



# Ethanol

## Safety data sheet

Compliant with Regulation (EU) no. 830/2015

Date of revision of the SDS: 01/09/2016

Version of the SDS: 2.0

Replaces the sheet: V.01 of  
01/12/2010

ecofuel

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

### 1.1. Product identifier

REACH – type	: Substance
Trade name	: Ethanol
Chemical name	: Ethanol
IUPAC name	: Ethanol
EU index number	: 603-002-00-5
EC number	: 200-578-6
CAS number	: 64-17-5
REACH - registration number	: 01-2119457610-43-0082
Product code	: ETHANOL
Formula	: C <sub>2</sub> H <sub>6</sub> O
Product group	: Raw material

### 1.2. Relevant identified uses and uses advised against

#### 1.2.1. Relevant identified uses

Main category	: Industrial use, Professional use, Consumer use
Specification of professional/industrial use	: Industrial Chemical intermediate
Function or category	: Fuel additives, Anti-freeze agents, Lab chemicals, Lubricants and additives, Cleaning and washing agents and additives

Title	Use descriptors
(1) Manufacture of Ethanol	SU3, SU8, SU9, PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, ERC1, ERC4, ERC6a, ESVOC SPERC 1.1.v1
(2) Distribution of Ethanol	SU3, SU8, SU9, PROC8a, PROC8b, PROC9, ERC2, ESVOC SPERC 1.1b.v1
(3) Formulation and (re)packing of Ethanol, and its mixtures	SU3, SU10, PROC3, PROC5, PROC8a, PROC8b, PROC9, PROC14, ERC2, ESVOC SPERC 2.2.v1
(4) Use of Ethanol in non spray applications – Industrial	SU3, PROC10, PROC13, ERC4, ESVOC SPERC 7.13a.v1
(5) Use of Ethanol in spray applications – Industrial	SU3, PROC7, ERC4, ESVOC SPERC 4.4a.v1
(6) Use of Ethanol as a fuel - Industrial	SU3, PROC16, ERC7, ESVOC SPERC 7.12a.v1
(7) Use of Ethanol as a fuel - Professional	SU22, PROC16, ERC9a, ERC9b, ESVOC SPERC 9.12b.v1
(8) Use of Ethanol in non spray applications – Professional	SU22, PROC10, PROC13, PROC14, PROC19, ERC8a, ERC8d, ESVOC SPERC 9.13b.v1
(9) Use of Ethanol in spray applications – Professional	SU22, PROC11, ERC8a, ERC8d, ESVOC SPERC 8.4b.v1
(10) Use of Ethanol as an automotive fuel - Consumers	SU21, PC13, ERC9a, ERC9b, ESVOC SPERC 9.12c.v1
(11) Use of Ethanol as a domestic fuel - Consumers	SU21, PC13, ERC8a, ERC8d, ESVOC SPERC 9.12c.v1
(12) Use of Ethanol in products - Consumers	SU21, PC9a, PC9c, PC10, ERC8a, ERC8d, ESVOC SPERC 8.3c.v1



# Ethanol

## Safety data sheet

Compliant with Regulation (EU) no. 830/2015

Date of revision of the SDS: 01/09/2016

Version of the SDS: 2.0

Replaces the sheet: V.01 of  
01/12/2010

ecofuel

Title	Use descriptors
(13) Use of Ethanol in closed systems - Consumers	SU21, PC16, PC17, ERC9a, ERC9b, ESVOG SPERC 9.13c.v1
(14) Use of Ethanol in coatings and paints – Consumers	SU21, PC1, PC3, PC8, PC12, PC14, PC15, PC18, PC23, PC24, PC27, PC28, PC30, PC31, PC34, PC39, ERC8a, ERC8d
(15) Use of Ethanol as antifreeze or deicing product - Consumers	SU21, PC4, ERC8d, ESVOG SPERC 8.14b.v1
(16) Use in cleaning products - Consumers	SU21, PC35, ERC8a, ERC8d, ESVOG SPERC 8.4c.v1
(17) Use of Ethanol in the lab - Industrial and Professional	SU3, SU22, PROC15, ERC2, ERC4, ERC8a
(18) Use of Ethanol in functional fluids - Industrial and Professional	SU3, SU22, PROC20, ERC7, ERC9a, ERC9b, ESVOG SPERC 7.13a.v1

Full text of the use descriptors: see paragraph 16.

### 1.2.2. Uses advised against

The relevant uses are listed above. Other uses are not recommended unless an evaluation has been carried out, prior to this kind of use, that demonstrates that this use will be controlled.

### 1.3. Identification of the supplier of the safety data sheet

Company name: Ecofuel  
Address: Via Maritano, 26  
City/Country: San Donato Milanese, MI, IT  
Telephone: +39 02 520 56147  
e-mail of Service Technician: [Reach@ecofuel.eni.com](mailto:Reach@ecofuel.eni.com)

### 1.4. Emergency Telephone number

Emergency telephone number : National Centre for Toxicological Information +39 0382 24444 (24h) (IT + EN)

## SECTION 2: Hazards identification

### 2.1. Classification of substance/mixture

#### Classification according to Regulation (EC) no. 1272/2008 [EU-GHS / CLP]

Flammable Liquid 2 H225  
Eye Irritant 2 H319

Full text of the classification categories and hazard statements: see paragraph 16

### Adverse physiochemical, human health and environmental effects

Highly flammable. Slightly irritating to eyes.

### 2.2. Label Elements

#### Labelling according to Regulation (EC) no. 1272/2008 [CLP]

Hazard pictograms (CLP)





# Ethanol

## Safety data sheet

Compliant with Regulation (EU) no. 830/2015

Date of revision of the SDS: 01/09/2016

Version of the SDS: 2.0

Replaces the sheet: V.01 of  
01/12/2010

ecofuel

Signal Word (CLP)	: Hazard
Hazard Statements (CLP)	: H225 - Highly flammable liquid and vapour H319 - Causes serious eye irritation.
Precautionary Statements (CLP)	: P101 - If medical advice is needed, have product container or label at hand. P102 - Keep out of reach of children. P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. P233 - Keep container tightly closed. 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. P370+P378 - In case of fire: Use foam, carbon dioxide or dry powder to extinction. P501 - Dispose of contents/container in accordance with the applicable regulations (Legislative Decree 152/2006 and subsequent amendments)
Child-proof fastening	: No
Tactile danger signal word	: No

### Other:

General indications : (Not applicable - Classified as hazardous according to (EC) no. 1272/2008)

### 2.3. Other hazards (not relevant for classification)

Physical / chemical	: When heated, the product may give off vapours that can form flammable and explosive mixtures with air.
Health	: Eye contact can cause reddening and irritation.
Environment	: None.
Pollutants	: None.
(air pollutants or other substances)	

Other hazards that do not contribute to the classification : None.

This substance/mixture does not meet the PBT criteria of annex XIII of the REACH regulation.

This substance/mixture does not meet the vPvB criteria of annex XIII of the REACH regulation.

## SECTION 3: Composition/information on ingredients

### 3.1. Substance

Composition - General indications	: Mono-component Organic
Hazardous substances and/or substances with occupational exposure limits.	: None.
Type of substance	: Mono-constituent
Chemical name	: Ethanol
CAS number	: 64-17-5
EC number	: 200-578-6
EU index number	: 603-002-00-5



# Ethanol

Safety data sheet

Compliant with Regulation (EU) no. 830/2015

Date of revision of the SDS:

01/09/2016

Version of the SDS: 2.0

Replaces the sheet: V.01 of  
01/12/2010

ecofuel

Name	Product identifier	%	Classification according to Regulation (EC) no. 1272/2008 [EU-GHS / CLP]
Ethanol	(CAS number) 64-17-5 (EC number) 200-578-6 (EU index number) 603-002-00-5	> 95	Flammable Liquid 2, H225 Eye Irritant 2, H319

Full text of the H phrases: see section 16

## 3.2. Mixture

Not applicable

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

First aid measures after inhalation	: Move the affected person away from the contaminated area and to fresh air. Get medical advice/attention if you feel unwell.
First aid measures after skin contact	: Wash with plenty of soap and water. Consult a doctor immediately in the event of irritation, swelling or redness that develops and persists.
First aid measures after contact with eyes	: Rinse immediately with plenty of water; seek medical advice if irritation persists.
First aid measures after ingestion	: If vomiting occurs spontaneously, keep the head down to avoid aspiration into the lungs. Make victim drink plenty of water.

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

Symptoms/injuries (general indications)	: Repeated and prolonged contact with skin may cause reddening of the skin, irritation and allergic dermatitis. High concentrations of vapours may cause: migraines, nausea and dizziness.
Symptoms/injuries in case of inhalation	: Inhalation of vapours may cause irritation of the respiratory system.
Symptoms/injuries after skin contact	: Irritation. Has a degreasing effect on skin.
Symptoms/injuries after contact with the eyes	: Causes eye irritation.
Symptoms/injuries in case of swallowing	: Depression of the central nervous system.
Chronic symptoms	: Effects to the central nervous system.

### 4.3. Indication of the necessity to consult a doctor immediately and provide special treatments

Symptomatic treatment.

## SECTION 5: Fire-fighting measures

### 5.1. Extinguishing media

Appropriate extinguishing medium	: Carbon dioxide. Dry powder. Foam.
Inappropriate extinguishing agent	: Do not aim water jets directly on the burning product.

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

Fire hazard	: Heating may cause a fire. Highly flammable liquid and vapour. The vapours are flammable and may form flammable and explosive mixtures with air.
Explosion hazard	: Explosion risk in case of fire.
Hazardous decomposition products in case of fire	: Carbon dioxide. Carbon monoxide.
Combustion products	: Do not breathe smoke in the event of fire or the decomposition vapours



# Ethanol

## Safety data sheet

Compliant with Regulation (EU) no. 830/2015

Date of revision of the SDS: 01/09/2016

Version of the SDS: 2.0

Replaces the sheet: V.01 of  
01/12/2010

ecofuel

### 5.3. Advice for fire-fighters

- Precautionary measures in case of fire : Do not breathe fumes.
- Fire-extinguishing instructions : Use water spray or fog for cooling exposed containers. Move undamaged containers away from the danger zone, if this can be done safely.
- Special equipment for fire-fighters: : Do not enter the area of fire without appropriate protective equipment, including self-contained breathing apparatus. Full-body protection. Self-contained breathing apparatus (refer, if necessary, to MD 02/05/2001 for the characteristics).
- Further information (fire-fighting) : Never introduce water or an aqueous medium in the tanks or containers.

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

- General measures : If the conditions are right, stop or contain leaking at the source. Eliminate all possible sources of ignition.

#### 6.1.1. For non-emergency personnel

- Means of protection : Keep unauthorised personnel away from the area of the release. Alert the emergency teams.
- Emergency procedures : Avoid contact with eyes and skin. Avoid direct contact with the released material. Do not breathe vapours. Stay upwind. Intervention limited to qualified personnel with the appropriate protective equipment.

#### 6.1.2. For emergency personnel

- Means of protection : Large spills: all-body protective clothing resistant to chemical agents. Protective gloves. Earthing of the devices/containers.
- Emergency procedures : Ventilate the area. Remove all sources of ignition. In the case of large spills, alert the people in the areas downwind. Contain the product using floating barriers or other devices.

### 6.2. Environmental precautions

Prevent the substance from entering the sewage system, rivers or other bodies of water. Inform the authorities if the liquid enters the drains or public waters. Reduce vapours with water spray.

### 6.3. Methods and materials for containment and site clean up

- Methods for containment : Collect the spilled product using specific absorbent floating materials. If necessary, store the contaminated material for later safe disposal, use suitable containers only (watertight, sealed, impermeable, earthed). Inside buildings or confined spaces, ensure appropriate ventilation is available.
- Methods for cleaning : Sweep up and shovel into suitable containers for disposal. Collect spillage. Inform the authorities if the product enters the drains or public waters. Absorb leakage on non-combustible material, e.g. sand/earth/dry vermiculite/infusorial earth/ground limestone.
- Other information (accidental spillage) : Use only electrical safety devices and spark-free tools. Set up a containment structure around the storage systems to prevent contamination of land and water in case of leakage.

### 6.4. Reference to other sections

See Section 8. For further information, see section 13.

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

- Further hazards during processing : Handle empty containers with care due also to residual flammable vapour. It can form flammable mixtures with air during use.



# Ethanol

## Safety data sheet

Compliant with Regulation (EU) no. 830/2015

Date of revision of the SDS:

01/09/2016

Version of the SDS: 2.0

Replaces the sheet: V.01 of  
01/12/2010

ecofuel

Precautions for safe handling	: Avoid contact with eyes and skin. Avoid friction, impact or abrasion. During transfer operations, ensure correct earthing of the equipment and containers, and avoid accumulation of static electricity charges. Keep away from ignition sources. Do not smoke. Ensure sufficient ventilation. Remain upwind.
Hygiene measures	: Do not smoke. Keep away from food and drink. Avoid contact with eyes and skin.

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

Technical measures	: Ground/bond container and receiving equipment.
Conditions for storage	: Protect against sunlight.
Incompatible products	: Keep away from hot surfaces, flames or sparks. Keep away from: Oxidising agent. Acid chlorides. Acid anhydrides. Alkali metals. Ammonia. Peroxides.
Place of storage	: Store in a well-ventilated place.
Packaging and containers:	: Keep the containers properly sealed and labelled. Protect against direct sunlight.

### 7.3. Specific end uses

For further information on personal protective equipment and operating conditions, refer to the section "Exposure scenarios".

## SECTION 8: Exposure control/personal protection

### 8.1. Control parameters

Ethanol (64-17-5)		
Austria	MAK (ppm)	1000 ppm
Austria	MAK Short-term (ppm)	2000 ppm
Belgium	Limit value (ppm)	1000 ppm
Denmark	Grænseværdi (langvarig) (ppm)	1000 ppm
Denmark	Grænseværdi (kortvarig) (ppm)	2000 ppm
France	VME (ppm)	5000 ppm
France	VLE (ppm)	1000 ppm
Germany	TRGS 900 Professional exposure limits (ppm)	500 ppm
Germany	TRGS 900 Extreme limit (ppm)	1000 ppm
Hungary	CK-érték	1900 mg/m <sup>3</sup>
Hungary	MK-érték	7600 mg/m <sup>3</sup>
Holland	MAC TGG 8h (mg/m <sup>3</sup> )	260 mg/m <sup>3</sup>
Poland	NDSch (mg/m <sup>3</sup> )	1900 mg/m <sup>3</sup>
Spain	VLA-ED (ppm)	1000 ppm
Sweden	Nivågränsvärde (NVG) (ppm)	500 ppm
Sweden	Kortidsvärde (KTV) (ppm)	1000 ppm
United Kingdom	WEL TWA (ppm)	1000 ppm
Switzerland	VME (ppm)	500 ppm
Switzerland	VLE (ppm)	1000 ppm
Canada (Quebec)	VECD (ppm)	1000 ppm
USA - ACGIH	ACGIH TLV®-STEL (ppm)	1000 ppm ACGIH 2015

Ethanol (64-17-5)	
DNEL / DMEL (Workers)	
Acute - local effects, inhalation	1900 mg/m <sup>3</sup> (DNEL - NOAEC)
Long-term - local effects, skin	343 (DNEL - NOAEL)



# Ethanol

## Safety data sheet

Compliant with Regulation (EU) no. 830/2015

Date of revision of the SDS: 01/09/2016

Version of the SDS: 2.0

Replaces the sheet: V.01 of 01/12/2010

ecofuel

Ethanol (64-17-5)	
Long-term - systemic effects, inhalation	950 mg/m <sup>3</sup> (DNEL - NOAEC)
DNEL / DMEL (general public)	
Acute - local effects, inhalation	950 mg/m <sup>3</sup> (DNEL)
Long-term - systemic effects, oral	87 mg/kg of body weight/day (DNEL)
Long-term - systemic effects, inhalation	114 mg/m <sup>3</sup> (DNEL)
Long-term - systemic effects, skin	206 mg/kg of body weight/day (DNEL)
PNEC (Water)	
PNEC water (freshwater)	0.96 mg/l
PNEC water (sea water)	0.79 mg/l
PNEC water (intermittent, freshwater)	2.75 mg/l
PNEC (sediments)	
Sediments (freshwater)	3.6 mg/kg dwt
Sediment (sea water)	2.9 mg/kg dwt
PNEC (Soil)	
PNEC soil	0.63 mg/kg dwt
PNEC (oral)	
PNEC oral (secondary poisoning)	0.72 g/kg
PNEC (STP)	
Purification system	580 mg/l

Control methods (monitoring) : Refer to Legislative Decree 81/2008 and good industrial hygiene practices.

