614
Particle size	No information available.
Molecular weight	46.07
Volatility	100
Saturation concentration	No information available.

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Critical temperature	No information available.
Volatile organic compound	This product contains a maximum VOC content of 100% .

SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity	The following materials may react with the product: Oxidising materials. Acids.

10.2. Chemical stability

Stability	Stable at normal ambient temperatures and when used as recommended.

10.3. Possibility of hazardous reactions

Possibility of hazardous reactions	The product is highly flammable. The following materials may react violently with the product: Strong oxidising agents.

10.4. Conditions to avoid

Conditions to avoid	Avoid heat, flames and other sources of ignition. Static electricity and formation of sparks must be prevented.

10.5. Incompatible materials

Materials to avoid	Strong oxidising agents. Strong acids.

10.6. Hazardous decomposition products

Hazardous decomposition products	Oxides of the following substances: Carbon.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity - oral

Acute toxicity oral (LD_{50} mg/kg)	10,470.0
Species	Rat
Notes (oral LD_{50})	LD_{50} 10470 mg/kg, Oral, Rat

Acute toxicity - dermal

Acute toxicity dermal (LD_{50} mg/kg)	15,800.0
Species	Rat
Notes (dermal LD_{50})	LD_{50} 15800 mg/kg, Dermal, Rat

Acute toxicity - inhalation

Acute toxicity inhalation (LC_{50} vapours mg/l)	20.0
Species	Rat
Notes (inhalation LC_{50})	LC_{50} 20 mg/l, Inhalation, Vapour, Rat
ATE inhalation (vapours mg/l)	20.0

Skin corrosion/irritation

Animal data	Not irritating. Rabbit OECD 404

Serious eye damage/irritation

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Serious eye damage/irritation Irritating. Rabbit OECD 405

Respiratory sensitisation

Respiratory sensitisation Not sensitising.

Skin sensitisation

Skin sensitisation Not sensitising. Mouse OECD 429

Germ cell mutagenicity

Genotoxicity - in vitro Based on available data the classification criteria are not met.

Carcinogenicity

Carcinogenicity Based on available data the classification criteria are not met.

Reproductive toxicity

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

Specific target organ toxicity - single exposure

STOT - single exposure No information available.

Specific target organ toxicity - repeated exposure

STOT - repeated exposure No information available.

Aspiration hazard

Aspiration hazard No information available.

Inhalation Vapours in high concentrations are narcotic. Symptoms following overexposure may include the following: Headache. Fatigue. Dizziness. Nausea, vomiting.

Ingestion Ingestion of large amounts may cause unconsciousness. May cause nausea, headache, dizziness and intoxication.

Skin contact Repeated exposure may cause skin dryness or cracking.

Eye contact Irritating to eyes.

SECTION 12: Ecological Information

Ecotoxicity The product components are not classified as environmentally hazardous. However, large or frequent spills may have hazardous effects on the environment.

12.1. Toxicity

Acute aquatic toxicity

Acute toxicity - fish LC_{50}, 48 hours: > 100 mg/l, Leuciscus idus (Golden orfe)
LC_{50}, 96 hour: 14200 mg/l, Pimephales promelas (Fat-head Minnow)
LC_{50}, 96 hour: 13000 mg/l, Oncorhynchus mykiss (Rainbow trout)
LC_{50}, 96 hour: 12000 - 16000 mg/l, Oryzias latipes (Red killifish)

Acute toxicity - aquatic invertebrates EC_{50}, 48 hours: 12340 mg/l, Daphnia magna

Acute toxicity - aquatic plants EC_{50}, 48 hours: > 100 mg/l, Selenastrum capricornutum
EC_{50}, 72 hour: 275 mg/l,
(Chlorella vulgaris)

Chronic aquatic toxicity

Chronic toxicity - aquatic invertebrates NOEC, 9 day: 9.6 mg/l, Daphnia magna

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12.2. Persistence and degradability

Persistence and degradability The product is readily biodegradable. The product is degraded completely by photochemical oxidation.

Biodegradation - Degradation 84%: 20 day
- Half-life : 1 - <10 days

12.3. Bioaccumulative potential

Bioaccumulative potential The product is not bioaccumulating.

Partition coefficient : - 0.31

12.4. Mobility in soil

Mobility The product contains volatile organic compounds (VOCs) which will evaporate easily from all surfaces. The product is water-soluble and may spread in water systems.

12.5. Results of PBT and vPvB assessment

Results of PBT and vPvB assessment This substance is not classified as PBT or vPvB according to current EU criteria.

12.6. Other adverse effects

Other adverse effects The product contains volatile organic compounds (VOCs) which have a photochemical ozone creation potential.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

General information Waste is classified as hazardous waste. Do not puncture or incinerate, even when empty. Materials such as cleaning rags and paper wipes that are contaminated with flammable liquids may self-ignite after use and should be stored in designated fireproof containers with tight-fitting, self-closing lids.

Disposal methods Dispose of waste to licensed waste disposal site in accordance with the requirements of the local Waste Disposal Authority.

SECTION 14: Transport information

General Wear protective clothing as described in Section 8 of this safety data sheet.

14.1. UN number

UN No. (ADR/RID) 1170

UN No. (IMDG) 1170

UN No. (ICAO) 1170

UN No. (ADN) 1170

14.2. UN proper shipping name

Proper shipping name (ADR/RID) ETHANOL (ETHYL ALCOHOL) or ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION)

Proper shipping name (IMDG) ETHANOL (ETHYL ALCOHOL) or ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION)

Proper shipping name (ICAO) ETHANOL (ETHYL ALCOHOL) or ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION)

Proper shipping name (ADN) ETHANOL (ETHYL ALCOHOL) or ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION)

14.3. Transport hazard class(es)

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ADR/RID class	3
ADR/RID classification code	F1
ADR/RID label	3
IMDG class	3
ICAO class/division	3
ADN class	3

Transport labels

14.4. Packing group

ADR/RID packing group	II
IMDG packing group	II
ADN packing group	II
ICAO packing group	II

14.5. Environmental hazards

Environmentally hazardous substance/marine pollutant
No.

14.6. Special precautions for user

EmS	F-E, S-D
ADR transport category	2
Emergency Action Code	•2YE
Hazard Identification Number (ADR/RID)	33
Tunnel restriction code	(D/E)

14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not determined.

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

EU legislation	Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) (as amended). Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures (as amended). Commission Regulation (EU) No 2015/830 of 28 May 2015. This product may impact SEVESO storage regulations.

15.2. Chemical safety assessment

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A chemical safety assessment has been carried out.

SECTION 16: Other information

Abbreviations and acronyms used in the safety data sheet

ATE: Acute Toxicity Estimate.
ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road.
ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways.
CAS: Chemical Abstracts Service.
DNEL: Derived No Effect Level.
IATA: International Air Transport Association.
IMDG: International Maritime Dangerous Goods.
Kow: Octanol-water partition coefficient.
LC_{50}: Lethal Concentration to 50 % of a test population.
LD_{50}: Lethal Dose to 50% of a test population (Median Lethal Dose).
PBT: Persistent, Bioaccumulative and Toxic substance.
PNEC: Predicted No Effect Concentration.
REACH: Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006.
RID: European Agreement concerning the International Carriage of Dangerous Goods by Rail.
vPvB: Very Persistent and Very Bioaccumulative.
IARC: International Agency for Research on Cancer.
MARPOL 73/78: International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978.
cATpE: Converted Acute Toxicity Point Estimate.
BCF: Bioconcentration Factor.
BOD: Biochemical Oxygen Demand.
EC_{50}: 50% of maximal Effective Concentration.
LOAEC: Lowest Observed Adverse Effect Concentration.
LOAEL: Lowest Observed Adverse Effect Level.
NOAEC: No Observed Adverse Effect Concentration.
NOAEL: No Observed Adverse Effect Level.
NOEC: No Observed Effect Concentration.
LOEC: Lowest Observed Effect Concentration.
DMEL: Derived Minimal Effect Level.
EL50: Exposure Limit 50
hPa: Hectopascal
LL50: Lethal Loading fifty
OECD: Organisation for Economic Co-operation and Development
POW: Octanol-water partition coefficient
SCBA: self-contained breathing apparatus
STP: Sewage Treatment Plant
VOC: Volatile Organic Compounds

Classification abbreviations and acronyms

Acute Tox. = Acute toxicity
Aquatic Acute = Hazardous to the aquatic environment (acute)
Aquatic Chronic = Hazardous to the aquatic environment (chronic)

Key literature references and sources for data

ECHA Disseminated REACH Dossier

Revision comments

NOTE: Lines within the margin indicate significant changes from the previous revision.

Revision date

16/01/2019

ETHANOL

Version number	3.003
Supersedes date	14/11/2018
SDS number	459
SDS status	Approved.
Hazard statements in full	H225 Highly flammable liquid and vapour. H319 Causes serious eye irritation.
Signature	J Spenceley

Exposure scenario
Industrial manufacturing of Ethanol, or use as intermediate or process chemical

Identification

Product name	Ethanol
REACH registration number	01-2119457610-43-XXXX
CAS number	64-17-5
EC number	200-578-6
EU index number	603-002-00-5
Supplier	Univar Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 sds@univar.com

1. Title of exposure scenario

Main title	Industrial manufacturing of Ethanol, or use as intermediate or process chemical
Process scope	Manufacture of the substance or use as a process chemical or extraction agent. Includes recycling/recovery, material transfers, storage, maintenance and loading (including marine vessel/barge, road/rail car and bulk container), sampling and associated laboratory activities.
Main sector	SU3 Industrial uses
Sector of use	SU8 Manufacture of bulk, large-scale chemicals (including petroleum products) SU9 Manufacture of fine chemicals

Environment

Environmental release category	ERC1 Manufacture of substances. ERC4 Industrial use of processing aids in processes and products, not becoming part of articles. ERC6a Industrial use resulting in manufacture of another substance (use of intermediates).

Worker

Process category	PROC1 Use in closed process, no likelihood of exposure. PROC2 Use in closed, continuous process with occasional controlled exposure PROC3 Use in closed batch process (synthesis or formulation). PROC4 Use in batch and other process (synthesis) where opportunity for exposure arises. 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.

2. Conditions of use affecting exposure (Industrial - Environment 1)

Industrial manufacturing of Ethanol, or use as intermediate or process chemical

Product characteristics

Physical state	Liquid
Concentration details	Covers concentrations up to 100 %.

Amounts used

Annual amount per site: 400000 tonnes
Annual amount used in the EU: 4600000 tonnes

Frequency and duration of use

Continuous.
Emission days: 350 days/year

Environmental factors not influenced by risk management measures

Dilution	Receiving water dilution (fresh or marine): 18000 m³/day

Risk management measures

Good practice	Carefully handle the substance to minimise releases.
Technical measures	Bund storage facilities to prevent soil and water pollution in the event of spillage. When not in use, keep containers tightly closed. Avoid discharge into drains and the aquatic environment.
STP type	Municipal STP.
STP details	Assumed domestic sewage treatment plant flow: 2000 m³/day Removal efficiency (total): 90%

Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

Air	Treat air emission to provide a typical removal efficiency of 70%.
Water	Typical onsite wastewater treatment technology provides removal efficiency of 87%.

Conditions and measures related to external treatment of waste for disposal

Sludge treatment	Sludge is disposed of or recovered.
Disposal method	Contain and dispose of waste according to local regulations. Incineration, disposal or recycling at specific offsite provider.

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state	Liquid
Vapour pressure	5.73 kPa @ 20°C
Concentration details	Covers concentrations up to 100 %.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Human factors not influenced by risk management

Potentially exposed body parts	PROC1 Use in closed process, no likelihood of exposure. PROC2 Use in closed, continuous process with occasional controlled exposure Palm of both hands. Covers skin contact area up to 480 cm². 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. Both hands. Covers skin contact area up to 960 cm².

Industrial manufacturing of Ethanol, or use as intermediate or process chemical

Other given operational conditions affecting workers exposure

Setting Indoor/outdoor use.

Temperature Assumes activities are at ambient temperature (unless stated differently).

Technical conditions and measures at process level (source) to prevent release

Technical protective measures Handle substance within a predominantly closed system provided with extract ventilation. Ensure material transfers are under containment or extract ventilation. Provide extract ventilation at the points where emissions occur.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Assumes a good basic standard of occupational hygiene is implemented.

Risk management measures

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop. Use suitable eye protection.

3. Exposure estimation (Environment 1)

Assessment method Used EUSES model.

Environmental exposure STP: Exposure 5.65 mg/l, PNEC 580 mg/l, RCR 0.0097
Fresh water: Exposure 0.0000264 mg/l, PNEC 0.96 mg/l, RCR 0.0000275
Soil: Exposure 0.00119 mg/kg, PNEC 0.63 mg/kg, RCR 0.00189
Marine water: Exposure 0.00000224 mg/l, PNEC 0.79 mg/l, RCR 0.000002835

3. Exposure estimation (Health 1)

Assessment method ECETOC TRA v2.0 Worker

Exposure Worker - inhalation: Exposure 96.04 mg/m³, DNEL 950 mg/m³, RCR 0.101
Worker - dermal: Exposure 13.71 mg/kg/day, DNEL 343 mg/kg/day, RCR 0.040
Worker - all relevant routes: Exposure 27.43 mg/kg/day, DNEL 343 mg/kg/day, RCR 0.080

Worst case assumption

Exposure scenario
Distribution of Ethanol

Identification

Product name	Ethanol
REACH registration number	01-2119457610-43-XXXX
CAS number	64-17-5
EC number	200-578-6
EU index number	603-002-00-5
Supplier	Univar Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 sds@univar.com

1. Title of exposure scenario

Main title	Distribution of Ethanol
Process scope	Loading (including marine vessel/barge, rail/road car and IBC loading) and repacking (including drums and small packs) of substance, including its sampling, storage, unloading distribution and associated laboratory activities.
Main sector	SU3 Industrial uses
Sector of use	SU8 Manufacture of bulk, large-scale chemicals (including petroleum products) SU9 Manufacture of fine chemicals

Environment

Environmental release category	ERC2 Formulation of preparations.

Worker

Process category	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).

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Physical state	Liquid
Concentration details	Covers concentrations up to 100 %.

Distribution of Ethanol

Amounts used

Annual amount per site: 75000 tonnes
Annual amount used in the EU: 3800000 tonnes

Frequency and duration of use

Continuous.
Emission days: 300 days/year

Environmental factors not influenced by risk management measures

Dilution Receiving water dilution (fresh or marine): 18000 m³/day

Risk management measures

Good practice Carefully handle the substance to minimise releases.

Technical measures Bund storage facilities to prevent soil and water pollution in the event of spillage. When not in use, keep containers tightly closed. Avoid discharge into drains and the aquatic environment.