### 8.2. Exposure controls

Technical control measures : Provide a good standard of ventilation at the workplace.

Personal protective equipment (for industrial or professional use) : Gloves. Protective clothing. Goggles. Safety shoes.



Hand protection : Wear: gloves. Use the gloves in accordance with the conditions and limits set out by the manufacturer. Replace the gloves immediately when cut or perforated or show other signs of deterioration. If required, refer to the standard UNI EN 374.

Type	Material	Permeation	Thickness	Penetration	Standard
Reusable gloves	PVC (polyvinyl chloride)	6 (> 480 Minutes)	N/A	N/A	EN 374

Eye protection : Goggles

Skin and body protection : Anti-static and non-slip safety shoes or boots, resistant to chemical agents.

Respiratory protection : In case of insufficient ventilation, wear suitable respiratory equipment (EN 136/140/145). At high concentrations of vapour/gas: gas mask with type A filter

Thermal protection : None in normal conditions.

Environmental exposure controls : Do not dispose of in the environment.



# Ethanol

## Safety data sheet

Compliant with Regulation (EU) no. 830/2015

Date of revision of the SDS: 01/09/2016

Version of the SDS: 2.0

Replaces the sheet: V.01 of  
01/12/2010

ecofuel

Further information : Do not eat, drink or smoke during use.

### 8.3. Hygiene measures

General protective and hygiene measures : Do not reuse contaminated garments.  
at the workplace

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

Physical state	: Liquid
Appearance	: Clear liquid.
Molecular mass	: 46.07
Colour	: Colourless.
Odour	: characteristic.
Odour Threshold	: $\approx 10$ ppm 18.8 mg/m <sup>3</sup>
pH	: Not applicable
Evaporation rate rel. To butyl acetate	: 3.2
Melting point	: No data available.
Freezing point	: -114 °C
Boiling point	: 78.3
Flash point	: 13
Auto-ignition temperature	: 363 °C
Decomposition temperature	: $\geq 700$ °C
Flammability (solids, gas)	: No data available.
Vapour pressure	: 5.7 - 5.9 kPa at 20°C
Relative vapour density at 20 °C	: 0.79 - 0.8
Relative Density	: 0.789
Relative gas density	: 1.03
Solubility	: Water: 789 g/l at 20°C Organic solvent: soluble in ether and chloroform
Log Pow	: -0.35 kPa at 20°C
Kinematic viscosity	: 1.082 - 2.247 mm <sup>2</sup> /s
Dynamic viscosity	: 0.544 - 1.22 mPa.s
Explosive properties	: None.
Oxidising properties	: None.
Flammability/explosive limits	: 3.3 vol %

### 9.2. Further information

Further indications : No data available.

*The data above (9.1 - 9.2) represent typical values and are purely indicative.*

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

The material can attack certain types of plastic, aluminium, rubber and coatings.



# Ethanol

## Safety data sheet

Compliant with Regulation (EU) no. 830/2015

Date of revision of the SDS: 01/09/2016

Version of the SDS: 2.0

Replaces the sheet: V.01 of  
01/12/2010

ecofuel

### 10.2. Chemical stability

Stable under normal conditions.

### 10.3. Possibility of hazardous reactions

May react vigorously with alkali metals/alkali earth metals. Reacts vigorously with oxidants and strong acids. Heating may cause a fire or explosion.

### 10.4. Conditions to be avoided

Heat. Naked flames. Humidity.

### 10.5. Incompatible materials

Acids. Acid chlorides. Acid anhydrides. Alkali metals. Oxidising agent. Ammonia. Peroxides.

### 10.6. Hazardous decomposition products

Hazardous decomposition products should not form under normal conditions of storage and use. Thermal decomposition generates: methane, ethane, formaldehyde, acetaldehyde, ether and phenol.

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

Acute toxicity : Not classified (data conclusive, not sufficient for classification)

Ethanol (64-17-5)	
DL50 oral rat	10470 mg/kg of body weight OECD Guideline 401
DL50 skin rabbit	> 15800 mg/kg of body weight
CL50 inhalation rat (mg/l)	51 mg/l 6 hours - OECD Guideline 403

Skin corrosion/irritation : Not classified (data conclusive, not sufficient for classification)  
Rabbit  
(OECD 404)  
Not irritating  
pH: Not applicable

Serious eye damage/serious eye irritation : Causes serious eye irritation.  
Rabbit  
Causes eye irritation  
(OECD 405)  
pH: Not applicable

Respiratory or skin sensitisation : Not classified (data conclusive, not sufficient for classification)  
Guinea-pig  
(OECD 406)  
not sensitising.

Germ cell mutagenicity : Not classified (data conclusive, not sufficient for classification)

Carcinogenicity : Not classified (data conclusive, not sufficient for classification)

Reproductive toxicity : Not classified (data conclusive, not sufficient for classification)  
Developmental toxicity; teratogenicity: the results of the tests showed positive effects only with doses that have caused maternal toxicity.  
Classification is not necessary.  
May damage fertility

Specific target organ toxicity (single exposure) : Not classified (data conclusive, not sufficient for classification)  
Depression of the central nervous system



# Ethanol

## Safety data sheet

Compliant with Regulation (EU) no. 830/2015

Date of revision of the SDS: 01/09/2016

Version of the SDS: 2.0

Replaces the sheet: V.01 of  
01/12/2010

ecofuel

Specific target organ toxicity (repeated exposure) : Not classified (data conclusive, not sufficient for classification)

May cause: Depression of the central nervous system  
May cause damage to the heart through prolonged or repeated exposure via ingestion.

Excessive exposure may cause stomach cramps, vomiting and coughing, and may also cause damage to the kidneys and liver

Ethanol (64-17-5)	
NOAEL (subchronic, taken orally, animal/male, 90 days)	3250 mg/kg of body weight EPA OPPTS

Aspiration hazard : Not classified (data conclusive, not sufficient for classification)  
May be harmful if swallowed or enters airways

Ethanol (64-17-5)	
Kinematic viscosity	1.082 - 2.247 mm <sup>2</sup> /s

Potentially dangerous effects on human health and potential symptoms : Eye contact can cause temporary reddening and irritation.  
High concentrations of vapours may cause: migraines, nausea and dizziness.

IARC group : 1

Further information : Likely exposure routes - oral, inhalation, skin and eyes.

## SECTION 12: Ecological information

### 12.1. Toxicity

Ecology - general : Not harmful to aquatic organisms.

Ethanol (64-17-5)	
CL50 fish 1	14.2 mg/l (96 hours - US EPA E03-05 - Pimephales promelas - 1984)
CL50 fish 2	11200 mg/l (24 hours - US EPA E03-05 - Oncorhynchus mykiss)
CL50 other aquatic organisms 1	0.1 - 1 mg/l (48 hours - Eisenia fetida)
CE50 Daphnia 1	5012 mg/l (48 hours - LC50 - ASTM E729-80)
CE50 other aquatic organisms 1	5.8 g/l 4 hours
EC50 72 h Algae [mg/l] 1	275 mg/l (Chlorella vulgaris - OECD Guideline 201)
EC50 96h Algae [mg/l] (1)	1000 mg/l (Chlorella vulgaris - OECD Guideline 201)
ErC50 (algae)	22.6 mg/l (10d)
Chronic NOEC for fish	250 mg/l 5 days
Chronic NOEC for crustaceans	9.6 mg/l 10 days
Chronic NOEC for algae	280 mg/l 7 days

### 12.2. Persistence and degradability

Ethanol (64-17-5)	
Persistence and degradability	Readily biodegradable.
Biochemical oxygen demand (BOD)	1067 - 1236 g O <sub>2</sub> /g substance
Chemical oxygen demand (COD)	1.99 g O <sub>2</sub> /g substance

### 12.3. Bioaccumulation potential

Ethanol (64-17-5)	
Bioconcentration factor (FCB REACH)	3.2
Log Pow	-0.35 kPa at 20°C
Bioaccumulation potential	Weak bioaccumulative potential.

### 12.4. Mobility in soil

Ethanol (64-17-5)	
Log Koc	2.75



# Ethanol

## Safety data sheet

Compliant with Regulation (EU) no. 830/2015

Date of revision of the SDS: 01/09/2016

Version of the SDS: 2.0

Replaces the sheet: V.01 of  
01/12/2010

ecofuel

Ecology - soil	Weak adsorption.
----------------	------------------

### 12.5. Results of PBT and vPvB assessment

<b>Ethanol (64-17-5)</b>
This substance/mixture does not meet the PBT criteria of annex XIII of the REACH regulation.
This substance/mixture does not meet the vPvB criteria of annex XIII of the REACH regulation.

### 12.6. Other adverse effects

Other adverse effects : None.

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

Local legislation (waste)	: Disposal in accordance with the legal provisions in force/Dispose according to Legislative Decree 152/06 and subsequent amendments
Waste treatment procedure	: Can be reused after regeneration.
Recommendations on disposal in the drains	: The sludge generated by treatment of industrial waters must be incinerated, contained or treated.
Recommendations on disposal	: Contact the producer or supplier for information on recovery/recycling.
Further indications	: Avoid bringing this material in contact with water (or damp air). Empty containers may contain flammable product residues. Do not pierce, cut, grind, weld, braze, burn or incinerate empty containers or drums unless they have been suitably cleaned. Dispose of empty containers that have not been cleaned in conditions of safety, in accordance with Legislative Decree 152/2006 and subsequent amendments.
Ecology - waste	: Do not dispose of in the environment.
code H	: H3-A - «Highly flammable»: — liquid substances and preparations having a flash point below 21 °C (including extremely flammable liquids), or — substances and preparations which may become hot and finally catch fire in contact with air at ambient temperature without any application of energy, or — solid substances and preparations which may readily catch fire after brief contact with a source of ignition and which continue to burn or to be consumed after removal of the source of ignition, or — gaseous substances and preparations which are flammable in air at normal pressure, or — substances and preparations which, in contact with water or damp air, evolve highly flammable gases in dangerous quantities. H4 - «Irritant»: non-corrosive substances and preparations which, through immediate, prolonged or repeated contact with the skin or mucous membrane, can cause inflammation.

## SECTION 14: Transport information

Pursuant to the requirements of ADR / RID / ADN / IMDG / ICAO / IATA

ADR	IMDG	IATA	ADN	RID
<b>14.1. UN number</b>				
1170	1170	1170	1170	1170
<b>14.2. UN shipment name</b>				
ETHANOL (ETHYL ALCOHOL)	ETHANOL (ETHYL ALCOHOL)	ETHANOL	ETHANOL (ETHYL ALCOHOL) / ETHANOL IN SOLUTION (ETHYL ALCOHOL IN SOLUTION)	ETHANOL (ETHYL ALCOHOL) / ETHANOL IN SOLUTION (ETHYL ALCOHOL IN SOLUTION)



# Ethanol

## Safety data sheet

Compliant with Regulation (EU) no. 830/2015






Date of revision of the SDS:

01/09/2016

Version of the SDS: 2.0

Replaces the sheet: V.01 of  
01/12/2010

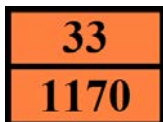
ecofuel

Description of the transport document				
UN 1170 ETHANOL (ETHYL ALCOHOL), 3, II, (D/E)	UN 1170 ETHANOL (ETHYL ALCOHOL), 3, II			
14.3. Transport hazard classes				
3	3	3	3	3
				
14.4. Packing group				
II	II	II	II	II
14.5. Environmental hazards				
Environmentally hazardous: No	Environmentally hazardous: No Marine pollution: No	Environmentally hazardous: No	Environmentally hazardous: No	Environmentally hazardous: No
Further information (transport): None.				

### 14.6. Special precautions for users

#### - Land transport

Regulation for transport (ADR) : Subject to requirements  
 Classification code (UN) : F1  
 Limited quantities (ADR) : 1L  
 Excepted quantities (ADR) : E2  
 Transport category (ADR) : 2  
 Hazard number (Kemler code) : 33  
 Orange panel :



Tunnel restriction code (ADR) : D/E

#### - Maritime transport

Regulation for transport (IMDG) : Subject to requirements  
 Limited quantities (IMDG) : 5 L  
 Excepted quantities (IMDG) : E1  
 EmS-No. (Fire class) : F-E  
 EmS-No. (Spillage) : S-D  
 Stowage category (IMDG) : A

#### - Air transport

Regulation for transport (ICAO) : Subject to requirements  
 Excepted quantities for passenger and cargo planes (IATA) : E1  
 Max net quantities of limited quantities for passenger and cargo planes (IATA) : 10L

#### - Transport by inland waterways

Regulation for transport (ADN) : Subject to requirements  
 Classification code (ADN) : F1  
 Limited quantities (ADN) : 1 L  
 Excepted quantities (ADN) : E2



# Ethanol

## Safety data sheet

Compliant with Regulation (EU) no. 830/2015

Date of revision of the SDS: 01/09/2016

Version of the SDS: 2.0

Replaces the sheet: V.01 of  
01/12/2010

ecofuel

### - Transport by rail

Regulation for transport (RID)	: Subject to requirements
Classification code (RID)	: F1
Limited quantities (RID)	: 1L
Excepted quantities (RID)	: E2
Transport category (RID)	: 2
Hazard number (RID)	: 33

### 14.7. Transport of bulk material in accordance with annex II of MARPOL 73/78 and the IBC code

IBC code	: Applicable.
IBC name of the product	: IBC name of the product
Pollutant category	: Z

## SECTION 15: Regulatory information

### 15.1. Standards and legislation on health, safety and environment specific to the substance or mixture

#### 15.1.1. EU regulations

No restrictions pursuant to annex XVII of the REACH regulation

Ethanol is not in the REACH Candidate List

Ethanol is not in annex XIV of the REACH list

Applicable legislation of the European Union : 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) (et sequens). Regulation (EC) No. 1272/2008 of the European Parliament and of the Council of 16 December 2008 concerning the classification, labelling and packaging of substances and mixtures amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006 (et sequens).

#### 15.1.2. Domestic standards

##### Germany

Reference to Annex VwVwS : Water hazard class (WGK) (D) 1, low hazard to waters (Classification according to VwVwS, annex 2; No WGK 96)

12th Order implementing the federal law on Emissions - 12.BImSchV : Not subject to the 12th BImSchV (decree on protection against emissions) (Regulation on major accidents)

##### Denmark

Fire hazard class : Class I-1

Unit of storage : 1 litre

Notes on classification : F <Flammable Liquid 2>; The emergency management guidelines for the storage of flammable liquids must be observed

### 15.2. Chemical Safety Assessment

A chemical safety assessment was carried out.

## SECTION 16: Further information

Notes on changes:

MAK (ppm). MAK Short-term (ppm). Limit value (ppm). VLE (ppm). VME (ppm). TRGS 900 Professional exposure limits (ppm). TRGS 900 Extreme limit (ppm). ACGIH TLV®-TWA (ppm). VLA-ED (ppm). VLE (ppm). VME (ppm). MAC TGG 8H (mg/m³). WEL TWA (ppm). Grænseværdi (langvarig) (ppm). Grænseværdi (kortvarig) (ppm). MK-érték. CK-érték. NDSch (mg/m³). Nivågränsvärde (NVG) (ppm). Kortidsvärde (KTV) (ppm). VECD (ppm). Hazard pictograms (CLP). CLP signal word. Signal Words (CLP). Precautionary Statements (CLP).