STP type Municipal STP.

STP details Assumed domestic sewage treatment plant flow: 2000 m³/day
Removal efficiency (total): 90%

Conditions and measures related to external treatment of waste for disposal

Sludge treatment Sludge is disposed of or recovered.

Disposal method Contain and dispose of waste according to local regulations. Incineration, disposal or recycling at specific offsite provider.

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Liquid

Vapour pressure 5.73 kPa @ 20°C

Concentration details Covers concentrations up to 100 %.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Human factors not influenced by risk management

Potentially exposed body parts Both hands. Covers skin contact area up to 960 cm².

Other given operational conditions affecting workers exposure

Setting Indoor/outdoor use.

Temperature Assumes activities are at ambient temperature (unless stated differently).

Ventilation rate Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.

Technical conditions and measures at process level (source) to prevent release

Technical protective measures Ensure material transfers are under containment or extract ventilation. Provide extract ventilation at the points where emissions occur.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Assumes a good basic standard of occupational hygiene is implemented.

Distribution of Ethanol

Risk management measures

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop. Use suitable eye protection.

3. Exposure estimation (Environment 1)

Assessment method ECETOC TRA v2.0 Environment

Environmental exposure STP: Exposure 4.66 mg/l, PNEC 580 mg/l, RCR 0.0080
Fresh water: Exposure 0.52 mg/l, PNEC 0.96 mg/l, RCR 0.542
Soil: Exposure 0.007 mg/kg, PNEC 0.63 mg/kg, RCR 0.00111
Marine water: Exposure 0.0515 mg/l, PNEC 0.79 mg/l, RCR 0.0652

3. Exposure estimation (Health 1)

Assessment method ECETOC TRA v2.0 Worker

Exposure Worker - inhalation: Exposure 96.04 mg/m³, DNEL 950 mg/m³, RCR 0.101
Worker - dermal: Exposure 13.71 mg/kg/day, DNEL 343 mg/kg/day, RCR 0.040
Worker - all relevant routes: Exposure 27.43 mg/kg/day, DNEL 343 mg/kg/day, RCR 0.080

Worst case assumption

Exposure scenario
Industrial formulation and (re)packing of Ethanol and it's mixtures

Identification

Product name	Ethanol
REACH registration number	01-2119457610-43-XXXX
CAS number	64-17-5
EC number	200-578-6
EU index number	603-002-00-5
Supplier	Univar Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 sds@univar.com

1. Title of exposure scenario

Main title	Industrial formulation and (re)packing of Ethanol and it's mixtures
Process scope	Formulation of the substance and its mixtures in batch or continuous operations within closed or contained systems, including incidental exposures during storage, materials transfers, mixing, maintenance, sampling and associated laboratory activities.
Main sector	SU3 Industrial uses
Sector of use	SU10 Formulation [mixing] of preparations and/or re-packaging

Environment

Environmental release category	ERC2 Formulation of preparations.

Worker

Process category	PROC3 Use in closed batch process (synthesis or formulation). PROC5 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). PROC8a Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities. PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. PROC9 Transfer of substance or preparation into small containers (dedicated filling line, including weighing). PROC14 Production of preparations or articles by tabletting, compression, extrusion, pelletisation.

2. Conditions of use affecting exposure (Industrial - Environment 1)

Industrial formulation and (re)packing of Ethanol and it's mixtures

Product characteristics

Physical state Liquid

Concentration details Covers concentrations up to 100 %.

Amounts used

Annual amount per site: 280000 tonnes
Annual amount used in the EU: 3800000 tonnes

Frequency and duration of use

Continuous.
Emission days: 300 days/year

Environmental factors not influenced by risk management measures

Dilution Receiving water dilution (fresh or marine): 18000 m³/day

Risk management measures

Good practice Carefully handle the substance to minimise releases.

Technical measures Bund storage facilities to prevent soil and water pollution in the event of spillage. When not in use, keep containers tightly closed. Avoid discharge into drains and the aquatic environment.

STP type Municipal STP.

STP details Assumed domestic sewage treatment plant flow: 2000 m³/day
Removal efficiency (total): 90%

Conditions and measures related to external treatment of waste for disposal

Sludge treatment Sludge is disposed of or recovered.

Disposal method Contain and dispose of waste according to local regulations. Incineration, disposal or recycling at specific offsite provider.

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Liquid

Vapour pressure 5.73 kPa @ 20°C

Concentration details Covers concentrations up to 100 %.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Human factors not influenced by risk management

Potentially exposed body parts PROC3 Use in closed batch process (synthesis or formulation). Palm of both hands. Covers skin contact area up to 480 cm².
PROC5 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). PROC8a Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities. PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. PROC9 Transfer of substance or preparation into small containers (dedicated filling line, including weighing). PROC14 Production of preparations or articles by tabletting, compression, extrusion, pelletisation. Both hands. Covers skin contact area up to 960 cm².

Other given operational conditions affecting workers exposure

Industrial formulation and (re)packing of Ethanol and it's mixtures

Setting	Indoor.
Temperature	Assumes activities are at ambient temperature (unless stated differently).
Ventilation rate	Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.

Technical conditions and measures at process level (source) to prevent release

Technical protective measures	Ensure material transfers are under containment or extract ventilation. Provide extract ventilation at the points where emissions occur.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures	Assumes a good basic standard of occupational hygiene is implemented.

Risk management measures

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop. Use suitable eye protection.

3. Exposure estimation (Environment 1)

Assessment method	ECETOC TRA v2.0 Environment
Environmental exposure	STP: Exposure 1.73 mg/l, PNEC 580 mg/l, RCR 0.00298 Fresh water: Exposure 0.185 mg/l, PNEC 0.96 mg/l, RCR 0.193 Soil: Exposure 0.0117 mg/kg, PNEC 0.63 mg/kg, RCR 0.0186 Marine water: Exposure 0.0186 mg/l, PNEC 0.79 mg/l, RCR 0.0235

3. Exposure estimation (Health 1)

Assessment method	ECETOC TRA v2.0 Worker
Exposure	Worker - inhalation: Exposure 96.04 mg/m³, DNEL 950 mg/m³, RCR 0.101 Worker - dermal: Exposure 13.71 mg/kg/day, DNEL 343 mg/kg/day, RCR 0.040 Worker - all relevant routes: Exposure 27.43 mg/kg/day, DNEL 343 mg/kg/day, RCR 0.080 Worst case assumption

Exposure scenario
Industrial use of Ethanol in non-spray applications

Identification

Product name	Ethanol
REACH registration number	01-2119457610-43-XXXX
CAS number	64-17-5
EC number	200-578-6
EU index number	603-002-00-5
Supplier	Univar Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 sds@univar.com

1. Title of exposure scenario

Main title	Industrial use of Ethanol in non-spray applications Dipping, immersion and pouring Treatment by dipping and pouring Roller, spreader, flow application
Main sector	SU3 Industrial uses

Environment

Environmental release category	ERC4 Industrial use of processing aids in processes and products, not becoming part of articles.

Worker

Process category	PROC10 Roller application or brushing of adhesive and other coating. PROC13 Treatment of articles by dipping and pouring.

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Physical state	Liquid
Concentration details	Covers concentrations up to 100 %.