# Ethanol

## Safety data sheet

Compliant with Regulation (EU) no. 830/2015

Date of revision of the SDS: 01/09/2016

Version of the SDS: 2.0

Replaces the sheet: V.01 of  
01/12/2010

ecofuel

### Abbreviations and acronyms:

ADN	European agreement governing the international carriage of dangerous goods by inland waterways
ADR	European agreement governing the international carriage of dangerous goods by road
BCF	Bioconcentration Factor
CLP calculator	Regulation concerning classification, labelling and packaging; regulation (EC) no. 1272/2008
DNEL	Derived No-Effect Level
EC50	Half maximal effective concentration
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
LC50	Median lethal concentration of a group of test animals
LD50	Median lethal dose that kills 50 percent of a test sample
NOAEL	No Observed Adverse Effect Level
NOAEC	No Observed Adverse Effect Concentration
OCSE	Organisation for economic co-operation and development
PBT	Persistent, Bioaccumulative and Toxic substance
PNEC	Predicted No Effect Concentration
REACH	Registration, Evaluation, Authorisation & restriction of CHemicals, Regulation (EC) no. 1907/2006.
RID	Regulations governing the international carriage of dangerous goods by rail
SDS	Safety Data Sheet
STP	Sewage Treatment Plant
vPvB	Very Persistent and very Bioaccumulative

Data sources : Regulation (EC) No. 1272/2008 of the European Parliament and of the Council of 16 December 2008 concerning the classification, labelling and packaging of substances and mixtures amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006 (et sequens).

Suggested vocational training : Provide professional workers with appropriate training in the use of Personal Protective Equipment (PPE), in relation to the information in this safety data sheet.

Further information : Do not use the product for purposes other than those indicated by the manufacturer.

### Full text of the H and EUH phrases:

Eye Irritant 2	Serious eye damage/eye irritation, Category 2
Flammable Liquid 2	Flammable liquids Category 2
H225	Highly flammable liquid and vapour
H319	Causes serious eye irritation
ERC1	Manufacture of substances
ERC2	Formulation of preparations
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)
ERC7	Industrial use of substances in closed systems
ERC8a	Wide dispersive indoor use of processing aids in open systems
ERC8d	Wide dispersive outdoor use of processing aids in open systems
ERC9a	Wide dispersive indoor use of substances in closed systems
ERC9b	Wide dispersive outdoor use of substances in open systems



# Ethanol

## Safety data sheet

Compliant with Regulation (EU) no. 830/2015

Date of revision of the SDS: 01/09/2016

Version of the SDS: 2.0

Replaces the sheet: V.01 of  
01/12/2010

ecofuel

ESVOC SPERC 1.1.v1	Manufacture of substances: Industrial (SU8, SU9)
ESVOC SPERC 1.1b.v1	Distribution: Industrial (SU3)
ESVOC SPERC 2.2.v1	Formulation and (re)packing of substances and their mixtures: Industrial (SU10)
ESVOC SPERC 4.4a.v1	Use in cleaning products: Industrial (SU3)
ESVOC SPERC 7.12a.v1	Use as a fuel: Industrial (SU3)
ESVOC SPERC 7.13a.v1	Use as functional fluids: Industrial (SU3)
ESVOC SPERC 8.14b.v1	De-icing and antifreeze applications: Consumer (SU21)
ESVOC SPERC 8.3c.v1	Use in coatings: Consumer (SU21)
ESVOC SPERC 8.4b.v1	Use in cleaning products: Professional (SU22)
ESVOC SPERC 8.4c.v1	Use in cleaning products: Consumer (SU21)
ESVOC SPERC 9.12b.v1	Use as a fuel/fuel additive: Professional (SU 22)
ESVOC SPERC 9.12c.v1	Use as a fuel/fuel additive: Consumer (SU21)
ESVOC SPERC 9.13b.v1	Use as functional fluids: Professional (SU22)
ESVOC SPERC 9.13c.v1	Use as functional fluids: Consumer (SU21)
PC1	Adhesives, sealants
PC10	
PC12	Fertilisers
PC13	Fuels/Fuel additives
PC14	Metal surface treatment products, including galvanic and electroplating products
PC15	Non-metal-surface treatment products
PC16	Heat transfer fluids
PC17	Hydraulic fluids
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
PC3	Air care products
PC30	Photochemicals
PC31	Polishes and wax blends
PC34	Textile dyes, finishing and impregnating products; including bleaches and other processing aids
PC35	Washing and cleaning products (including solvent based products)
PC39	Cosmetics, personal care products
PC4	Antifreeze and de-icing products
PC5	
PC8	Biocidal products (e.g. disinfectants, pest control)
PC9a	Coatings and paints, thinners, paint removers
PC9c	Finger paints
PROC1	Use in a closed process, no likelihood of exposure (no sampling)
PROC10	Roller application or brushing
PROC11	Non-industrial spraying
PROC13	Treatment of articles by dipping and pouring
PROC14	Production of preparations* or articles by tableting, compression, extrusion, pelletisation
PROC15	Use as laboratory reagent
PROC16	Using material as fuel sources, limited exposure to unburned product to be expected



# Ethanol

## Safety data sheet

Compliant with Regulation (EU) no. 830/2015

Date of revision of the SDS: **01/09/2016**

Version of the SDS: **2.0**

Replaces the sheet: V.01 of  
01/12/2010

ecofuel

PROC19	Hand mixing with intimate contact and only personal protective equipment (PPE) available
PROC2	Use in closed, continuous process with occasional controlled exposure (with sampling)
PROC20	Heat and pressure transfer fluids in dispersive, professional use but closed systems
PROC3	Use in closed bath process (synthesis or formulation) (with sampling)
PROC4	Use in bath and other process (synthesis) where opportunity for exposure arises
PROC5	Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)
PROC7	Industrial spraying
PROC8a	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
SU10	Formulation [mixing] of preparations and/or repackaging (excluding alloys)
SU21	Consumer uses: private households (= general public = consumers)
SU22	Professional uses: public domain (administration, education, entertainment, services, craftsmen)
SU3	Industrial uses: use of substances on their own or in preparations* for industrial manufacturing
SU8	Manufacture of bulk, large scale chemicals (including petroleum products)
SU9	Manufacture of fine chemicals

SDS EU (REACH Annex II) eni 2015

*This information is based on our current knowledge and describes the product only for the purposes of protection of health, safety and the environment. The information does not, therefore, lay down any guarantees of the specific characteristics of the product.*



# Ethanol

Safety data sheet

Compliant with Regulation (EU) no. 830/2015

Date of revision of the SDS: 01/09/2016

Version of the SDS: 2.0

Replaces the sheet: V.01 of  
01/12/2010

ecofuel

## Annex

### EXPOSURE SCENARIOS

#### Index

1. Production of Ethanol
2. Distribution of Ethanol
3. Formulation and (re)packing of Ethanol – Industrial
4. Use of Ethanol in non spray applications – Industrial
5. Use of Ethanol in spray applications – Industrial
6. (Use of Ethanol as a fuel – Industrial
7. Use of Ethanol as a fuel – Professional
8. Use of Ethanol in non spray applications – Professional
9. Use of Ethanol in spray applications – Professional
10. Use of Ethanol as an automotive fuel – Consumers
11. Use of Ethanol as a domestic fuel – Consumers
12. Use of Ethanol in products – Consumers
13. Use of Ethanol in closed systems – Consumers
14. Use of Ethanol in coatings and paints – Consumers
15. Use of Ethanol as antifreeze or de-icing product – Consumers
16. Use of Ethanol in cleaning products – Consumers
17. Use of Ethanol in the lab – Industrial and Professional
18. Use of Ethanol in functional fluids – Industrial and Professional



# Ethanol

Safety data sheet

Compliant with Regulation (EU) no. 830/2015

Date of revision of the SDS:

01/09/2016

Version of the SDS: 2.0

Replaces the sheet: V.01 of  
01/12/2010

ecofuel

## 1. Production of Ethanol

1. Exposure Scenario for Industrial manufacturing of Ethanol, or use as intermediate or process chemical		
Ethanol REACH Association - reference no. ES1		
Systematic title based on use descriptors	SU3, SU8, SU9 PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b ERC1, ERC4, ERC6A	
Processes, tasks, activities covered	Covers the industrial manufacture of Ethanol at controlled manufacturing plants in continuous and batch processes. Includes recycling/recovery, material transfers, filling, storage, maintenance and loading, sampling and use as an intermediate or process chemical.	
Assessment Method	Ecetoc TRA integrated model version 2, EUSES v.2.	
1.1 Exposure Scenario		
1.1.1. Operational conditions and risk management measures		
<p>Process categories: Continuous process in high integrity contained systems with little potential for exposure (sampling via closed loop system) and continuous process not specifically aimed at minimising emissions. It is not a high integrity system but a system prone to occasional exposure through e.g. maintenance and sampling. Sampling, loading, filling, storage and transfer under controlled conditions at the manufacturing site is also included.</p> <p>Environmental release categories: Manufacture, and industrial use as intermediate or process chemical of organic substances using continuous processes or batch processes applying dedicated or multi-purpose equipment, either technically controlled or operated by manual interventions.</p> <p>Number of sites using the substance: Substance widely used.</p>		
1.1.2 Control of workers exposure		
Product characteristics (including package design affecting exposure)	Physical state	liquid
	Concentration of substance in product	Up to 100 %
	Vapour pressure of substance	5.73 kPa
Amounts used	n.a. in tier1 TRA model	
Frequency and duration of use/exposure	Frequency of exposure (weekly)	> 4 Days/week
	Frequency of exposure (annual)	240 Days/year
	Duration of exposure	> 4 Hours/day
Human factors not influenced by risk management	Potentially exposed body parts	Two hands face side only (automated processes/PROC1, 2) Two hands (transfer, filling, etc./PROC8a, b)
	Exposed skin surface	480 cm <sup>2</sup> (automated processes/PROC1, 2, 3, 4) 960 cm2 (transfer, filling, etc./PROC8a, b)
Other given operational conditions affecting workers exposure	Assumes a good basic standard of occupational hygiene is implemented.	
	Setting (indoor/outdoor)	Outdoor
Technical conditions and measures at process level (source) to prevent release	No specific technical prevention measures required for process in high integrity contained systems with little potential for exposure or with only occasional minor exposure through e.g. maintenance and sampling.	
Technical conditions and measures to control dispersion from source towards the worker	Ventilation	None required
	Efficiency rate	95%
Organisational measures to prevent /limit releases, dispersion and exposure	Handle substances within a predominantly closed system. Ensure material transfers are under containment or extract ventilation. No specific technical prevention measures required for process in high integrity contained systems with little potential for exposure or with only occasional minor exposure through e.g. maintenance and sampling. Provide extract ventilation to points where emissions occur. Wear suitable gloves tested to EN374 during the activities where skin contact is possible.	
Conditions and measures related to	PPE: Respiratory Protection - not required for normal operations. PPE: Eye Protection – suitable	

# Ethanol

Product code: ETHANOL

## Safety data sheet

Compliant with Regulation (EU) no. 830/2015

Date of revision of the SDS: 13/04/2016

Version of the SDS: 2.0

personal protection, hygiene and health evaluation	eye protection should be worn when handling product if there is a risk of splashing.		
1.1.3 Control of environmental exposure			
Product characteristics	Physical state	liquid	
	Concentration of substance in product	Up to 100 %	
Amounts used	Daily at point source	not applicable	
	Annually at point source	400,000 t/year (maximum plant size, worst case)	
	Annually total	4,600,000 t/year total market	
Frequency and duration of use	Pattern of release	Continuous 350 days per year	
Environment factors not influenced by risk management	Flow rate of receiving surface water	18,000m3/day (default)	
Other given operational conditions affecting environmental exposure	Processing setting (indoor/outdoor)	Indoor and/or outdoor	
	Processing temperature	Environment	
	Processing pressure	Environment	
Technical conditions and measures at process level (source) to prevent release	Keep containers tightly closed. Store in a bounded area. Do not discharge into sewers or drains. Use appropriate emission abatement equipment from LEV systems if required by local legislation. Waste product and empty containers should be disposed of as hazardous waste in accordance with all local and national regulations		
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Apply technical measures aiming at reducing releases to air (containment by preference or catalytic or thermal gas oxidation)	Efficacy >70% (for ethanol)	
	Apply technical measures aiming at reduction and cleaning of waste water (WWTP /local STP (e.g. biological treatment))	Efficacy >87% (for ethanol)	
Organisational measures to prevent/limit release from site	Do not release wastewater directly into environment	Wastewater release into local or municipal STP.	
Conditions and measures related to municipal sewage treatment plant	Size of STP	>= 2000 m³/day	
	Degradation efficacy	90% (for ethanol)	
	Sludge treatment	Disposal or recovery	
Conditions and measures related to treatment of waste	Hazardous waste incineration or dispose for use in recycled fuels		
1.2. Exposure estimate			
The workers exposure estimation is calculated with Ecetoc TRA model v2.. The exposure estimates below are based on the PROC with the highest exposure levels in this scenario (PROC8a).			
Workers exposure	Exposure estimate	DNEL	Comment
Inhalation (mg/m³)	96.04	950 (OEL)	PROC 8a results in the highest exposure in this exposure scenario
Dermal (mg/kd/day)	13.71	343	
Combined (mg/kg/day)	27.43	343	
The environmental exposure estimation is based with EUSES 2.0 model. Ethanol is fully soluble in water, readily biodegradable, not bio-accumulative, does not accumulate in the sediments or soil and is assumed to degrade by 90% in the local and/or municipal STP under evaluated conditions.			
Release times per year (days/year)	350	Local release to air (kg/day)	226.0
Fraction used at main local source	0,086	Local release to waste water (kg/day)	11.3
Amount used locally (kg/day)	0	Local release to soil (kg/day)	0
Environmental exposure	PEC	PNEC	Comment
In STP / untreated wastewater(mg/l)	5.65	580	-
In local freshwater (mg/l)	0.0000264	0.96	-
In local soil	0.00119 (mg/kg)	0.63 (mg/kgwwt)	-

# Ethanol

Product code: ETHANOL

## Safety data sheet

Compliant with Regulation (EU) no. 830/2015

Date of revision of the SDS: 13/04/2016

Version of the SDS: 2.0

In local marine water (mg/l)	0.00000224	0.79	-
Total daily intake via local environment (mg/kgdw/d)	Negligible compared to daily dietary intake and endogenous formation.		
Guidance to DU to evaluate whether he works inside the boundaries set by the ES			
The workers exposure and environmental emissions have been evaluated using Ecetoc TRA integrated tool version 2 and EUSES v2.0 respectively.			
If the local environmental emission conditions deviate significantly from the used default values, please use the algorithm below to estimate the correct local emissions and RCRs:			
PECcorrected = PECcalculated * (local emission fraction) * (local WWTP flow rate fraction) * (local river flow rate fraction) * (local STP efficiency fraction)			
Example for calculating your local freshwater PEC:			
Corrected local freshwater PEC = 0,0000264* (your local emission [kg/day] / 350) * (2000 / your local WWTP flow rate [m3/day]) * (18000 / your local river flow rate [m3/day]) * ((1 – your local WWTP efficiency)/0.1)			
Additional good practice advice beyond the REACH CSA			
The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH		Use specific measures expected to reduce the predicted exposure beyond the level estimated based on the exposure scenario when possible.	

## 2. Distribution of Ethanol

2. Exposure Scenario for Industrial distribution of Ethanol		
Ethanol REACH Association - reference no. ES2		
Systematic title based on use descriptors	SU3, SU8, SU9 PROC8a, PROC8b, PROC9 ERC2	
Processes, tasks, activities covered	Covers transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated and dedicated facilities, loading (including marine vessel/barge, rail/road car and IBC loading), storage, and repacking (including drums and small packs) of substance, including its distribution. Intended for e.g. traders, distributors, transporters, etc.	
Assessment Method	Ecetoc TRA integrated model version 2	
2.1 Exposure Scenario		
2.1.1. Operational conditions and risk management measures		
Process categories: Sampling, loading, filling, transfer, drumming, bagging in non-dedicated facilities. Exposure related to vapour, aerosols or spillage, and cleaning of equipment to be expected. Environmental release categories: mixing, blending, diluting, transferring, filling, drumming and distributing activities of substances in all types of distribution and trading industry. Also includes drumming, filling and distribution activities in formulating industries, such as paints and do-it-yourself products, pigment pastes, fuels, household products (cleaning products), cosmetics, lubricants etc.		
Number of sites using the substance: substance widely used.		
2.1.2 Control of workers exposure		
Product characteristics (including package design affecting exposure)	Physical state	liquid
	Concentration of substance in product	Up to 100 %
	Vapour pressure of substance	5.73 kPa
Amounts used	n.a. in tier1 TRA model	
Frequency and duration of use/exposure	Frequency of exposure (weekly)	> 4 Days/week
	Frequency of exposure (annual)	240 Days/year
	Duration of exposure	> 4 Hours/day
Human factors not influenced by risk management	Potentially exposed body parts	Two hands
	Exposed skin surface	960 cm <sup>2</sup>
Other given operational conditions affecting workers exposure	Assumes a good basic standard of occupational hygiene is implemented.	
	Setting (indoor/outdoor)	Outdoor or in ventilated (open) spaces
Technical conditions and measures at process level (source) to prevent release	No specific technical prevention measures required	
Technical conditions and measures to control dispersion from source towards the worker	Outdoor	No specific measures identified.
	If indoors	Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour). Ensure material transfers are under containment or extract ventilation. Provide good ventilation to points where emissions occur.
Organisational measures to prevent /limit releases, dispersion and exposure	No specific measures identified.	
Conditions and measures related to personal	PPE: Eye Protection – suitable eye protection should be worn when handling product if	

# Ethanol

## Safety data sheet

Compliant with Regulation (EU) no. 830/2015

Product code:

ETHANOL

Date of revision of the SDS: 13/04/2016

Version of the SDS: 2.0

protection, hygiene and health evaluation		there is a risk of splashing. Wear suitable gloves tested to EN374 during the activities where skin contact is possible.	
2.1.3 Control of environmental exposure			
Product characteristics	Physical state	liquid	
	Concentration of substance in product	Up to 100 %	
Amounts used	Daily at point source	not applicable	
	Annually at point source	75,000 t/year (worst case scenario, at point source)	
	Annually total	3,800,000 t/year total market	
Frequency and duration of use	Pattern of release	300 days per year	
Environment factors not influenced by risk management	Flow rate of receiving surface water	18,000m3/day (default)	
Other given operational conditions affecting environmental exposure	Processing setting (indoor/outdoor)	Outdoor	
	Processing temperature	Environment	
	Processing pressure	Environment	
Technical conditions and measures at process level (source) to prevent release	Keep containers tightly closed. Store in a bounded area. Do not discharge into sewers or drains. Waste product and empty containers should be disposed of as hazardous waste in accordance with all local and national regulations		
Organisational measures to prevent/limit release from site	Do not release wastewater directly into environment	Wastewater release into local or municipal STP.	
Conditions and measures related to municipal sewage treatment plant	Size of STP	>2000 m³/day	
	Degradation efficacy	>90% (for ethanol)	
	Sludge treatment	Disposal or recovery	
Conditions and measures related to treatment of waste	Hazardous waste incineration or dispose for use in recycled fuels		
2.2. Exposure estimate			
The workers exposure estimation is calculated with Ecetoc TRA model v2.. The exposure estimates below are based on the PROC with the highest exposure levels in this scenario (PROC8a).			
Workers exposure	Exposure estimate	DNEL	Comment
Inhalation (mg/m³)	96.04	950 (OEL)	PROC 8a results in the highest exposure in this exposure scenario
Dermal (mg/kd/day)	13.71	343	
Combined (mg/kg/day)	27.43	343	
The environmental exposure estimation is based on Ecetoc TRA model v2 including the data from TGD A&B tables (MC-1b, IC-2, UC-48, fraction main source 0.1) and based on the worst-case scenario with point-source production volume of 15,000 t/year. Ethanol is fully soluble in water, readily biodegradable, not bio-accumulative, does not accumulate in the sediments or soil and is assumed to degrade by 90% in the local and/or municipal STP under evaluated conditions.			
Release times per year (days/year)	300	Local release to air (kg/day)	50
Fraction used at main local source	0.1	Local release to waste water (kg/day)	15
Amount used locally (kg/day)	5000	Local release to soil (kg/day)	1
Environmental exposure	PEC	PNEC	Comment
In STP / untreated wastewater(mg/l)	4.66	580	-
In local freshwater (mg/l)	0.52	0.96	-
In local soil	0.007 (mg/kg)	0.63 (mg/kgwwt)	-
In local marine water (mg/l)	0.0515	0.79	-
Total daily intake via local environment (mg/kgdw/d)	Negligible compared to daily dietary intake and endogenous formation.		
Guidance to DU to evaluate whether he works inside the boundaries set by the ES			
The workers exposure and environmental emissions have been evaluated using Ecetoc TRA integrated tool version 2 and EUSES v2.0 respectively.			

# Ethanol

Product code: ETHANOL

Safety data sheet  
Compliant with Regulation (EU) no. 830/2015

Date of revision of the SDS: 13/04/2016  
Version of the SDS: 2.0

<p>If the local environmental emission conditions deviate significantly from the used default values, please use the algorithm below to estimate the correct local emissions and RCRs:</p> <p><math>PEC_{corrected} = PEC_{calculated} * (local\ emission\ fraction) * (local\ WWTP\ flow\ rate\ fraction) * (local\ river\ flow\ rate\ fraction) * (local\ STP\ efficiency\ fraction)</math></p> <p><u>Example for calculating your local freshwater PEC:</u></p> <p>Corrected freshwater PEC = 0.104 * (your local emission [kg/day] / 15) * (2000 / your local WWTP flow rate [m3/day]) * (18000 / your local river flow rate [m3/day]) * ((1 – your local WWTP efficiency)/0.1)</p>	
<p><b>Additional good practice advice beyond the REACH CSA</b></p> <p>Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to the obligations laid down in Article 37 (4) of the REACH regulation.</p>	<p>Use specific measures expected to reduce the predicted exposure beyond the level estimated based on the exposure scenario when possible.</p>

### 3. Formulation of Ethanol – Industrial

3. Exposure Scenario for Industrial formulation and (re)packing of Ethanol, and its mixtures		
Ethanol REACH Association - reference no. ES3		
Systematic title based on use descriptors	SU3, SU10 PROC3, PROC5, PROC8a, PROC8b, PROC9, PROC14 ERC 2	
Processes, tasks, activities covered	Covers industrial formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, large and small scale packing, maintenance. Includes formulation of fuels containing ethanol.	
Assessment Method	Ecetoc TRA integrated model version 2, EUSES v.2.	
3.1 Exposure Scenario		
3.1.1. Operational conditions and risk management measures		
<p>Process category: Manufacture or formulation of chemical products or articles using technologies related to mixing and blending of solid or liquid materials, and where the process is in stages and provides the opportunity for significant contact at any stage. Filling lines specifically designed to both capture vapour and aerosol emissions and minimise spillage. Sampling, loading, filling, transfer, dumping, bagging in non-dedicated and dedicated facilities with possible exposure related to dust, vapour, aerosols or spillage, and cleaning of equipment.</p> <p>Environmental release category: Manufacture of organic and inorganic substances in chemical, petrochemical, primary metals and minerals industry including intermediates, monomers using continuous processes or batch processes applying dedicated or multi-purpose equipment, either technically controlled or operated by manual interventions</p> <p>Number of sites using the substance: Substance widely used.</p>		
3.1.2 Control of workers exposure		
Product characteristics (including package design affecting exposure)	Physical state	liquid
	Concentration of substance in product	Up to 100 %
	Vapour pressure of substance	5.73 kPa
Amounts used	n.a. in tier1 TRA model	
Frequency and duration of use/exposure	Frequency of exposure (weekly)	> 4 Days/week
	Frequency of exposure (annual)	240 Days/year
	Duration of exposure	> 4 Hours/day
Human factors not influenced by risk management	Potentially exposed body parts	Two hands face side only (automated processes/PROC3) Two hands (transfer, filling, etc./PROC8a, b)
	Exposed skin surface	480 cm <sup>2</sup> (automated processes/PROC3) 960 cm2 (transfer, filling, etc./PROC8a, b)
Other given operational conditions affecting workers exposure	Assumes a good basic standard of occupational hygiene is implemented.	
	Setting (indoor/outdoor)	Indoor
Technical conditions and measures at process level (source) to prevent release	No specific measures identified.	
Technical conditions and measures to control dispersion from source towards the worker	Ensure material transfers are under containment or extract ventilation. Provide good ventilation to points where emissions occur. Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour).	
Organisational measures to prevent /limit	No specific measures identified.	

# Ethanol

Product code: ETHANOL

## Safety data sheet

Compliant with Regulation (EU) no. 830/2015

Date of revision of the SDS: 13/04/2016

Version of the SDS: 2.0

releases, dispersion and exposure				
Conditions and measures related to personal protection, hygiene and health evaluation		PPE: Eye Protection – suitable eye protection should be worn when handling product if there is a risk of splashing. Wear suitable gloves tested to EN374 during the activities where excessive skin contact is possible.		
3.1.3 Control of environmental exposure				
Product characteristics	Physical state	liquid		
	Concentration of substance in product	Up to 100 %		
Amounts used	Daily at point source	not applicable		
	Annually at point source	280,000 t/year (maximum at point source in worst case)		
	Annually total	3,800,000 t/year		
Frequency and duration of use	Pattern of release	Continuous 300 days per year		
Environment factors not influenced by risk management	Flow rate of receiving surface water	18,000m3/day (default)		
Other given operational conditions affecting environmental exposure	Processing setting (indoor/outdoor)	Indoor		
	Processing temperature	Environment		
	Processing pressure	Environment		
Technical conditions and measures at process level (source) to prevent release		Keep containers tightly closed. Store in a bounded area. Do not discharge into sewers or drains. Waste product and empty containers should be disposed of as hazardous waste in accordance with all local and national regulations. Formulation activity is assumed to be a predominantly enclosed process.		
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil		Apply technical measures aiming at reduction and cleaning of waste water (WWTP/local STP (e.g. biological treatment))  Efficacy >90%		
Organisational measures to prevent/limit release from site		Do not release wastewater directly into environment  Wastewater release into municipal STP.		
Conditions and measures related to municipal sewage treatment plant	Size of STP	>2000 m³/day		
	Degradation efficacy	90% (for ethanol)		
	Sludge treatment	Disposal or recovery		
Conditions and measures related to treatment of waste		Hazardous waste incineration or dispose for use in recycled fuels		
3.2. Exposure estimate				
The workers exposure estimation is calculated with Ecetoc TRA model v2.. The exposure estimates below are based on the PROC with the highest exposure levels in this scenario (PROC8a).				
Workers exposure	Exposure estimate	DNEL	Comment	
Inhalation (mg/m³)	96.04	950	PROC 8a results in the highest exposure in this exposure scenario	
Dermal (mg/kg/day)	13.71	343		
Combined (mg/kg/day)	27.43	343		
The environmental exposure estimation is based on Ecetoc TRA model v2 including the data from TGD A&B tables (MC-1b, IC-9, UC-27, fraction main source 0.1) and based on the worst-case scenario. Ethanol is fully soluble in water, readily biodegradable, not bio-accumulative, does not accumulate in the sediments or soil and is assumed to degrade by 90% in the local and/or municipal STP under evaluated conditions.				
Release times per year (days/year)		300	Local release to air (kg/day)	469
Fraction used at main local source		0.1	Local release to waste water (kg/day)	28
Amount used locally (kg/day)		93,333	Local release to soil (kg/day)	9
Environmental exposure		PEC	PNEC	Comment
In STP / untreated wastewater(mg/l)		1.73	580	-
In local freshwater (mg/l)		0.185	0.96	-

# Ethanol

Product code: ETHANOL

## Safety data sheet

Compliant with Regulation (EU) no. 830/2015

Date of revision of the SDS: 13/04/2016

Version of the SDS: 2.0

In local soil	0.0117 (mg/kg)	0.63 (mg/kgwwt)	-
In local marine water (mg/l)	0.0186	0.79	-
Total daily intake via local environment (mg/kgdw/d)	Negligible compared to daily dietary intake and endogenous formation.		
Guidance to DU to evaluate whether he works inside the boundaries set by the ES			
The workers exposure and environmental emissions have been evaluated using Ecetoc TRA integrated tool version 2.			
If the local environmental emission conditions deviate significantly from the used default values, please use the algorithm below to estimate the correct local emissions and RCRs:			
PECcorrected = PECcalculated * (local emission fraction) * (local WWTP flow rate fraction) * (local river flow rate fraction) * (local STP efficiency fraction)			
Example for calculating your local freshwater PEC:			
Corrected local freshwater PEC = 0.185 * (your local emission [kg/day] / 28) * (2000 / your local WWTP flow rate [m3/day]) * (18000 / your local river flow rate [m3/day]) * ((1 – your local WWTP efficiency)/0.1)			
Additional good practice advice beyond the REACH CSA			
Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to the obligations laid down in Article 37 (4) of the REACH regulation.		Use specific measures expected to reduce the predicted exposure beyond the level estimated based on the exposure scenario when possible.	

## 4. Use in non spray applications – Industrial

4. Exposure Scenario for Industrial use of Ethanol in non-spray applications		
Ethanol REACH Association - reference no. ES4		
Systematic title based on use descriptors	SU3 PROC10, PROC13 ERC4	
Processes, tasks, activities covered	Covers industrial (end) use of ethanol as such or in preparations in non-spray application (e.g. as processing aid, cleaning agent, solvent or ingredient in coatings). Indoor roller application, brushing and treatment of surfaces, treatment of articles by dipping/ pouring/ immersing/ soaking, etc.	
Assessment Method	Ecetoc TRA integrated model version 2	
4.1 Exposure Scenario		
4.1.1. Operational conditions and risk management measures		
<p>Process Categories: Low energy spreading of e.g. coatings. Including cleaning of surfaces. Substance can be inhaled as vapours, skin contact can occur through droplets, splashes, working with wipes and handling of treated surfaces. Immersion operations. Treatment of articles by dipping, pouring, immersing, soaking, washing out or washing in substances; including cold formation or resin type matrix. Includes handling of treated objects (e.g. after dying, plating,). Substance is applied to a surface by low energy techniques such as dipping the article into a bath or pouring a preparation onto a surface. Use of substances at small-scale laboratory (&lt; 1 l or 1 kg). Covers also the use of the substance as fuel sources (including additives) where limited exposure to the product in its unburned form is expected.</p> <p>Environmental Release Categories: Industrial use of processing aids in a batch process, not becoming part of an article using dedicated or multi-purpose equipment, either technically controlled or operated by manual interventions. For example, solvents used in chemical reactions or the 'use' of solvents during the application of paints, lubricants in metal working fluids, anti-set off agents in polymer moulding/casting.</p> <p>Number of sites using the substance: Substance widely used.</p>		
4.1.2 Control of workers exposure		
Product characteristics (including package design affecting exposure)	Physical state	liquid
	Concentration of substance in product	Up to 100 %
	Vapour pressure of substance	5.73 kPa
Amounts used	n.a. in tier1 TRA model	
Frequency and duration of use/exposure	Frequency of exposure (weekly)	> 4 Days/week
	Frequency of exposure (annual)	240 Days/year
	Duration of exposure	> 4 Hours/day
Human factors not influenced by risk management	Potentially exposed body parts	Two hands, face side only (PROC13) Two hands (PROC10)
	Exposed skin surface	480 cm² (PROC13) 960 cm² (PROC10)
Other given operational conditions affecting workers exposure	Assumes a good basic standard of occupational hygiene is implemented.	
	Setting (indoor/outdoor)	Indoor and outdoor
Technical conditions and measures at process level (source) to prevent release	No specific measures identified.	
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour) when working indoors. Ensure material transfers are under containment or extract ventilation. Provide good ventilation to points where emissions occur.	
Organisational measures to prevent /limit releases, dispersion and exposure	No specific measures identified.	
Conditions and measures related to personal protection, hygiene and health evaluation	PPE: Eye Protection – suitable eye protection should be worn when handling product if there is a risk of splashing. Wear suitable gloves tested to EN374 during the activities where frequent or excessive skin contact is possible.	