Amounts used

Regional use tonnage: 2750 tonnes/year
Annual amount used in the EU: 27500 tonnes

Frequency and duration of use

Industrial use of Ethanol in non-spray applications

Continuous.
Emission days: 300 days/year

Environmental factors not influenced by risk management measures

Dilution Receiving water dilution (fresh or marine): 18000 m³/day

Risk management measures

Good practice Carefully handle the substance to minimise releases.

Technical measures Bund storage facilities to prevent soil and water pollution in the event of spillage. When not in use, keep containers tightly closed. Avoid discharge into drains and the aquatic environment.

STP type Municipal STP.

STP details Assumed domestic sewage treatment plant flow: 2000 m³/day
Removal efficiency (total): 90%

Conditions and measures related to external treatment of waste for disposal

Sludge treatment Sludge is disposed of or recovered.

Disposal method Contain and dispose of waste according to local regulations. Incineration, disposal or recycling at specific offsite provider.

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Liquid

Vapour pressure 5.73 kPa @ 20°C

Concentration details Covers concentrations up to 100 %.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Human factors not influenced by risk management

Potentially exposed body parts PROC13 Treatment of articles by dipping and pouring. Palm of both hands. Covers skin contact area up to 480 cm².
PROC10 Roller application or brushing of adhesive and other coating. Both hands. Covers skin contact area up to 960 cm².

Other given operational conditions affecting workers exposure

Setting Indoor/outdoor use.

Temperature Assumes activities are at ambient temperature (unless stated differently).

Ventilation rate Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan. , or: Ensure operation is undertaken outdoors.

Technical conditions and measures at process level (source) to prevent release

Technical protective measures Ensure material transfers are under containment or extract ventilation. Provide extract ventilation at the points where emissions occur.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Assumes a good basic standard of occupational hygiene is implemented.

Risk management measures

Industrial use of Ethanol in non-spray applications

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop. Use suitable eye protection.

3. Exposure estimation (Environment 1)

Assessment method

ECETOC TRA v2.0 Environment

Environmental exposure

STP: Exposure 0.285 mg/l, PNEC 580 mg/l, RCR 0.000491
Fresh water: Exposure 0.039 mg/l, PNEC 0.96 mg/l, RCR 0.0406
Soil: Exposure 0.0091 mg/kg, PNEC 0.63 mg/kg, RCR 0.0144
Marine water: Exposure 0.0039 mg/l, PNEC 0.79 mg/l, RCR 0.00494

3. Exposure estimation (Health 1)

Assessment method

ECETOC TRA v2.0 Worker

Exposure

Worker - inhalation: Exposure 96.04 mg/m³, DNEL 950 mg/m³, RCR 0.101
Worker - dermal: Exposure 27.43 mg/kg/day, DNEL 343 mg/kg/day, RCR 0.080
Worker - all relevant routes: Exposure 41.15 mg/kg/day, DNEL 343 mg/kg/day, RCR 0.120

Worst case assumption

Exposure scenario
Industrial use of Ethanol in spray applications

Identification

Product name	Ethanol
REACH registration number	01-2119457610-43-XXXX
CAS number	64-17-5
EC number	200-578-6
EU index number	603-002-00-5
Supplier	Univar Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 sds@univar.com

1. Title of exposure scenario

Main title	Industrial use of Ethanol in spray applications
	Spraying
Main sector	SU3 Industrial uses

Environment

Environmental release category	ERC4 Industrial use of processing aids in processes and products, not becoming part of articles.

Worker

Process category	PROC7 Spraying in industrial settings and applications.

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Physical state	Liquid
Concentration details	Covers concentrations up to 100 %.

Amounts used

Regional use tonnage: 2750 tonnes/year
Annual amount used in the EU: 27500 tonnes

Frequency and duration of use

Continuous.
Emission days: 300 days/year

Environmental factors not influenced by risk management measures

Industrial use of Ethanol in spray applications

Dilution	Receiving water dilution (fresh or marine): 18000 m³/day

Risk management measures

Good practice	Carefully handle the substance to minimise releases.
Technical measures	Bund storage facilities to prevent soil and water pollution in the event of spillage. When not in use, keep containers tightly closed. Avoid discharge into drains and the aquatic environment.
STP type	Municipal STP.
STP details	Assumed domestic sewage treatment plant flow: 2000 m³/day Removal efficiency (total): 90%

Conditions and measures related to external treatment of waste for disposal

Sludge treatment	Sludge is disposed of or recovered.
Disposal method	Contain and dispose of waste according to local regulations. Incineration, disposal or recycling at specific offsite provider.

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state	Liquid
Vapour pressure	5.73 kPa @ 20°C
Concentration details	Covers concentrations up to 25 %.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Human factors not influenced by risk management

Potentially exposed body parts	Hands and forearms. Covers skin contact area up to 1500 cm².

Other given operational conditions affecting workers exposure

Setting	Indoor.
Temperature	Assumes activities are at ambient temperature (unless stated differently).
Ventilation rate	Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.

Technical conditions and measures at process level (source) to prevent release

Technical protective measures	Ensure material transfers are under containment or extract ventilation. Provide extract ventilation at the points where emissions occur.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures	Assumes a good basic standard of occupational hygiene is implemented.

Risk management measures

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop.
Use suitable eye protection.
Wear a respirator conforming to EN140 with Type A filter or better.
, or:
Carry out in a vented booth provided with laminar airflow.

Industrial use of Ethanol in spray applications

3. Exposure estimation (Environment 1)

Assessment method	ECETOC TRA v2.0 Environment
Environmental exposure	STP: Exposure 0.285 mg/l, PNEC 580 mg/l, RCR 0.000491 Fresh water: Exposure 0.039 mg/l, PNEC 0.96 mg/l, RCR 0.0406 Soil: Exposure 0.0091 mg/kg, PNEC 0.63 mg/kg, RCR 0.0144 Marine water: Exposure 0.0039 mg/l, PNEC 0.79 mg/l, RCR 0.00494

3. Exposure estimation (Health 1)

Assessment method	ECETOC TRA v2.0 Worker
Exposure	Worker - inhalation: Exposure 480.21 mg/m³, DNEL 950 mg/m³, RCR 0.505 Worker - dermal: Exposure 42.86 mg/kg/day, DNEL 343 mg/kg/day, RCR 0.125 Worker - all relevant routes: Exposure 111.46 mg/kg/day, DNEL 343 mg/kg/day, RCR 0.325 Worst case assumption

Exposure scenario
Professional use of Ethanol in non-spray applications

Identification

Product name	Ethanol
REACH registration number	01-2119457610-43-XXXX
CAS number	64-17-5
EC number	200-578-6
EU index number	603-002-00-5
Supplier	Univar Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 sds@univar.com

1. Title of exposure scenario

Main title	Professional use of Ethanol in non-spray applications
	Dipping, immersion and pouring Treatment by dipping and pouring Roller, spreader, flow application
Main sector	SU22 Professional uses

Environment

Environmental release category	ERC8a Wide dispersive indoor use of processing aids in open systems. ERC8d Wide dispersive outdoor use of processing aids in open systems.

Worker

Process category	PROC10 Roller application or brushing of adhesive and other coating. PROC13 Treatment of articles by dipping and pouring. PROC14 Production of preparations or articles by tabletting, compression, extrusion, pelletisation. PROC19 Hand-mixing with intimate contact and only PPE available.

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Physical state	Liquid
Concentration details	Covers concentrations up to 100 %.