# Ethanol

## Safety data sheet

Compliant with Regulation (EU) no. 830/2015

Product code:

ETHANOL

Date of revision of the SDS: 13/04/2016

Version of the SDS: 2.0

4.1.3 Control of environmental exposure			
Product characteristics	Physical state	liquid	
	Concentration of substance in product	Up to 100 %	
Amounts used	Daily at point source	not applicable	
	Annually to the region	2,750 t/year (general)	
	Annually total	27,500 t/year (general) total market	
Frequency and duration of use	Pattern of release	300 days per year	
Environment factors not influenced by risk management	Flow rate of receiving surface water	18,000m3/day (default)	
Other given operational conditions affecting environmental exposure	Processing setting (indoor/outdoor)	Indoor and outdoor	
	Processing temperature	Environment	
	Processing pressure	Environment	
Technical conditions and measures at process level (source) to prevent release	Do not discharge into sewers or drains. Waste product and empty containers should be disposed of as hazardous waste in accordance with all local and national regulations.		
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Apply technical measures aiming at reduction and cleaning of waste water (WWTP/local STP (e.g. biological treatment))	Efficacy >70%	
Organisational measures to prevent/limit release from site	Do not release wastewater directly into environment	Wastewater release into municipal STP.	
Conditions and measures related to municipal sewage treatment plant	Size of STP	>2000 m³/day	
	Degradation efficacy	90% (for ethanol)	
	Sludge treatment	Disposal or recovery	
Conditions and measures related to treatment of waste	Hazardous waste incineration or dispose for use in recycled fuels		
4.2. Exposure estimate			
The workers exposure estimation is calculated with Ecetoc TRA model v2.. The exposure estimates below are based on the PROC with the highest exposure levels in this scenario (PROC8a).			
Workers exposure	Exposure estimate	DNEL	Comment
Inhalation (mg/m³)	96.04	950	PROC 10 results in the highest exposure in this exposure scenario
Dermal (mg/kd/day)	27.43	343	
Combined (mg/kg/day)	41.15	343	
The environmental exposure estimation is based on Ecetoc TRA model v2 including the data from TGD A&B tables (MC-Ib, IC-14, UC-48, fraction main source 0.1 using local STP and MC-Ic, IC-9, UC-27 fraction main source 0.1 using local STP). Below values are those related to processes with the highest risk characterization ratio (related to industrial use of coatings, inks and adhesives). All other activities covered in this exposure scenario result in lower environmental exposure estimates, Ethanol is fully soluble in water, readily biodegradable, not bio-accumulative, does not accumulate in the sediments or soil and is assumed to degrade by 90% in the local and/or municipal STP under evaluated conditions.			
Release times per year (days/year)	300	Local release to air (kg/day)	367
Fraction used at main local source	0.1	Local release to waste water (kg/day)	5
Amount used locally (kg/day)	458	Local release to soil (kg/day)	1
Environmental exposure	PEC	PNEC	Comment
In STP / untreated wastewater(mg/l)	0.285	580	-
In local freshwater (mg/l)	0.039	0.96	-
In local soil	0.0091 (mg/kg)	0.63 (mg/kgwwt)	-
In local marine water (mg/l)	0.0039	0.79	-
Total daily intake via local environment (mg/kgdw/d)	Negligible compared to daily dietary intake and endogenous formation.		
Guidance to DU to evaluate whether he works inside the boundaries set by the ES			

# Ethanol

Product code: ETHANOL

Safety data sheet  
Compliant with Regulation (EU) no. 830/2015

Date of revision of the SDS: 13/04/2016

Version of the SDS: 2.0

<p>The workers exposure and environmental emissions have been evaluated using Ecetoc TRA integrated tool version 2.</p> <p>If the local environmental emission conditions deviate significantly from the used default values, please use the algorithm below to estimate the correct local emissions and RCRs:</p> <p><math>PEC_{corrected} = PEC_{calculated} * (local\ emission\ fraction) * (local\ WWTP\ flow\ rate\ fraction) * (local\ river\ flow\ rate\ fraction) * (local\ STP\ efficiency\ fraction)</math></p> <p><u>Example for calculating your local freshwater PEC:</u></p> <p><math>Corrected\ freshwater\ PEC = 0.039 * (your\ local\ emission\ [kg/day] / 5) * (2000 / your\ local\ WWTP\ flow\ rate\ [m3/day]) * (18000 / your\ local\ river\ flow\ rate\ [m3/day]) * ((1 - your\ local\ WWTP\ efficiency)/0.1)</math></p>	
<p><b>Additional good practice advice beyond the REACH CSA</b></p> <p>Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to the obligations laid down in Article 37 (4) of the REACH regulation.</p>	<p>Use specific measures expected to reduce the predicted exposure beyond the level estimated based on the exposure scenario when possible.</p>

## 5. Use in spray applications – Industrial

5. Exposure Scenario for Industrial use of Ethanol in spray applications		
Ethanol REACH Association reference no. ES5		
Systematic title based on use descriptors	SU3 PROC7 ERC4	
Processes, tasks, activities covered	Covers industrial (end) use of ethanol as such or in preparations by spraying (e.g. as processing aid, cleaning agent, solvent or ingredient in coatings). Indoor painting, application of coatings, adhesives, polishes/cleaners, air-care products and other mixtures containing Ethanol by automated spraying techniques in factories or comparable industrial settings.	
Assessment Method	Ecetoc TRA integrated model version 2	
5.1 Exposure Scenario		
5.1.1. Operational conditions and risk management measures		
Process Categories: Industrial spraying. Air dispersive techniques. The substance can be inhaled as aerosols. The energy of the aerosol particles may require advanced exposure controls.		
Environmental Release Categories: Industrial use of processing aids in a batch process, not becoming part of an article using dedicated or multi-purpose equipment, either technically controlled or operated by manual interventions.		
Number of sites using the substance: Substance widely used.		
5.1.2 Control of workers exposure		
Product characteristics (including package design affecting exposure)	Physical state	liquid
	Concentration of substance in product	Up to 25 %
	Vapour pressure of substance	5.73 kPa
Amounts used	n.a. in tier1 TRA model	
Frequency and duration of use/exposure	Frequency of exposure (weekly)	> 4 Days/week
	Frequency of exposure (annual)	240 Days/year
	Duration of exposure	> 4 Hours/day
Human factors not influenced by risk management	Potentially exposed body parts	Two hands and forearms
	Exposed skin surface	1500 cm²
Other given operational conditions affecting workers exposure	Assumes a good basic standard of occupational hygiene is implemented.	
	Setting (indoor/outdoor)	Indoor
Technical conditions and measures at process level (source) to prevent release	No specific measures identified.	
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour) when working indoors. Ensure material transfers are under containment or extract ventilation. Provide good ventilation to points where emissions occur.	
Organisational measures to prevent /limit releases, dispersion and exposure	No specific measures identified.	
Conditions and measures related to personal protection, hygiene and health evaluation	Avoid excessive and frequent skin contact as much as possible. Wear suitable gloves tested to EN374 during the activities where excessive or frequent skin contact is possible. Wear a respirator conforming to EN140 with Type A filter or better if vented booth with laminar flow is not available.	
5.1.3 Control of environmental exposure		
Product characteristics	Physical state	liquid
	Concentration of substance in product	Up to 25 %
Amounts used	Daily at point source	not applicable

# Ethanol

Product code:

ETHANOL

## Safety data sheet

Compliant with Regulation (EU) no. 830/2015

Date of revision of the SDS: 13/04/2016

Version of the SDS: 2.0

	Annually to the region	2,750 t/year (maximum in worst case)
	Annually total	27,500 t/year total market
Frequency and duration of use	Pattern of release	Continuous 300 days per year
Environment factors not influenced by risk management	Flow rate of receiving surface water	18,000m <sup>3</sup> /day (default)
Other given operational conditions affecting environmental exposure	Processing setting (indoor/outdoor)	Indoor and outdoor
	Processing temperature	Environment
	Processing pressure	Environment
Technical conditions and measures at process level (source) to prevent release	Do not discharge into sewers or drains. Waste product and empty containers should be disposed of as hazardous waste in accordance with all local and national regulations.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Apply technical measures aiming at reduction and cleaning of waste water (WWTP/local STP (e.g. biological treatment))	Efficacy >70%
Organisational measures to prevent/limit release from site	Do not release wastewater directly into environment	Wastewater release into municipal STP.
Conditions and measures related to municipal sewage treatment plant	Size of STP	>2000 m <sup>3</sup> /day
	Degradation efficacy	90% (for ethanol)
	Sludge treatment	Disposal or recovery
Conditions and measures related to treatment of waste	Hazardous waste incineration or dispose for use in recycled fuels	

### 5.2. Exposure estimate

The workers exposure estimation is calculated with Ecetoc TRA model v2..

Workers exposure	Exposure estimate	DNEL	Comment
Inhalation (mg/m <sup>3</sup> )	480.21	950	Exposure estimates and RCRs given here are calculated for conditions without LEV (worst case scenario).
Dermal (mg/kg/day)	42.86	343	
Combined (mg/kg/day)	111.46	343	

The environmental exposure estimation is based on Ecetoc TRA model v2 including the data from TGD A&B tables (MC-1b, IC-14, UC-48, fraction main source 0.1 using local STP). Below values are those related to processes with the highest risk characterization ratio (related to industrial use of coatings, inks and adhesives). All other activities covered in this exposure scenario result in lower environmental exposure estimates.

Ethanol is fully soluble in water, readily biodegradable, not bio-accumulative, does not accumulate in the sediments or soil and is assumed to degrade by >90% in the Local and Municipal STP under evaluated conditions.

Release times per year (days/year)	300	Local release to air (kg/day)	367
Fraction used at main local source	0.1	Local release to waste water (kg/day)	5
Amount used locally (kg/day)	458	Local release to soil (kg/day)	1
Environmental exposure	PEC	PNEC	Comment
In STP / untreated wastewater(mg/l)	0.285	580	-
In local freshwater (mg/l)	0.039	0.96	-
In local soil	0.0091 (mg/kg)	0.63 (mg/kgwwt)	-
In local marine water (mg/l)	0.0039	0.79	-
Total daily intake via local environment (mg/kgdw/d)	Negligible compared to daily dietary intake and endogenous formation.		

### Guidance to DU to evaluate whether he works inside the boundaries set by the ES

The workers exposure and environmental emissions have been evaluated using Ecetoc TRA integrated tool version 2.

If the local environmental emission conditions deviate significantly from the used default values, please use the algorithm below to estimate the correct local emissions and RCRs:

$PEC_{corrected} = PEC_{calculated} * (\text{local emission fraction}) * (\text{local WWTP flow rate fraction}) * (\text{local river flow rate fraction}) * (\text{local STP efficiency fraction})$

Example for calculating your local freshwater PEC:

$Corrected\ freshwater\ PEC = 0.039 * (\text{your local emission [kg/day]} / 5) * (2000 / \text{your local WWTP flow rate [m}^3\text{/day]}) * (18000 / \text{your local river flow rate [m}^3\text{/day]})$

# Ethanol

Safety data sheet  
Compliant with Regulation (EU) no. 830/2015

Product code: ETHANOL  
  
Date of revision of the SDS: 13/04/2016  
  
Version of the SDS: 2.0

rate [m3/day]) * ((1 – your local WWTP efficiency)/0.1)	
<b>Additional good practice advice beyond the REACH CSA</b> Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to the obligations laid down in Article 37 (4) of the REACH regulation.	Use specific measures expected to reduce the predicted exposure beyond the level estimated based on the exposure scenario when possible.

## 6. Use of Ethanol as a fuel – Industrial

6. Exposure Scenario for Industrial use of Ethanol as fuel source		
Ethanol REACH Association - reference no. ES6a		
Systematic title based on use descriptors	SU3 PROC16 ERC7	
Processes, tasks, activities covered	Use as fuel or fuel additive in industrial setting.	
Assessment Method	Ecetoc TRA integrated model version 2	
6.1 Exposure Scenario		
6.1.1. Operational conditions and risk management measures		
<p>Process Categories: Covers also the use of the substance as fuel sources (including additives) where limited exposure to the product in its unburned form is expected. Does not cover exposure as a consequence of spillage or combustion.</p> <p>Environmental Release Categories: Industrial use of substances in closed systems. Use in closed equipment, such as the use of liquids in hydraulic systems, cooling liquids in refrigerators and lubricants in engines and di-electric fluids in electric transformers and oil in heat exchangers. No intended contact between functional fluids and products foreseen, and thus low emissions via waste water and waste air to be expected.</p> <p>Number of sites using the substance: Substance widely used.</p>		
6.1.2 Control of workers exposure		
Product characteristics (including package design affecting exposure)	Physical state	liquid
	Concentration of substance in product	Up to 100 %
	Vapour pressure of substance	5.73 kPa
Amounts used	n.a. in tier1 TRA model	
Frequency and duration of use/exposure	Frequency of exposure (weekly)	> 4 Days/week
	Frequency of exposure (annual)	240 Days/year
	Duration of exposure	> 4 Hours/day
Human factors not influenced by risk management	Potentially exposed body parts	One hand, face side only
	Exposed skin surface	240 cm²
Other given operational conditions affecting workers exposure	Assumes a good basic standard of occupational hygiene is implemented.	
	Setting (indoor/outdoor)	Indoor
Technical conditions and measures at process level (source) to prevent release	No specific measures identified.	
Technical conditions and measures to control dispersion from source towards the worker	No specific measures identified.	
Organisational measures to prevent /limit releases, dispersion and exposure	No specific measures identified.	
Conditions and measures related to personal protection, hygiene and health evaluation	No specific PPE measures identified.	
6.1.3 Control of environmental exposure		
Product characteristics	Physical state	liquid
	Concentration of substance in product	Up to 100 %
Amounts used	Daily at point source	not applicable
	Annually to the region	30,000 t/year (maximum in worst case)
	Annually total	300,000 t/year total market
Frequency and duration of use	Pattern of release	Continuous 300 days per year
Environment factors not influenced by risk	Flow rate of receiving surface water	18,000m3/day (default)

# Ethanol

Product code: ETHANOL

## Safety data sheet

Compliant with Regulation (EU) no. 830/2015

Date of revision of the SDS: 13/04/2016

Version of the SDS: 2.0

management			
Other given operational conditions affecting environmental exposure	Processing setting (indoor/outdoor)	Indoor and outdoor	
	Processing temperature	Environment	
	Processing pressure	Environment	
Technical conditions and measures at process level (source) to prevent release	Do not discharge into sewers or drains. Waste product and empty containers should be disposed of as hazardous waste in accordance with all local and national regulations.		
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Apply technical measures aiming at reduction and cleaning of waste water (WWTP/local STP (e.g. biological treatment))	Efficacy >70%	
Organisational measures to prevent/limit release from site	Do not release wastewater directly into environment	Wastewater release into municipal STP.	
Conditions and measures related to municipal sewage treatment plant	Size of STP	>2000 m³/day	
	Degradation efficacy	90%	
	Sludge treatment	Disposal or recovery	
Conditions and measures related to treatment of waste	Hazardous waste incineration or dispose for use in recycled fuels		
6.2. Exposure estimate			
The workers exposure estimation is calculated with Ecetoc TRA model v2..			
Workers exposure	Exposure estimate	DNEL	Comment
Inhalation (mg/m³)	9.6	950	-
Dermal (mg/kd/day)	0.3	343	
Combined (mg/kg/day)	1.7	343	
The environmental exposure estimation is based on Ecetoc TRA model v2 including the data from TGD A&B tables (MC-1c, IC-9, UC-27, fraction main source 0.02 using local STP, 350 emission days per year).			
Ethanol is fully soluble in water, readily biodegradable, not bio-accumulative, does not accumulate in the sediments or soil and is assumed to degrade by 90% in the STP under evaluated conditions.			
Release times per year (days/year)	350	Local release to air (kg/day)	9
Fraction used at main local source	0.02	Local release to waste water (kg/day)	1
Amount used locally (kg/day)	1714	Local release to soil (kg/day)	2
Environmental exposure	PEC	PNEC	Comment
In STP / untreated wastewater(mg/l)	0.053	580	-
In local freshwater (mg/l)	0.0152	0.96	-
In local soil	0.0006 (mg/kg)	0.63 (mg/kgwwt)	-
In local marine water (mg/l)	0.0016	0.79	-
Total daily intake via local environment (mg/kgdw/d)	Negligible compared to daily dietary intake and endogenous formation.		
Guidance to DU to evaluate whether he works inside the boundaries set by the ES			
The workers exposure and environmental emissions have been evaluated using Ecetoc TRA integrated tool version 2.			
If the local environmental emission conditions deviate significantly from the used default values, please use the algorithm below to estimate the correct local emissions and RCRs:			
PECcorrected = PECcalculated * (local emission fraction) * (local WWTP flow rate fraction) * (local river flow rate fraction) * (local STP efficiency fraction)			
Example for calculating your local freshwater PEC:			
Corrected freshwater PEC = 0.0152 * (your local emission [kg/day] / 5) * (2000 / your local WWTP flow rate [m3/day]) * (18000 / your local river flow rate [m3/day]) * ((1 – your local WWTP efficiency)/0.1)			
Additional good practice advice beyond the REACH CSA		Use specific measures expected to reduce the predicted exposure beyond the level estimated based on the exposure scenario when possible.	
Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to the obligations laid down in Article 37 (4) of the REACH regulation.			

## 7. Use of Ethanol as a fuel – Professional

7. Exposure Scenario for Professional use of Ethanol as fuel source		
Ethanol REACH Association - reference no. ES6b		
Systematic title based on use descriptors	SU22 PROC16 ERC 9a, ERC 9b	
Processes, tasks, activities covered	Use as fuel or fuel additive in professional setting.	
Assessment Method	Ecetoc TRA integrated model version 2	
7.1 Exposure Scenario		
7.1.1. Operational conditions and risk management measures		
<p>Process Categories: Covers also the use of the substance as fuel sources (including additives) where limited exposure to the product in its unburned form is expected. Does not cover exposure as a consequence of spillage or combustion.</p> <p>Environmental Release Categories: Professional use of substances in closed systems. Use in closed equipment, such as the use of liquids in hydraulic systems, cooling liquids in refrigerators and lubricants in engines and dielectric fluids in electric transformers and oil in heat exchangers. No intended contact between functional fluids and products foreseen, and thus low emissions via waste water and waste air to be expected.</p> <p>Number of sites using the substance: Substance widely used.</p>		
7.1.2 Control of workers exposure		
Product characteristics (including package design affecting exposure)	Physical state	liquid
	Concentration of substance in product	Up to 100 %
	Vapour pressure of substance	5.73 kPa
Amounts used	n.a. in tier1 TRA model	
Frequency and duration of use/exposure	Frequency of exposure (weekly)	> 4 Days/week
	Frequency of exposure (annual)	240 Days/year
	Duration of exposure	> 4 Hours/day
Human factors not influenced by risk management	Potentially exposed body parts	One hand, face side only
	Exposed skin surface	240 cm²
Other given operational conditions affecting workers exposure	Assumes a good basic standard of occupational hygiene is implemented.	
	Setting (indoor/outdoor)	Indoor
Technical conditions and measures at process level (source) to prevent release	No specific measures identified.	
Technical conditions and measures to control dispersion from source towards the worker	No specific measures identified.	
Organisational measures to prevent /limit releases, dispersion and exposure	No specific measures identified.	
Conditions and measures related to personal protection, hygiene and health evaluation	No specific PPE measures identified.	
7.1.3 Control of environmental exposure		
Product characteristics	Physical state	liquid
	Concentration of substance in product	Up to 100 %
Amounts used	Daily at point source	not applicable
	Annually to the region	380,000 t/year

# Ethanol

Product code: ETHANOL

## Safety data sheet

Compliant with Regulation (EU) no. 830/2015

Date of revision of the SDS: 13/04/2016

Version of the SDS: 2.0

	Annually total	3,800,000 t/year total market for industrial, professional and consumer use
Frequency and duration of use	Pattern of release	Continuous wide dispersive: 365 days per year
Environment factors not influenced by risk management	Flow rate of receiving surface water	18,000m3/day (default)
Other given operational conditions affecting environmental exposure	Processing setting (indoor/outdoor)	Indoor and outdoor
	Processing temperature	Environment
	Processing pressure	Environment
Technical conditions and measures at process level (source) to prevent release	Do not discharge into sewers or drains.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Do not discharge directly into environment. Use in predominantly closed systems.	
Organisational measures to prevent/limit release from site	Do not release wastewater directly into environment	Wastewater release into municipal STP.
Conditions and measures related to municipal sewage treatment plant	Size of STP	>2000 m <sup>3</sup> /day
	Degradation efficacy	90%
	Sludge treatment	Disposal or recovery
Conditions and measures related to treatment of waste	Hazardous waste incineration or dispose for use in recycled fuels	

### 7.2. Exposure estimate

The workers exposure estimation is calculated with Ecetoc TRA model v2..

Workers exposure	Exposure estimate	DNEL	Comment
Inhalation (mg/m <sup>3</sup> )	9.6	950	-
Dermal (mg/kg/day)	0.3	343	
Combined (mg/kg/day)	1.7	343	

The environmental exposure estimation is based on Ecetoc TRA model ERC9a, and TGD-A&B table (MC-IV, IC-6, UC-27). Below values are those related to TGD A&B table calculation.

Ethanol is fully soluble in water, readily biodegradable, not bio-accumulative, does not accumulate in the sediments or soil and is assumed to degrade by 90% in the STP under evaluated conditions.

Release times per year (days/year)	365	Local release to air (kg/day)	n.a. wide dispersive
Fraction used at main local source	0.002	Local release to sewage (kg/day)	n.a. wide dispersive
Amount used locally (kg/day)	2082	Local release to soil (kg/day)	n.a. wide dispersive
Environmental exposure	PEC	PNEC	Comment
In STP (mg/l)	0.065	580	-
In local freshwater (mg/l)	0.0240	0.96	-
In local soil (mg/kg)	0.0273	0.63 (mg/kgwwt)	-
In local marine water (mg/l)	0.0034	0.79	-
Total daily intake via local environment (mg/kgdw/d)	Negligible compared to daily dietary intake and endogenous formation.		

### Guidance to DU to evaluate whether he works inside the boundaries set by the ES

The workers exposure and environmental emissions have been evaluated using Ecetoc TRA integrated tool version 2.

If the local environmental emission conditions deviate significantly from the used default values, please use the algorithm below to estimate the correct local emissions and RCRs:

$PEC_{corrected} = PEC_{calculated} * (local\ emission\ fraction) * (local\ WWTP\ flow\ rate\ fraction) * (local\ river\ flow\ rate\ fraction) * (local\ STP\ efficiency\ fraction)$

Example for calculating your local freshwater PEC:

# Ethanol

Safety data sheet  
Compliant with Regulation (EU) no. 830/2015

Product code: ETHANOL  
  
Date of revision of the SDS: 13/04/2016  
  
Version of the SDS: 2.0

Corrected freshwater PEC = 0.0240 * (your local emission [kg/day] / 5) * (2000 / your local WWTP flow rate [m3/day]) * (18000 / your local river flow rate [m3/day]) * ((1 – your local WWTP efficiency)/0.1)	
<b>Additional good practice advice beyond the REACH CSA</b> Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to the obligations laid down in Article 37 (4) of the REACH regulation.	Use specific measures expected to reduce the predicted exposure beyond the level estimated based on the exposure scenario when possible.

## 8. Use in spray applications – Professional

8. Exposure Scenario for Professional use of Ethanol in non-spray applications		
Ethanol REACH Association - reference no. ES7		
Systematic title based on use descriptors	SU22 PROC10, PROC13, PROC14, PROC19 ERC8a, ERC8d	
Processes, tasks, activities covered	Covers professional (end) use of ethanol as such or in preparations in non-spray application (e.g. as processing aid, cleaning agent, application of coatings). Indoor roller application, brushing and treatment of surfaces. Treatment of articles by dipping and pouring. Includes stabilization of explosives.	
Assessment Method	Ecetoc TRA integrated model version 2	
8.1 Exposure Scenario		
8.1.1. Operational conditions and risk management measures		
<p>Process Categories: Low energy spreading of e.g. coatings. Including cleaning of surfaces. Substance can be inhaled as vapours, skin contact can occur through droplets, splashes, working with wipes and handling of treated surfaces. Immersion operations. Treatment of articles by dipping, pouring, immersing, soaking, washing out or washing in substances; including cold formation or resin type matrix. Includes handling of treated objects (e.g. after dying, plating,). Substance is applied to a surface by low energy techniques such as dipping the article into a bath or pouring a preparation onto a surface. Use of substances at small-scale laboratory (&lt; 1 l or 1 kg). Addresses also occupations and activities where intimate and intentional contact with substances occurs without any specific exposure controls other than PPE.</p> <p>Environmental Release Categories: Wide dispersive indoor use of processing aids by the public at large or professional use. Use (usually) results in direct release into the sewage system, for example, cosmetics, detergents in fabric washing, machine wash liquids and lavatory cleaners, automotive and bicycle care products (polishes, lubricants, de-icers), solvents in paints and adhesives or fragrances and aerosol propellants in air fresheners.</p> <p>Number of sites using the substance: Substance widely used.</p>		
8.1.2 Control of workers exposure		
Product characteristics (including package design affecting exposure)	Physical state	liquid
	Concentration of substance in product	Up to 100 %
	Vapour pressure of substance	5.73 kPa
Amounts used	n.a. in tier1 TRA model	
Frequency and duration of use/exposure	Frequency of exposure (weekly)	> 4 Days/week
	Frequency of exposure (annual)	240 Days/year
	Duration of exposure	> 4 Hours/day
Human factors not influenced by risk management	Potentially exposed body parts	Two hands, face side only (PROC13, 14) Two hands (PROC10) Two hands and forearms (PROC19)
	Exposed skin surface	480 cm² (PROC13, 14) 960 cm² (PROC10) 1980 cm² (PROC19)
Other given operational conditions affecting workers exposure	Assumes a good basic standard of occupational hygiene is implemented.	
	Setting (indoor/outdoor)	Indoor and outdoor
Technical conditions and measures at process level (source) to prevent release	If >4 hours/day (PROC19)	Limit the substance concentration in the product to 25%
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general or controlled ventilation. Natural ventilation is from windows and doors etc. Controlled ventilation means air is supplied or removed by a powered fan.	
Organisational measures to prevent /limit releases, dispersion and exposure	No specific measures identified.	
Conditions and measures related to personal protection, hygiene and health evaluation	If PROC 19 and concentration >25%	PPE: Wear suitable gloves tested to EN374 and avoid skin contact  PPE: Eye Protection – suitable eye protection should be worn when handling

# Ethanol

Product code: ETHANOL

## Safety data sheet

Compliant with Regulation (EU) no. 830/2015

Date of revision of the SDS: 13/04/2016

Version of the SDS: 2.0

		product if there is a risk of splashing.	
8.1.3 Control of environmental exposure			
Product characteristics	Physical state	liquid	
	Concentration of substance in product	Up to 100 %	
Amounts used	Daily at point source	not applicable	
	Annually at point source	n.a. (wide dispersive use)	
	Annually total	10,000 t/year total market	
Frequency and duration of use	Pattern of release	Continuous 365 days per year	
Environment factors not influenced by risk management	Flow rate of receiving surface water	18,000m3/day (default)	
Other given operational conditions affecting environmental exposure	Processing setting (indoor/outdoor)	Indoor and outdoor	
	Processing temperature	Environment	
	Processing pressure	Environment	
Technical conditions and measures at process level (source) to prevent release	No specific measures identified.		
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	No specific measures identified.		
Organisational measures to prevent/limit release from site	Do not release wastewater directly into environment. Wastewater release into municipal STP.		
Conditions and measures related to municipal sewage treatment plant	Size of STP	>2000 m³/day	
	Degradation efficacy	90% (for ethanol)	
	Sludge treatment	Disposal or recovery	
Conditions and measures related to treatment of waste	Contain and dispose of waste in accordance with environmental legislation and according to local regulations.		
8.2. Exposure estimate			
The workers exposure estimation is calculated with Ecetoc TRA model v2.. Below given exposure estimates are based on the PROC with the highest exposure levels in this scenario (PROC19).			
Workers exposure	Exposure estimate	DNEL	Comment
Inhalation (mg/m³)	115.25	950	PROC 19 results in the highest exposure in this exposure scenario
Dermal (mg/kg/day)	84.86	343	
Combined (mg/kg/day)	101.32	343	
The environmental exposure estimation is based on Ecetoc TRA model v2 based on ERC 8 a, d and TGD A&B table (MC-Ic, IC-6, UC-9). Below values are estimates based on the ERC approach calculation resulting in more conservative values. Ethanol is fully soluble in water, readily biodegradable, not bio-accumulative, does not accumulate in the sediments or soil and is assumed to degrade by 90% in the STP under evaluated conditions.			
Release times per year (days/year)	365	Local release to air (kg/day)	5
Fraction used at main local source	0.1	Local release to waste water (kg/day)	5
Amount used locally (kg/day)	5.5	Local release to soil (kg/day)	1
Environmental exposure	PEC	PNEC	Comment
In STP / untreated wastewater(mg/l)	0.34	580	-
In local freshwater (mg/l)	0.045	0.96	-
In local soil	0.0003 (mg/kg)	0.63 (mg/kgwwt)	-
In local marine water (mg/l)	0.0044	0.79	-
Total daily intake via local environment (mg/kgdw/d)	Negligible compared to daily dietary intake and endogenous formation.		
Guidance to DU to evaluate whether he works inside the boundaries set by the ES			

Ethanol

Safety data sheet  
Compliant with Regulation (EU) no. 830/2015

Product code: ETHANOL  
  
Date of revision of the SDS: 13/04/2016  
  
Version of the SDS: 2.0

<p>The workers exposure and environmental emissions have been evaluated using Ecetoc TRA integrated tool version 2.</p> <p>If the local environmental emission conditions deviate significantly from the used default values, please use the algorithm below to estimate the correct local emissions and RCRs:</p> <p><math>PEC_{corrected} = PEC_{calculated} * (local\ emission\ fraction) * (local\ WWTP\ flow\ rate\ fraction) * (local\ river\ flow\ rate\ fraction) * (local\ STP\ efficiency\ fraction)</math></p> <p><u>Example for calculating your local freshwater PEC:</u></p> <p><math>Corrected\ local\ freshwater\ PEC = 0.045 * (your\ local\ emission\ [kg/day] / 5) * (2000 / your\ local\ WWTP\ flow\ rate\ [m3/day]) * (18000 / your\ local\ river\ flow\ rate\ [m3/day]) * ((1 - your\ local\ WWTP\ efficiency)/0.1)</math></p>	
<p><b>Additional good practice advice beyond the REACH CSA</b></p> <p>Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to the obligations laid down in Article 37 (4) of the REACH regulation.</p>	<p>Use specific measures expected to reduce the predicted exposure beyond the level estimated based on the exposure scenario when possible.</p>

## 9. Use in spray applications – Professional

9. Exposure Scenario for Professional use of Ethanol in spray applications		
Ethanol REACH Association - reference no. ES8		
Systematic title based on use descriptors	SU22 PROC11 ERC8a, ERC8d	
Processes, tasks, activities covered	Professional application of paints, coatings, adhesives, cleaners and other mixtures containing ethanol by spraying. Non industrial / professional spraying of mixtures and products like paints, coatings, adhesives, polishes, cleaners, etc.	
Assessment Method	Ecetoc TRA integrated model version 2	
9.1 Exposure Scenario		
9.1.1. Operational conditions and risk management measures		
<p>Process Categories: Air dispersive techniques. Spraying for surface coating, adhesives, polishes/cleaners, air care products, etc. The substance can be inhaled as aerosols. The energy of the aerosol particles may require advanced exposure controls.</p> <p>Environmental release category: Wide dispersive indoor and outdoor use of processing aids by the public at large or professional use. Use (usually) results in direct release into the sewage system, for example, cosmetics, detergents in fabric washing, machine wash liquids and lavatory cleaners, automotive and bicycle care products (polishes, lubricants, de-icers), solvents in paints and adhesives or fragrances and aerosol propellants in air fresheners.</p> <p>Number of sites using the substance: Substance widely used.</p>		
9.1.2 Control of workers exposure		
Product characteristics (including package design affecting exposure)	Physical state	Liquid (spray aerosol)
	Concentration of substance in product	5-25 %
	Vapour pressure of substance	5.73 kPa
Amounts used	n.a. in tier1 TRA model	
Frequency and duration of use/exposure	Frequency of exposure (weekly)	> 4 Days/week
	Frequency of exposure (annual)	300 Days/year
	Duration of exposure	Variable
Human factors not influenced by risk management	Potentially exposed body parts	Two hands and forearms
	Potentially exposed skin surface	1500 cm <sup>2</sup>
Other given operational conditions affecting workers exposure	Assumes a good basic standard of occupational hygiene is implemented.	
	Setting (indoor/outdoor)	Indoor and/or outdoor
Technical conditions and measures at process level (source) to prevent release	If duration of exposure > 4 hours/day	Limit the substance content in the product to 5%
	If duration of exposure 1-4 hours/day	Limit the substance content in the product to 25%
	If duration of exposure < 1 hours/day	No specific measures identified
Technical conditions and measures to control dispersion from source towards the worker	Substance content in the product > 25%	Provide enhanced general ventilation by mechanical means. Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour).
	Substance content in the product 5 - 25%	Provide a good standard of general ventilation. Natural ventilation is from windows and doors etc. Controlled ventilation means air is supplied or removed by a powered fan.
	Substance content in the product < 5%	No specific measures identified.