Amounts used

Annual amount for wide dispersive uses: 10000 tonnes

Frequency and duration of use

Professional use of Ethanol in non-spray applications

Continuous.
Emission days: 365 days/year

Environmental factors not influenced by risk management measures

Dilution Receiving water dilution (fresh or marine): 18000 m³/day

Risk management measures

Good practice Carefully handle the substance to minimise releases.

Technical measures No specific measures identified.

STP type Municipal STP.

STP details Assumed domestic sewage treatment plant flow: 2000 m³/day
Removal efficiency (total): 90%

Conditions and measures related to external treatment of waste for disposal

Sludge treatment Sludge is disposed of or recovered.

Disposal method Contain and dispose of waste according to local regulations.

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Liquid

Vapour pressure 5.73 kPa @ 20°C

Concentration details Covers concentrations up to 100 %.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Human factors not influenced by risk management

Potentially exposed body parts PROC13 Treatment of articles by dipping and pouring. PROC14 Production of preparations or articles by tabletting, compression, extrusion, pelletisation. Palm of both hands. Covers skin contact area up to 480 cm².
PROC10 Roller application or brushing of adhesive and other coating. Both hands. Covers skin contact area up to 960 cm².
PROC19 Hand-mixing with intimate contact and only PPE available. Hands and forearms. Covers skin contact area up to 1980 cm².

Other given operational conditions affecting workers exposure

Setting Indoor/outdoor use.

Temperature Assumes activities are at ambient temperature (unless stated differently).

Ventilation rate Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan. , or: Ensure operation is undertaken outdoors.

Technical conditions and measures at process level (source) to prevent release

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

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Assumes a good basic standard of occupational hygiene is implemented.
PROC19 Hand-mixing with intimate contact and only PPE available. Limit the substance content in the product to 25%. , or: Avoid carrying out operation for more than 4 hours.

Professional use of Ethanol in non-spray applications

Risk management measures

PROC19 Hand-mixing with intimate contact and only PPE available.
Limit the substance content in the product to 25%.
, or:
Wear suitable gloves (tested to EN374) and eye protection.

3. Exposure estimation (Environment 1)

Assessment method	ECETOC TRA v2.0 Environment
Environmental exposure	STP: Exposure 0.34 mg/l, PNEC 580 mg/l, RCR 0.000586 Fresh water: Exposure 0.045 mg/l, PNEC 0.96 mg/l, RCR 0.0521 Soil: Exposure 0.0003 mg/kg, PNEC 0.63 mg/kg, RCR 0.000476 Marine water: Exposure 0.0044 mg/l, PNEC 0.79 mg/l, RCR 0.00557

3. Exposure estimation (Health 1)

Assessment method	ECETOC TRA v2.0 Worker
Exposure	Worker - inhalation: Exposure 115.25 mg/m³, DNEL 950 mg/m³, RCR 0.121 Worker - dermal: Exposure 84.86 mg/kg/day, DNEL 343 mg/kg/day, RCR 0.247 Worker - all relevant routes: Exposure 101.32 mg/kg/day, DNEL 343 mg/kg/day, RCR 0.295 Worst case assumption

Exposure scenario
Professional use of Ethanol in spray applications

Identification

Product name	Ethanol
REACH registration number	01-2119457610-43-XXXX
CAS number	64-17-5
EC number	200-578-6
EU index number	603-002-00-5
Supplier	Univar Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 sds@univar.com

1. Title of exposure scenario

Main title	Professional use of Ethanol in spray applications
	Spraying
Main sector	SU22 Professional uses

Environment

Environmental release category	ERC8a Wide dispersive indoor use of processing aids in open systems. ERC8d Wide dispersive outdoor use of processing aids in open systems.

Worker

Process category	PROC11 Spraying outside industrial settings and/or applications.

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Physical state	Liquid
Concentration details	Covers concentrations up to 25 %.

Amounts used

Annual amount for wide dispersive uses: 10000 tonnes

Frequency and duration of use

Continuous.
Emission days: 365 days/year

Environmental factors not influenced by risk management measures

Professional use of Ethanol in spray applications

Dilution	Receiving water dilution (fresh or marine): 18000 m³/day

Risk management measures

Good practice	Carefully handle the substance to minimise releases.
Technical measures	Avoid discharge into drains and the aquatic environment.
STP type	Municipal STP.
STP details	Assumed domestic sewage treatment plant flow: 2000 m³/day Removal efficiency (total): 90%

Conditions and measures related to external treatment of waste for disposal

Sludge treatment	Sludge is disposed of or recovered.
Disposal method	Contain and dispose of waste according to local regulations.

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state	Liquid
Vapour pressure	5.73 kPa @ 20°C
Concentration details	Covers concentrations up to 25 %.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Human factors not influenced by risk management

Potentially exposed body parts	Hands and forearms. Covers skin contact area up to 1500 cm².

Other given operational conditions affecting workers exposure

Setting	Indoor/outdoor use.
Temperature	Assumes activities are at ambient temperature (unless stated differently).
Ventilation rate	Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures	Assumes a good basic standard of occupational hygiene is implemented. Avoid carrying out operation for more than 4 hours. , or: Limit the substance content in the product to 5%.

Risk management measures

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop.
Use suitable eye protection.
Wear a respirator conforming to EN140 with Type A filter or better.
, or:
Provide enhanced general ventilation by mechanical means.
, or:
Limit the substance content in the product to 25%.

3. Exposure estimation (Environment 1)

Professional use of Ethanol in spray applications

Assessment method	ECETOC TRA v2.0 Environment
Environmental exposure	STP: Exposure 0.34 mg/l, PNEC 580 mg/l, RCR 0.000690 Fresh water: Exposure 0.045 mg/l, PNEC 0.96 mg/l, RCR 0.0469 Soil: Exposure 0.0003 mg/kg, PNEC 0.63 mg/kg, RCR 0.000476 Marine water: Exposure 0.0044 mg/l, PNEC 0.79 mg/l, RCR 0.00557

3. Exposure estimation (Health 1)

Assessment method	ECETOC TRA v2.0 Worker
Exposure	Worker - inhalation: Exposure 672.29 mg/m³, DNEL 950 mg/m³, RCR 0.708 Worker - dermal: Exposure 21.43 mg/kg/day, DNEL 343 mg/kg/day, RCR 0.0625 Worker - all relevant routes: Exposure 117.47 mg/kg/day, DNEL 343 mg/kg/day, RCR 0.342 Worst case assumption

Exposure scenario
Use of Ethanol in consumer products (<50g per event)

Identification

Product name	Ethanol
REACH registration number	01-2119457610-43-XXXX
CAS number	64-17-5
EC number	200-578-6
EU index number	603-002-00-5
Supplier	Univar Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 sds@univar.com

1. Title of exposure scenario

Main title	Use of Ethanol in consumer products (<50g per event)
Process scope	Covers general exposures to consumers arising from the use of household products sold as washing and cleaning products, aerosols, coatings, de-icers, lubricants and air care products.
Product category	PC1 Adhesives, sealants. PC3 Air care products. PC8 Biocidal products. PC12 Lawn and garden preparations (- fertilizers). PC14 Metal surface treatment products, including galvanic and electroplating products. PC15 Non-metal-surface treatment products. PC18 Ink and toners. PC23 Leather tanning, dye, finishing, impregnation and care products. PC24 Lubricants, greases and release products. PC27 Plant protection products. PC28 Perfumes, fragrances. PC30 Photochemicals. PC31 Polishes and wax blends. PC34 Textile dyes, finishing and impregnating products, including bleaches and other processing aids. PC39 Cosmetics, personal care.
Main sector	SU21 Consumer uses

Environment

Environmental release category	ERC8a Wide dispersive indoor use of processing aids in open systems. ERC8d Wide dispersive outdoor use of processing aids in open systems.