# Ethanol

Product code: ETHANOL

## Safety data sheet

Compliant with Regulation (EU) no. 830/2015

Date of revision of the SDS: 13/04/2016

Version of the SDS: 2.0

Organisational measures to prevent /limit releases, dispersion and exposure	Do not carry out operation for more than 1 hour when substance content in the product exceeds 25% and no enhanced mechanical ventilation (minimum efficiency 70%) is available.		
Conditions and measures related to personal protection, hygiene and health evaluation	PPE: Respiratory Protection with at least 90% reduction in inhaled concentration of the substance	Condition: If no enhanced ventilation available and concentration of the substance in the product > 25 %	
	PPE: Wear suitable gloves (chemically resistant gloves tested to EN374) during the activities where excessive skin contact is possible.	Condition: If concentration of the substance in the product > 5 %	
9.1.3 Control of environmental exposure			
Product characteristics	Physical state	Liquid (sprayed)	
	Concentration of substance in product	5 - 25 %	
Amounts used	Daily at point source	not applicable	
	Annually at point source	n.a. (wide dispersive use)	
	Annually total	10,000 t/year total market	
Frequency and duration of use	Pattern of release	Continuous 365 days per year	
Environment factors not influenced by risk management	Flow rate of receiving surface water	18,000m3/day (default)	
Other given operational conditions affecting environmental exposure	Processing setting (indoor/outdoor)	Indoor and outdoor	
	Processing temperature	Environment	
	Processing pressure	Environment	
Technical conditions and measures at process level (source) to prevent release	No specific measures identified.		
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	No specific measures identified.		
Organisational measures to prevent/limit release from site	Do not release wastewater directly into environment. Wastewater release into municipal STP.		
Conditions and measures related to municipal sewage treatment plant	Size of STP	>2000 m³/day	
	Degradation efficacy	90%	
	Sludge treatment	Disposal or recovery	
Conditions and measures related to treatment of waste	Contain and dispose of waste in accordance with environmental legislation and according to local regulations.		
9.2. Exposure estimate			
The workers exposure estimation is calculated with Ecetoc TRA model v2.. Below given exposure estimates are based on the PROC with the highest exposure levels in this scenario (PROC19).			
Workers exposure	Exposure estimate	DNEL	Comment
Inhalation (mg/m³)	672.29	950	-
Dermal (mg/kd/day)	21.43	343	
Combined (mg/kg/day)	117.47	343	
The environmental exposure estimation is based on Ecetoc TRA model v2 based on ERC8a default settings and TGD A&B table (MC-Ic, IC-6, UC-9). Below values are estimates based on the ERC approach calculation resulting in more conservative values. Ethanol is fully soluble in water, readily biodegradable, not bio-accumulative, does not accumulate in the sediments or soil and is assumed to degrade by 90% in the STP under evaluated conditions.			
Release times per year (days/year)	365	Local release to air (kg/day)	n.a. wide dispersive
Fraction used at main local source	0.1	Local release to waste water (kg/day)	n.a. wide dispersive
Amount used locally (kg/day)	5.5	Local release to soil (kg/day)	n.a. wide dispersive

# Ethanol

Product code: ETHANOL

## Safety data sheet

Compliant with Regulation (EU) no. 830/2015

Date of revision of the SDS: 13/04/2016

Version of the SDS: 2.0

Environmental exposure	PEC	PNEC	Comment
In STP / untreated wastewater(mg/l)	0.34	580	-
In local freshwater (mg/l)	0.045	0.96	-
In local soil	0.0003 (mg/kg)	0.63 (mg/kgwwt)	-
In local marine water (mg/l)	0.0044	0.79	-
Total daily intake via local environment (mg/kgdw/d)	Negligible compared to daily dietary intake and endogenous formation.		
<b>Guidance to DU to evaluate whether he works inside the boundaries set by the ES</b>			
The workers exposure and environmental emissions have been evaluated using Ecetoc TRA integrated tool version 2. If the local environmental emission conditions deviate significantly from the used default values, please use the algorithm below to estimate the correct local emissions and RCRs: $PEC_{corrected} = PEC_{calculated} * (local\ emission\ fraction) * (local\ WWTP\ flow\ rate\ fraction) * (local\ river\ flow\ rate\ fraction) * (local\ STP\ efficiency\ fraction)$ <u>Example for calculating your local freshwater PEC:</u> $Corrected\ local\ freshwater\ PEC = 0.045 * (your\ local\ emission\ [kg/day] / 5) * (2000 / your\ local\ WWTP\ flow\ rate\ [m3/day]) * (18000 / your\ local\ river\ flow\ rate\ [m3/day]) * ((1 - your\ local\ WWTP\ efficiency)/0.1)$			
<b>Additional good practice advice beyond the REACH CSA</b> Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to the obligations laid down in Article 37 (4) of the REACH regulation.		Use specific measures expected to reduce the predicted exposure beyond the level estimated based on the exposure scenario when possible.	

## 10. Use of Ethanol as a fuel – Consumers

10. Exposure Scenario for Consumer use of Ethanol as automotive fuel		
Ethanol REACH Association - reference no. ES9a		
Systematic title based on use descriptors	SU21 PC13 ERC9a, ERC9b	
Processes, tasks, activities covered	Covers the consumer use of automotive fuels which contain Ethanol	
Assessment Method	Ecetoc TRA integrated model version 2, ConsExpo v 4.1	
10.1 Exposure Scenario		
10.1.1. Operational conditions and risk management measures		
Product categories: Use of ethanol as automotive (vehicle) fuel. Minor exposure to ethanol vapours is possible during filling at the filling stations or transfer from portable fuel cans. Exposure to ethanol during the actual use of fuel (running of the engine) is not expected under normally foreseeable conditions of use since the substance is combusted in the (closed) engine system.		
Environmental release category: Wide dispersive outdoor use by the public. Use (usually) results in minor direct release into environment through accidental spillage and evaporation during the filling.		
Number of sites using the substance: Substance widely used.		
10.1.2 Control of consumer exposure		
Substance content in the product	Can be > 25 %	
Amounts of product used / applied per event	Up to 100 litre	
Exposure/release fraction	0.001 (Only to vapour and minor spills during the filling of the tank)	
Frequency and duration of use/exposure	Frequency of exposure: weekly	
	Duration of exposure per event: < 5 minutes (only during the filling of the tank)	
Setting and external conditions during use	Outdoor	
Technical (product related) use conditions	No specific measures required.	
Organisational consumer protection measures (e.g. recommendation and/or instructions on use)	No specific measures required.	
10.1.3 Control of environmental exposure		
Product characteristics	Physical state	Liquid
	Concentration of substance in product	Can be > 25 %
Amounts used	Daily at point source	not applicable
	Annually at point source	n.a. (wide dispersive use)
	Annually total	3,800,000 t/year total market for industrial, professional and consumer use
Frequency and duration of use	Pattern of release	365 days per year
Environment factors not influenced by risk management	Flow rate of receiving surface water	18,000m3/day (default)
Other given operational conditions affecting environmental exposure	Processing setting (indoor/outdoor)	Outdoor
	Processing temperature	Environment
	Processing pressure	Environment
Conditions and measures related to municipal sewage treatment plant	No release into the wastewaters or sewage is expected from this use. Only environmental release form the consumer use of ethanol as fuel is evaporation during filling (<0,01 %, assuming that less than 10 gram of ethanol evaporates during the filling of 75 litre tank during 2-5 minutes).	

# Ethanol

Product code: ETHANOL

## Safety data sheet

Compliant with Regulation (EU) no. 830/2015

Date of revision of the SDS: 13/04/2016

Version of the SDS: 2.0

Conditions and measures related to disposal of waste resulting from the use of the products	No waste expected from this use.		
Conditions and measures related to recovery of waste resulting from the use	Not applicable.		
10.2. Exposure estimate			
The consumer exposure estimation provided below is only indicative for one particular PC. The estimates are calculated with the industry model (draft version MasterCSA_8April2010)) CSA (PC13, Automotive, refuelling at 100% concentration).			
Consumer exposure	Exposure estimate	DNEL	Comment
Dermal (mg/kg/day)	35.00	LTS 206	-
Oral (mg/kg/day)	0.00	LTS 87	-
Inhalation (mg/m3 for 24hr day)	1.54	LTS 144	-
All routes systemic	-	-	-
The environmental exposure estimation is based on Ecetoc TRA model v2 based on ERC8d customized settings and total use of 3,800,000 t/year.			
Release times per year (days/year)	365	Local release to air (kg/day)	n.a. wide dispersive
Fraction used at main local source	0,002	Local release to waste water (kg/day)	n.a. wide dispersive
Amount used locally (kg/day)	not applicable	Local release to soil (kg/day)	n.a. wide dispersive
Environmental exposure	PEC	PNEC	Comment
In STP (mg/l)	0.065	580	-
In local freshwater (mg/l)	0.0240	0.96	-
In local soil (mg/kg)	0.0273	0.63 (mg/kgwwt)	-
In local marine water (mg/l)	0.0034	0.79	-
Total daily intake via local environment (mg/kgdw/d)	Negligible compared to daily dietary intake and endogenous formation.		
Additional good practice advice beyond the REACH CSA			
Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to the obligations laid down in Article 37 (4) of the REACH regulation.		Use specific measures expected to reduce the predicted exposure beyond the level estimated based on the exposure scenario when possible.	

## 11. Use of Ethanol as a domestic fuel – Consumers

11. Exposure Scenario for Consumer use of Ethanol as domestic fuel		
Ethanol REACH Association - reference no. ES9b		
Systematic title based on use descriptors	SU21 PC13 ERC8a, ERC8d	
Processes, tasks, activities covered	Covers the consumer use of domestic fuel products which contain Ethanol, e.g. fondue sets, etc. Includes garden equipment refuelling.	
Assessment Method	Ecetoc TRA integrated model version 2, ConsExpo v 4.1	
11.1 Exposure Scenario		
11.1.1. Operational conditions and risk management measures		
Fuels (for domestic use) like ethanol liquid/gel filling for fireplaces, fondue sets, heaters, etc. During use, minor exposure is possible during the transfer of the liquid product from the can/package into the holder or (burning-) device. No exposure to ethanol is expected during the actual burning of the fuel since the ethanol vapours are fully combusted.		
Environmental Release Categories: Wide dispersive indoor and outdoor use by public at large. Use (usually) results in direct release into the sewage system or environment. In this use, as domestic fuel, only expected environmental release is through evaporation during filling of the device.		
Number of sites using the substance: Substance widely used.		
11.1.2 Control of consumer exposure		
Substance content in the product	> 25 %	
Amounts of product used / applied per event	Up to 1 litre	
Potentially exposed body parts	Inside one hand: 210 cm²	
Frequency and duration of use/exposure	Frequency of use: weekly	
	Duration of use: 5 minutes (Only during the filling of the device)	
Setting and external conditions during use	Indoor and/or outdoor	
Technical (product related) use conditions	No specific measures required.	
Organisational consumer protection measures (e.g. recommendations and/or instructions on use)	PPE: Eye Protection – suitable eye protection should be worn when handling product if there is a risk of splashing.	
11.1.3 Control of environmental exposure		
Product characteristics	Physical state	Liquid
	Concentration of substance in product	Can be > 25 %
Amounts used	Daily at point source	not applicable
	Annually at point source	n.a. (wide dispersive use)
	Annually total	10,000 t/year total market
Frequency and duration of use	Pattern of release	365 days per year
Environment factors not influenced by risk management	Flow rate of receiving surface water	18,000m3/day (default)
Other given operational conditions affecting environmental exposure	Processing setting (indoor/outdoor)	Indoor and/or outdoor
	Processing temperature	Environment
	Processing pressure	Environment
Conditions and measures related to municipal sewage treatment plant	No release into the wastewaters or sewage is expected from this use. Only environmental release from the consumer use of ethanol as domestic fuel is evaporation during filling of the burner device.	
Conditions and measures related to disposal of	No waste expected from this use.	

# Ethanol

Product code:

ETHANOL

## Safety data sheet

Compliant with Regulation (EU) no. 830/2015

Date of revision of the SDS: 13/04/2016

Version of the SDS: 2.0

waste resulting from the use of the products			
Conditions and measures related to recovery of waste resulting from the use	Not applicable.		
11.2. Exposure estimate			
The consumer exposure estimation provided below is only indicative for one particular PC. The estimates are calculated with the industry model (draft version MasterCSA_8April2010) CSA (PC13, Garden equipment-liquid-refuelling at concentration 100%).			
Consumer exposure	Exposure estimate	DNEL	Comment
Dermal (mg/kg/day)	70.00	LTS 206	-
Oral (mg/kg/day)	0.00	LTS 87	-
Inhalation (mg/m3 for 24hr day)	0.81	LTS 144	-
All routes systemic	-	-	-
The environmental exposure estimation is based on Ecetoc TRA model v2 based on ERC8a and d settings and total use of 10,000 t/year. Ethanol is fully soluble in water, readily biodegradable, not bio-accumulative, does not accumulate in the sediments or soil and is assumed to be degraded by >90% in the STP under evaluated conditions.			
Release times per year (days/year)	365	Local release to air (kg/day)	n.a. wide dispersive
Fraction used at main local source	0.002	Local release to waste water (kg/day)	n.a. wide dispersive
Amount used locally (kg/day)	not applicable	Local release to soil (kg/day)	n.a. wide dispersive
Environmental exposure	PEC	PNEC	Comment
In STP (mg/l)	0.340	580	-
In local freshwater (mg/l)	0.0447	0.96	-
In local soil (mg/kg)	0.0003	0.63 (mg/kgwwt)	-
In local marine water (mg/l)	0.0044	0.79	-
Total daily intake via local environment (mg/kgdw/d)	Negligible compared to daily dietary intake and endogenous formation.		
Additional good practice advice beyond the REACH CSA			
Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to the obligations laid down in Article 37 (4) of the REACH regulation.		Use specific measures expected to reduce the predicted exposure beyond the level estimated based on the exposure scenario when possible.	