Use of Ethanol in consumer products (<50g per event)

2. Conditions of use affecting exposure (Non-industrial - Environment 1)

Product characteristics

Physical state Liquid

Amounts used

Annual amount for wide dispersive uses: 10000 tonnes

Frequency and duration of use

Emission days: 365 days/year

Environmental factors not influenced by risk management measures

Dilution Receiving surface water flow: 18000 m³/day

Other factors Covers use at ambient temperatures.

Risk management measures

Good practice Carefully pour from containers.

Technical measures Do not discharge into drains or watercourses or onto the ground.

STP type Municipal STP.

STP details Assumed domestic sewage treatment plant flow: 2000 m³/day
Removal efficiency fraction (offsite; STP): 90%

2. Conditions of use affecting exposure (Non-industrial - Health 1)

Product characteristics

Physical state Liquid

Concentration details PC24 Lubricants, greases and release products. PC31 Polishes and wax blends. Concentration of substance in product: <1%
PC5 Artists supply and hobby preparations. PC10 Building and construction preparations not covered elsewhere. PC22 Lawn and garden preparations, including fertilizers. PC23 Leather tanning, dye, finishing, impregnation and care products. PC27 Plant protection products. PC30 Photochemicals. PC34 Textile dyes, finishing and impregnating products, including bleaches and other processing aids. Concentration of substance in product: 1 - 5%
PC1 Adhesives, sealants. PC8 Biocidal products. PC14 Metal surface treatment products, including galvanic and electroplating products. PC15 Non-metal-surface treatment products. PC18 Ink and toners. Concentration of substance in product: 5 - 25%
PC3 Air care products. PC28 Perfumes, fragrances. Concentration of substance in product: >25%

Amounts used

Amount per use: <50 g

Frequency and duration of use

Covers daily exposure up to 4hours

Human factors not influenced by risk management

Potentially exposed body parts Palm of one hand. Covers skin contact area up to 210 cm².

Other given operational conditions affecting Non-industrial exposure

Setting Indoor/outdoor use.

Temperature Covers use at ambient temperatures.

Use of Ethanol in consumer products (<50g per event)

Room size Use in room with a minimum volume of 20 m³.

Other given operational conditions affecting Non-industrial exposure

Consumer information Avoid inhalation of vapours and contact with skin and eyes.

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

3. Exposure estimation (Environment 1)

Assessment method ECETOC TRA v2.0 Environment

Environmental exposure STP: Exposure 0.340 mg/l, PNEC 580 mg/l, RCR 0.000690
Fresh water: Exposure 0.0447 mg/l, PNEC 0.96 mg/l, RCR 0.0466
Soil: Exposure 0.0003 mg/kg, PNEC 0.63 mg/kg, RCR 0.000476
Marine water: Exposure 0.0044 mg/l, PNEC 0.79 mg/l, RCR 0.00557

3. Exposure estimation (Health 1)

Assessment method ConsExpo v4.1

Exposure Consumer - dermal: Exposure 2.87 mg/kg/day, DNEL 206 mg/kg/day, RCR 0.0139
Consumer - inhalation: Exposure 10.31 mg/m³, DNEL 144 mg/m³, RCR 0.0716

Worst case assumption

Exposure scenario
Consumer use of Ethanol in enclosed systems

Identification

Product name	Ethanol
REACH registration number	01-2119457610-43-XXXX
CAS number	64-17-5
EC number	200-578-6
EU index number	603-002-00-5
Supplier	Univar Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 sds@univar.com

1. Title of exposure scenario

Main title	Consumer use of Ethanol in enclosed systems
Process scope	Use of sealed items containing functional fluids e.g. transfer oils, hydraulic fluids, refrigerants.
Product category	PC16 Heat transfer fluids.
Main sector	SU21 Consumer uses

Environment

Environmental release category	ERC9a Wide dispersive indoor use of substances in closed systems. ERC9b Wide dispersive outdoor use of substances in closed systems.

2. Conditions of use affecting exposure (Non-industrial - Environment 1)

Product characteristics

Physical state	Liquid

Amounts used

Annual amount for wide dispersive uses: 10000 tonnes

Frequency and duration of use

Emission days: 365 days/year

Environmental factors not influenced by risk management measures

Dilution	Receiving surface water flow: 18000 m³/day
Other factors	Covers use at ambient temperatures.

Risk management measures

Consumer use of Ethanol in enclosed systems

Good practice	Carefully pour from containers.
Technical measures	Handle product within a closed system. Do not discharge into drains or watercourses or onto the ground.
STP type	Municipal STP.
STP details	Assumed domestic sewage treatment plant flow: 2000 m³/day

Conditions and measures related to external treatment of waste for disposal

Not applicable as there is no release to wastewater.

2. Conditions of use affecting exposure (Non-industrial - Health 1)

Product characteristics

Physical state	Liquid
Concentration details	Covers concentrations up to 100 %.

Amounts used

Amount per use: <50 g

Frequency and duration of use

Covers frequency up to 1 - 5 days/year, , .

Other given operational conditions affecting Non-industrial exposure

Temperature	Covers use at ambient temperatures. Handle substance within a closed system.

Other given operational conditions affecting Non-industrial exposure

Consumer information	Avoid inhalation of vapours and contact with skin and eyes. Keep container tightly closed. No specific risk management measure identified beyond those operational conditions stated.

3. Exposure estimation (Environment 1)

Assessment method	ECETOC TRA v2.0 Environment
Environmental exposure	STP: Exposure 0.017 mg/l, PNEC 580 mg/l, RCR 0.0000293 Fresh water: Exposure 0.0155 mg/l, PNEC 0.96 mg/l, RCR 0.0161 Soil: Exposure 0.00013 mg/kg, PNEC 0.63 mg/kg, RCR 0.000206 Marine water: Exposure 0.00145 mg/l, PNEC 0.79 mg/l, RCR 0.00184

3. Exposure estimation (Health 1)

Assessment method	ConsExpo v4.1
Exposure	Consumer - dermal: Exposure 0.85 mg/kg/day, DNEL 206 mg/kg/day, RCR 0.00413 Consumer - inhalation: Exposure 0.04 mg/m³, DNEL 144 mg/m³, RCR 0.000278 Worst case assumption

Exposure scenario
Consumer use of Ethanol in coatings and paints

Identification

Product name	Ethanol
REACH registration number	01-2119457610-43-XXXX
CAS number	64-17-5
EC number	200-578-6
EU index number	603-002-00-5
Supplier	Univar Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 sds@univar.com

1. Title of exposure scenario

Main title	Consumer use of Ethanol in coatings and paints
Product category	PC9a Coatings and paints, thinners, paint removers. PC9c Finger paints.
Main sector	SU21 Consumer uses

Environment

Environmental release category	ERC8a Wide dispersive indoor use of processing aids in open systems. ERC8d Wide dispersive outdoor use of processing aids in open systems.

2. Conditions of use affecting exposure (Non-industrial - Environment 1)

Product characteristics

Physical state	Liquid

Amounts used

Annual amount for wide dispersive uses: 10000 tonnes

Frequency and duration of use

Emission days: 365 days/year

Environmental factors not influenced by risk management measures

Dilution	Receiving surface water flow: 18000 m³/day
Other factors	Covers use at ambient temperatures.

Risk management measures

Consumer use of Ethanol in coatings and paints

Technical measures	No specific risk management measure identified beyond those operational conditions stated.
STP type	Municipal STP.
STP details	Assumed domestic sewage treatment plant flow: 2000 m³/day Removal efficiency (total): 90%

2. Conditions of use affecting exposure (Non-industrial - Health 1)

Product characteristics

Physical state	Liquid
Concentration details	Covers concentrations up to 15 %.

Amounts used

Amount per use: 50 - 250 g

Frequency and duration of use

Covers frequency up to 1 - 5 days/year, , .
Application duration: 20 - 60 minutes

Human factors not influenced by risk management

Potentially exposed body parts	Palm of one hand. Covers skin contact area up to 428 cm².

Other given operational conditions affecting Non-industrial exposure

Setting	Indoor/outdoor use.
Temperature	Covers use at ambient temperatures.
Room size	Use in room with a minimum volume of 20 m³.
Ventilation rate	Open windows during application to ensure natural ventilation.

3. Exposure estimation (Environment 1)

Assessment method	ECETOC TRA v2.0 Environment
Environmental exposure	STP: Exposure 0.340 mg/l, PNEC 580 mg/l, RCR 0.000586 Fresh water: Exposure 0.0447 mg/l, PNEC 0.96 mg/l, RCR 0.0466 Soil: Exposure 0.0003 mg/kg, PNEC 0.63 mg/kg, RCR 0.000476 Marine water: Exposure 0.0044 mg/l, PNEC 0.79 mg/l, RCR 0.00557

3. Exposure estimation (Health 1)

Assessment method	ConsExpo v4.1
Exposure	Consumer - dermal, short-term - local and systemic: Exposure 21.44 mg/kg/day, DNEL 206 mg/kg/day, RCR 0.104 Consumer - dermal, long-term - systemic: Exposure 0.30 mg/m³, DNEL 206 mg/m³, RCR 0.00146 Consumer - inhalation, short-term - local and systemic: Exposure 375 mg/m³, DNEL 950 mg/m³, RCR 0.395 Consumer - inhalation, long-term - systemic: Exposure 0.50 mg/m³, DNEL 144 mg/m³, RCR 0.00347 Worst case assumption

Exposure scenario
Consumer use of Ethanol in antifreeze, deicing and screenwash products

Identification

Product name	Ethanol
REACH registration number	01-2119457610-43-XXXX
CAS number	64-17-5
EC number	200-578-6
EU index number	603-002-00-5
Supplier	Univar Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 sds@univar.com

1. Title of exposure scenario

Main title	Consumer use of Ethanol in antifreeze, deicing and screenwash products
	De-icing and anti-icing applications
Product category	PC4 Anti-freeze and de-icing products.
Main sector	SU21 Consumer uses

Environment

Environmental release category	ERC8d Wide dispersive outdoor use of processing aids in open systems.

2. Conditions of use affecting exposure (Non-industrial - Environment 1)

Product characteristics

Physical state	Liquid

Amounts used

Annual amount for wide dispersive uses: 125000 tonnes

Frequency and duration of use

Emission days: 365 days/year

Environmental factors not influenced by risk management measures

Dilution	Receiving surface water flow: 18000 m³/day
Other factors	Covers use at ambient temperatures.

Risk management measures

Consumer use of Ethanol in antifreeze, deicing and screenwash products

Technical measures	No specific risk management measure identified beyond those operational conditions stated.
STP type	Municipal STP.
STP details	Assumed domestic sewage treatment plant flow: 2000 m³/day Removal efficiency (total): 90%

2. Conditions of use affecting exposure (Non-industrial - Health 1)

Product characteristics

Physical state	Liquid
Concentration details	Covers concentrations up to 100 %.

Amounts used

Amount per use: 1 - 50 g

Frequency and duration of use

Covers weekly exposure up to 5minutes

Human factors not influenced by risk management

Potentially exposed body parts	Covers skin contact area up to 214 cm².

Other given operational conditions affecting Non-industrial exposure

Setting	Indoor/outdoor use.
Temperature	Covers use at ambient temperatures.

Other given operational conditions affecting Non-industrial exposure

Consumer information	If risk of splashing, wear safety goggles or face shield.

3. Exposure estimation (Environment 1)

Assessment method	ECETOC TRA v2.0 Environment
Environmental exposure	STP: Exposure 0.0011 mg/l, PNEC 580 mg/l, RCR 0.00000190 Fresh water: Exposure 0.014 mg/l, PNEC 0.96 mg/l, RCR 0.0146 Soil: Exposure 0.00013 mg/kg, PNEC 0.63 mg/kg, RCR 0.000206 Marine water: Exposure 0.0013 mg/l, PNEC 0.79 mg/l, RCR 0.00165

3. Exposure estimation (Health 1)

Assessment method	ConsExpo v4.1
Exposure	Consumer - dermal: Exposure 17.87 mg/kg/day, DNEL 206 mg/kg/day, RCR 0.0867 Consumer - inhalation: Exposure 0.51 mg/m³, DNEL 144 mg/m³, RCR 0.00354
	Worst case assumption

Exposure scenario
Consumer use of Ethanol in washing and cleaning products

Identification

Product name	Ethanol
REACH registration number	01-2119457610-43-XXXX
CAS number	64-17-5
EC number	200-578-6
EU index number	603-002-00-5
Supplier	Univar Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 sds@univar.com

1. Title of exposure scenario

Main title	Consumer use of Ethanol in washing and cleaning products
Product category	PC35 Washing and cleaning products (including solvent-based products).
Main sector	SU21 Consumer uses

Environment

Environmental release category	ERC8a Wide dispersive indoor use of processing aids in open systems. ERC8d Wide dispersive outdoor use of processing aids in open systems.

2. Conditions of use affecting exposure (Non-industrial - Environment 1)

Product characteristics

Physical state Liquid

Amounts used

Annual amount for wide dispersive uses: 40000 tonnes

Frequency and duration of use

Emission days: 365 days/year

Environmental factors not influenced by risk management measures

Dilution Receiving surface water flow: 18000 m³/day

Other factors Covers use at ambient temperatures.

Risk management measures

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

Consumer use of Ethanol in washing and cleaning products

STP type	Municipal STP.
STP details	Assumed domestic sewage treatment plant flow: 2000 m³/day Removal efficiency (total): 90%

2. Conditions of use affecting exposure (Non-industrial - Health 1)

Product characteristics

Physical state	Liquid
Concentration details	Covers concentrations up to 25 %.

Amounts used

Amount per use: <250 g

Frequency and duration of use

Covers daily exposure up to 60minutes

Other given operational conditions affecting Non-industrial exposure

Setting	Indoor/outdoor use.
Temperature	Covers use at ambient temperatures.
Ventilation rate	Covers use under typical household ventilation. Spraying Open windows during application to ensure natural ventilation.

3. Exposure estimation (Environment 1)

Assessment method	ECETOC TRA v2.0 Environment
Environmental exposure	STP: Exposure 0.681 mg/l, PNEC 580 mg/l, RCR 0.00117 Fresh water: Exposure 0.0818 mg/l, PNEC 0.96 mg/l, RCR 0.0852 Soil: Exposure 0.000451 mg/kg, PNEC 0.63 mg/kg, RCR 0.000716 Marine water: Exposure 0.00808 mg/l, PNEC 0.79 mg/l, RCR 0.0102

3. Exposure estimation (Health 1)

Assessment method	ConsExpo v4.1
Exposure	Consumer - dermal: Exposure 10.7 mg/kg/day, DNEL 206 mg/kg/day, RCR 0.0519 Consumer - inhalation: Exposure 1.73 mg/m³, DNEL 144 mg/m³, RCR 0.0120

Worst case assumption

Exposure scenario
Industrial and Professional use of Ethanol as a laboratory agent

Identification

Product name	Ethanol
REACH registration number	01-2119457610-43-XXXX
CAS number	64-17-5
EC number	200-578-6
EU index number	603-002-00-5
Supplier	Univar Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 sds@univar.com

1. Title of exposure scenario

Main title	Industrial and Professional use of Ethanol as a laboratory agent
Process scope	Use of small quantities within laboratory settings, including material transfers and equipment cleaning.
Main sector	SU3 Industrial uses SU22 Professional uses

Environment

Environmental release category	ERC2 Formulation of preparations. ERC4 Industrial use of processing aids in processes and products, not becoming part of articles. ERC8a Wide dispersive indoor use of processing aids in open systems.

Worker

Process category	PROC15 Use as laboratory reagent.

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Physical state	Liquid
Concentration details	Covers concentrations up to 100 %.

Amounts used

Regional use tonnage: 500 tonnes/year
Annual amount used in the EU: 5000 tonnes

Frequency and duration of use

Industrial and Professional use of Ethanol as a laboratory agent

Continuous.
Emission days: 300 days/year

Environmental factors not influenced by risk management measures

Dilution Receiving water dilution (fresh or marine): 18000 m³/day

Risk management measures

Good practice Carefully handle the substance to minimise releases.

Technical measures When not in use, keep containers tightly closed. Avoid discharge into drains and the aquatic environment.

STP type Municipal STP.

STP details Assumed domestic sewage treatment plant flow: 2000 m³/day
Removal efficiency (total): 90%

Conditions and measures related to external treatment of waste for disposal

Sludge treatment Sludge is disposed of or recovered.

Disposal method Contain and dispose of waste according to local regulations.

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Liquid

Vapour pressure 5.73 kPa @ 20°C

Concentration details Covers concentrations up to 100 %.

Frequency and duration of use

Covers daily exposure up to 4hours

Human factors not influenced by risk management

Potentially exposed body parts Palm of one hand. Covers skin contact area up to 240 cm².

Other given operational conditions affecting workers exposure

Setting Indoor.

Temperature Assumes activities are at ambient temperature (unless stated differently).

Technical conditions and measures at process level (source) to prevent release

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

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Assumes a good basic standard of occupational hygiene is implemented.

Risk management measures

If risk of splashing, wear safety goggles or face shield.

3. Exposure estimation (Environment 1)

Assessment method ECETOC TRA v2.0 Environment

Industrial and Professional use of Ethanol as a laboratory agent

Environmental exposure	STP: Exposure 0.170 mg/l, PNEC 580 mg/l, RCR 0.000293 Fresh water: Exposure 0.027 mg/l, PNEC 0.96 mg/l, RCR 0.0281 Soil: Exposure 0.0002 mg/kg, PNEC 0.63 mg/kg, RCR 0.000317 Marine water: Exposure 0.0027 mg/l, PNEC 0.79 mg/l, RCR 0.00342

3. Exposure estimation (Health 1)

Assessment method	ECETOC TRA v2.0 Worker
Exposure	Worker - inhalation: Exposure 19.21 mg/m³, DNEL 950 mg/m³, RCR 0.0202 Worker - dermal: Exposure 0.34 mg/kg/day, DNEL 343 mg/kg/day, RCR 0.000991 Worker - all relevant routes: Exposure 3.09 mg/kg/day, DNEL 343 mg/kg/day, RCR 0.00901 Worst case assumption

Exposure scenario
Industrial and Professional use of Ethanol as heat transfer fluid, or other functional fluid

Identification

Product name	Ethanol
REACH registration number	01-2119457610-43-XXXX
CAS number	64-17-5
EC number	200-578-6
EU index number	603-002-00-5
Supplier	Univar Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 sds@univar.com

1. Title of exposure scenario

Main title	Industrial and Professional use of Ethanol as heat transfer fluid, or other functional fluid
Process scope	Use of sealed items containing functional fluids e.g. transfer oils, hydraulic fluids, refrigerants.
Main sector	SU3 Industrial uses SU22 Professional uses

Environment

Environmental release category	ERC7 Industrial use of substances in closed systems. ERC9a Wide dispersive indoor use of substances in closed systems. ERC9b Wide dispersive outdoor use of substances in closed systems.

Worker

Process category	PROC20 Heat and pressure transfer fluids in dispersive use but closed systems.

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Physical state	Liquid
Concentration details	Covers concentrations up to 100 %.

Amounts used

Regional use tonnage: 500 tonnes/year
Annual amount used in the EU: 5000 tonnes

Frequency and duration of use

Not applicable.

Industrial and Professional use of Ethanol as heat transfer fluid, or other functional fluid

Environmental factors not influenced by risk management measures

Dilution	Receiving water dilution (fresh or marine): 18000 m³/day

Risk management measures

Good practice	Carefully handle the substance to minimise releases.
Technical measures	When not in use, keep containers tightly closed. Avoid discharge into drains and the aquatic environment. Handle substance within a closed system.
STP type	Municipal STP.
STP details	Assumed domestic sewage treatment plant flow: 2000 m³/day Removal efficiency (total): 90%

Conditions and measures related to external treatment of waste for disposal

Sludge treatment	Sludge is disposed of or recovered.
Disposal method	Contain and dispose of waste according to local regulations.

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state	Liquid
Vapour pressure	5.73 kPa @ 20°C
Concentration details	Covers concentrations up to 100 %.

Frequency and duration of use

Covers daily exposure up to 4hours

Human factors not influenced by risk management

Potentially exposed body parts	Palm of both hands. Covers skin contact area up to 480 cm².

Other given operational conditions affecting workers exposure

Setting	Indoor/outdoor use.
Temperature	Assumes activities are at ambient temperature (unless stated differently).

Technical conditions and measures at process level (source) to prevent release

Technical protective measures	Handle substance within a closed system. Store substance within a closed system.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures	Assumes a good basic standard of occupational hygiene is implemented.

Risk management measures

If risk of splashing, wear safety goggles or face shield.

3. Exposure estimation (Environment 1)

Assessment method	ECETOC TRA v2.0 Environment
Environmental exposure	STP: Exposure 0 mg/l, PNEC 580 mg/l, RCR 0 Fresh water: Exposure 0.0107 mg/l, PNEC 0.96 mg/l, RCR 0.0111 Soil: Exposure 0.0002 mg/kg, PNEC 0.63 mg/kg, RCR 0.000317 Marine water: Exposure 0.0010 mg/l, PNEC 0.79 mg/l, RCR 0.00127

3. Exposure estimation (Health 1)

Industrial and Professional use of Ethanol as heat transfer fluid, or other functional fluid

Assessment method	ECETOC TRA v2.0 Worker
Exposure	Worker - inhalation: Exposure 38.42 mg/m³, DNEL 950 mg/m³, RCR 0.0404 Worker - dermal: Exposure 1.71 mg/kg/day, DNEL 343 mg/kg/day, RCR 0.00499 Worker - all relevant routes: Exposure 7.20 mg/kg/day, DNEL 343 mg/kg/day, RCR 0.0210 Worst case assumption