## 12. Use of Ethanol in products – Consumers

12. Exposure Scenario for Consumer use of Ethanol in products (<50g per event)				
Ethanol REACH Association - reference no. ES9c				
Systematic title based on use descriptors	SU21 PC: 1, 3, 8, 12, 14, 15, 18, 23, 24, 27, 28, 30, 31, 34, 39 ERC8a, ERC8d			
Processes, tasks, activities covered	Covers the consumer use of products which contain Ethanol with amount applied in use of less than 50g per event			
Assessment Method	Ecetoc TRA integrated model version 2, ConsExpo v 4.1			
12.1 Exposure Scenario				
12.1.1. Operational conditions and risk management measures				
Product categories: Adhesives (other than carpet and floor glue), sealants; Air care products; Artists supply and hobby preparations; Building and construction preparations; Metal-surface treatment products; Non-metal-surface treatment products; Ink and toners; Lawn and garden preparations; Leather tanning, finishing, impregnation, dye and care products; Lubricants, greases and release products; Plant protection products; Cosmetics and toiletries; Perfumes and fragrances; Photo-chemicals; Polishes and wax blends; Textile dye, finishing and impregnation products. Environmental Release Categories: Wide dispersive indoor and outdoor use. Use (usually) results in direct release into the sewage system or environment.				
Number of sites using the substance: Substance widely used.				
12.1.2 Control of consumer exposure				
Substance content in the product	< 1 %	1 – 5 %	5 – 25 %	> 25 %
Product characteristics (including package design affecting exposure)	PC24, PC31	PC5, PC10, PC22, PC23, PC27, PC30, PC34	PC1, PC8, PC14, PC15, PC18,	PC3, PC28
Amounts of product used / applied per event	< 50 g	< 50 g	< 50 g	< 10 g
Frequency and duration of use/exposure	Frequency of use: Up to daily			
	Duration of use/application: up to 4 hours			
Setting and external conditions during use	Indoors (minimum room volume 20m³) or outdoors			
Technical (product related) use conditions	not applicable	not applicable	not applicable	Controlled spray or release device.
Organisational consumer protection measures (e.g. recommendation and/or use instruction information for consumer; e.g. product labelling)	No specific measures required.	No specific measures required.	No specific measures required.	Do not spray empty in small, enclosed areas. Avoid inhalation and skin contact.
12.1.3 Control of environmental exposure				
Product characteristics	Physical state		Liquid	
	Concentration of substance in product		Could be > 25 %	
Amounts used	Daily at point source		not applicable	
	Annually at point source		n.a. (wide dispersive use)	
	Annually total		10,000 t/year total market, excluding cosmetics and toiletries	
Frequency and duration of use	Pattern of release		365 days per year	
Environment factors not influenced by risk management	Flow rate of receiving surface water		18,000m3/day (default)	
Other given operational conditions affecting	Processing setting (indoor/outdoor)		Indoor	

# Ethanol

Product code: ETHANOL

## Safety data sheet

Compliant with Regulation (EU) no. 830/2015

Date of revision of the SDS: 13/04/2016

Version of the SDS: 2.0

environmental exposure	Processing temperature	Environment	
	Processing pressure	Environment	
Conditions and measures related to municipal sewage treatment plant	Size of STP	> 2000 m³/day	
	Degradation efficacy	90%	
	Sludge treatment (disposal or recovery)	Disposal or recovery	
Conditions and measures related to disposal of waste resulting from the use of the products	No specific measures required.		
Conditions and measures related to recovery of waste resulting from the use	No specific measures required.		
12.2. Exposure estimate			
The consumer exposure estimation provided below is only indicative for one particular PC. The estimates are calculated with the industry model (draft version MasterCSA_8April2010) CSA (PC31 Polishes and wax blends for floor, furniture, shoes).			
Consumer exposure	Exposure estimate	DNEL	Comment
Dermal (mg/kg/day)	2.87	LTS 206	-
Oral (mg/kg/day)	0.00	LTS 87	-
Inhalation (mg/m3 for 24hr day)	10.31	LTS 144	-
All routes systemic	-	-	-
The environmental exposure estimation is based on Ecetoc TRA model v2 based on ERC8a and ERC8d default settings. The estimates below are based on ERC8d with total use of 10,000 t/year. This volume excludes cosmetics and toiletries use, where a 200,000 t/year total market is assumed – all emissions from this sector are assumed to be emissions to air.			
Ethanol is fully soluble in water, readily biodegradable, not bio-accumulative, does not accumulate in the sediments or soil and is assumed to degrade by 90% in the STP under evaluated conditions.			
Release times per year (days/year)	365	Local release to air (kg/day)	n.a. wide dispersive
Fraction used at main local source	0.002	Local release to waste water (kg/day)	n.a. wide dispersive
Amount used locally (kg/day)	not applicable	Local release to soil (kg/day)	n.a. wide dispersive
Environmental exposure	PEC	PNEC	Comment
In STP (mg/l)	0.340	580	-
In local freshwater (mg/l)	0.0447	0.96	-
In local soil (mg/kg)	0.0003	0.63 (mg/kgwwt)	-
In local marine water (mg/l)	0.0044	0.79	-
Total daily intake via local environment (mg/kgdw/d)	Negligible compared to daily dietary intake and endogenous formation.		
Additional good practice advice beyond the REACH CSA			
Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to the obligations laid down in Article 37 (4) of the REACH regulation.		Use specific measures expected to reduce the predicted exposure beyond the level estimated based on the exposure scenario when possible.	

## 13. Use of Ethanol in closed systems – Consumers

13. Exposure Scenario for Consumer use of Ethanol in closed systems		
Ethanol REACH Association - reference no. ES9d		
Systematic title based on use descriptors	SU21 PC16 (Heat transfer fluids), PC17 (Hydraulic fluids) ERC9a, ERC9b	
Processes, tasks, activities covered	Covers the consumer use of products which contain Ethanol - products in closed systems (with no expected exposure to ethanol during use)	
Assessment Method	Ecetoc TRA integrated model version 2, ConsExpo v 4.1	
13.1 Exposure Scenario		
13.1.1. Operational conditions and risk management measures		
Product categories: Heat transfer fluids; Hydraulic fluids and other products where ethanol is part of the closed system and no exposure of consumers during the use of the product is expected under normal and reasonably foreseeable conditions of use.  Environmental Release Categories: Indoor and outdoor use of substances by the public at large in closed systems. Use in closed equipment, such as the use of cooling liquids in refrigerators, oil-based electric heaters, hydraulic liquids in automotive suspension, lubricants in motor oil and brake fluids in automotive brake systems.		
Number of sites using the substance: Substance widely used.		
13.1.2 Control of consumer exposure		
Substance content in the product	> 25 %	
Product characteristics (including package design affecting exposure)	Substance is enclosed in the system and there is no consumer exposure possible under normal and reasonably foreseeable conditions of use.	
Amounts of product used / applied per event	n.a. substance in closed system	
Frequency and duration of use/exposure	Frequency of use: 1-5 times per year	
	Duration per use: divers	
Setting and external conditions during use	n.a. substance in closed system	
Technical (product related) use conditions	n.a. substance in closed system	
Organisational consumer protection measures (e.g. recommendation and/or use instruction information for consumer; e.g. product labelling)	Do not open, break or dismantle the container during use. Do not open, break or dismantle the container before disposal. Dispose off as chemical waste. PPE: Eye Protection – suitable eye protection should be worn when handling product if there is a risk of splashing.	
13.1.3 Control of environmental exposure		
Product characteristics	Physical state	Liquid
	Concentration of substance in product	Can be > 25 %
Amounts used	Daily at point source	not applicable
	Annually at point source	n.a. (wide dispersive use in closed systems)
	Annually total	10,000 t/year total market
Frequency and duration of use	Pattern of release	365 days per year
Environment factors not influenced by risk management	Flow rate of receiving surface water	18,000m3/day (default)
Other given operational conditions affecting environmental exposure	Processing setting (indoor/outdoor)	Indoor
	Processing temperature	Environment
	Processing pressure	Environment

# Ethanol

Product code: ETHANOL

## Safety data sheet

Compliant with Regulation (EU) no. 830/2015

Date of revision of the SDS: 13/04/2016

Version of the SDS: 2.0

Conditions and measures related to municipal sewage treatment plant	No release into the wastewaters or sewage is expected from this use. The substance is used in a closed system during its service life.		
Conditions and measures related to disposal of waste resulting from the use of the products	No waste expected from this use.		
Conditions and measures related to recovery of waste resulting from the use	not applicable		
13.2. Exposure estimate			
The consumer exposure estimation provided below is only indicative for one particular PC. The estimates are calculated with the industry model (draft version MasterCSA_8April2010)) CSA (Heat transfer fluid category).			
Consumer exposure	Exposure estimate	DNEL	Comment
Dermal (mg/kg/day)	0.85	LTS 206	-
Oral (mg/kg/day)	0.00	LTS 87	-
Inhalation (mg/m3 for 24hr day)	0.04	LTS 144	-
All routes systemic	-	-	-
The environmental exposure estimation is based on Ecetoc TRA model v2 based on ERC9a and b default settings and total use of 10,000 t/year. Ethanol is fully soluble in water, readily biodegradable, not bio-accumulative, does not accumulate in the sediments or soil and is assumed to be degraded by >90% in the STP under evaluated conditions.			
Release times per year (days/year)	365	Local release to air (kg/day)	n.a. wide dispersive
Fraction used at main local source	0.002	Local release to waste water (kg/day)	n.a. wide dispersive
Amount used locally (kg/day)	not applicable	Local release to soil (kg/day)	n.a. wide dispersive
Environmental exposure	PEC	PNEC	Comment
In STP (mg/l)	0.017	580	-
In local freshwater (mg/l)	0.0155	0.96	-
In local soil (mg/kg)	0.00013	0.63 (mg/kgwwt)	-
In local marine water (mg/l)	0.00145	0.79	-
Total daily intake via local environment (mg/kgdw/d)	Negligible compared to daily dietary intake and endogenous formation.		
Additional good practice advice beyond the REACH CSA			
Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to the obligations laid down in Article 37 (4) of the REACH regulation.		Use specific measures expected to reduce the predicted exposure beyond the level estimated based on the exposure scenario when possible.	

## 14. Use of Ethanol in coatings and paints – Consumers

14. Exposure Scenario for Consumer use of Ethanol in coatings and paints		
Ethanol REACH Association - reference no. ES9e		
Systematic title based on use descriptors	SU21 PC9a, PC9c ERC8a, ERC8d	
Processes, tasks, activities covered	Covers the consumer use of coatings and paint products which contain Ethanol.	
Assessment Method	Ecetoc TRA integrated model version 2, ConsExpo v 4.1	
14.1 Exposure Scenario		
14.1.1. Operational conditions and risk management measures		
Product categories: Coatings, paints, thinners and paint removers. Exposure to ethanol is possible during mixing, pouring and application (roller, brushing and spraying) of the products.		
Environmental Release Categories: Wide dispersive indoor and outdoor use of processing aids by the public at large. Use (usually) results in direct release into the sewage system or environment.		
Number of sites using the substance: Substance widely used.		
14.1.2 Control of consumer exposure		
Substance content in the product	1 – 15 %	
Amounts of product used / applied per event	50 – 250 gram	
Exposed skin area	428 cm <sup>2</sup> (Inside hands or one hand)	
Frequency and duration of use/exposure	Frequency of exposure: 1 – 5 times per year	
	Duration of exposure: 20 – 60 minutes	
Setting and external conditions during use	Indoor (room volume minimum 20 m <sup>3</sup> ). Outdoor	
Technical (product related) use conditions	Limit the ethanol content in the product to 15%.	
Organisational consumer protection measures (e.g. recommendation and/or use instruction information for consumer; e.g. product labelling)	Do not use in small, closed and not ventilated areas. Keep the doors and windows open during use indoors.	
14.1.3 Control of environmental exposure		
Product characteristics	Physical state	Liquid
	Concentration of substance in product	1 - 15 %
Amounts used	Daily at point source	not applicable
	Annually at point source	n.a. (wide dispersive use)
	Annually total	10,000 t/year total market
Frequency and duration of use	Pattern of release	365 days per year
Environment factors not influenced by risk management	Flow rate of receiving surface water	18,000m3/day (default)
Other given operational conditions affecting environmental exposure	Processing setting (indoor/outdoor)	Indoor and/or outdoor
	Processing temperature	Environment
	Processing pressure	Environment
Conditions and measures related to municipal sewage treatment plant	Size of STP	> 2000 m <sup>3</sup> /day
	Degradation efficacy	90%
	Sludge treatment (disposal or recovery)	Disposal or recovery
Conditions and measures related to disposal of waste resulting from the use of the products	No specific measures required.	

# Ethanol

Product code: ETHANOL

## Safety data sheet

Compliant with Regulation (EU) no. 830/2015

Date of revision of the SDS: 13/04/2016

Version of the SDS: 2.0

14.2. Exposure estimate			
The consumer exposure estimation provided below is only indicative for one particular PC. The estimates are calculated with the industry model (draft version MasterCSA_8April2010)) CSA (category waterborne latex wall paint at 15% concentration).			
Consumer exposure	Exposure estimate	DNEL	Comment
Dermal (mg/kg/day) (on day of application)	21.44	n/a	-
Dermal (mg/kg/day) (chronic)	0.30	LTS 206	
Oral (mg/kg/day)	0.00	LTS 87	-
Inhalation (mg/m3, main event)	~375	950	-
Inhalation (mg/m3, chronic)	0.50	LTS 144	
All routes systemic	-	-	-
The environmental exposure estimation is based on Ecetoc TRA model v2 based on ERC8a and d settings and total use of 10,000 t/year. The estimates below are based on ERC8d with total use of 10,000 t/year.			
Ethanol is fully soluble in water, readily biodegradable, not bio-accumulative, does not accumulate in the sediments or soil and is assumed to be degraded by >90% in the STP under evaluated conditions.			
Release times per year (days/year)	365	Local release to air (kg/day)	n.a. wide dispersive
Fraction used at main local source	0.002	Local release to waste water (kg/day)	n.a. wide dispersive
Amount used locally (kg/day)	not applicable	Local release to soil (kg/day)	n.a. wide dispersive
Environmental exposure	PEC	PNEC	Comment
In STP (mg/l)	0.340	580	-
In local freshwater (mg/l)	0.0447	0.96	-
In local soil (mg/kg)	0.0003	0.63 (mg/kgwwt)	-
In local marine water (mg/l)	0.0044	0.79	-
Total daily intake via local environment (mg/kgdw/d)	Negligible compared to daily dietary intake and endogenous formation.		
Additional good practice advice beyond the REACH CSA			
Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to the obligations laid down in Article 37 (4) of the REACH regulation.		Use specific measures expected to reduce the predicted exposure beyond the level estimated based on the exposure scenario when possible.	

## 15. Use of Ethanol as antifreeze – Consumers

15. Exposure Scenario for Consumer use of Ethanol in antifreeze, deicing and screenwash products		
Ethanol REACH Association - reference no. ES9f		
Systematic title based on use descriptors	SU21 PC4 ERC8d	
Processes, tasks, activities covered	Covers the consumer use of antifreeze, deicing and screenwash products which contain Ethanol	
Assessment Method	Ecetoc TRA integrated model version 2, ConsExpo v 4.1	
15.1 Exposure Scenario		
15.1.1. Operational conditions and risk management measures		
Product categories: Anti-freeze, de-icing and screen-wash consumer products. The exposure is possible during the activities related to transfer from the packaging, mixing and application of the product. Environmental Release Categories: Wide dispersive indoor and outdoor use of processing aids by the public at large. Use (usually) results in direct release into the sewage system or environment.		
Number of sites using the substance: Substance widely used.		
15.1.2 Control of consumer exposure		
Substance content in the product	> 25 %	
Amounts of product used / applied per event	1 – 50 gram	
Exposed skin area	214 cm <sup>2</sup>	
Frequency and duration of use/exposure	Frequency of use: weekly (up to 50 days per year)	
	Duration of exposure per event: < 5 minutes	
Setting and external conditions during use	Indoor and/or outdoor	
Technical (product related) use conditions	Controlled spray or dosing delivery device.	
Organisational consumer protection measures (e.g. recommendations and/or instructions on use)	PPE: Eye Protection – suitable eye protection should be worn when handling product if there is a risk of splashing.	
15.1.3 Control of environmental exposure		
Product characteristics	Physical state	Liquid
	Concentration of substance in product	Can be > 25 %
Amounts used	Daily at point source	not applicable
	Annually at point source	n.a. (wide dispersive use)
	Annually total	125,000 t/year total market
Frequency and duration of use	Pattern of release	365 days per year
Environment factors not influenced by risk management	Flow rate of receiving surface water	18,000m3/day (default)
Other given operational conditions affecting environmental exposure	Processing setting (indoor/outdoor)	Indoor
	Processing temperature	Environment
	Processing pressure	Environment
Conditions and measures related to municipal sewage treatment plant	Size of STP	> 2000 m³/day
	Degradation efficacy	90%
	Sludge treatment (disposal or recovery)	Disposal or recovery

# Ethanol

Product code: ETHANOL

## Safety data sheet

Compliant with Regulation (EU) no. 830/2015

Date of revision of the SDS: 13/04/2016

Version of the SDS: 2.0

Conditions and measures related to disposal of waste resulting from the use of the products		No specific measures required.	
15.2. Exposure estimate			
The consumer exposure estimation provided below is only indicative for one particular PC. The estimates are calculated with the industry model (draft version MasterCSA_8April2010)) CSA (PC24 Lock- de-icer with conc 50%).			
Consumer exposure	Exposure estimate	DNEL	Comment
Dermal (mg/kg/day)	17.87	LTS 206	Based on one use a day of 0.25 hr/event
Oral (mg/kg/day)	0.00	LTS 87	
Inhalation (mg/m3 for 24hr day)	0.51	LTS 144	
All routes systemic	-	-	
The environmental exposure estimation is based on Ecetoc TRA model v2 based on ERC8d and TGD A&B table (MC-IV, IC-6, UC-5) settings. Ethanol is fully soluble in water, readily biodegradable, not bio-accumulative, does not accumulate in the sediments or soil and is assumed to be degraded by >90% in the STP under evaluated conditions.			
Release times per year (days/year)	365	Local release to air (kg/day)	n.a. wide dispersive
Fraction used at main local source	0.002	Local release to waste water (kg/day)	n.a. wide dispersive
Amount used locally (kg/day)	not applicable	Local release to soil (kg/day)	n.a. wide dispersive
Environmental exposure	PEC	PNEC	Comment
In STP (mg/l)	0.0011	580	-
In local freshwater (mg/l)	0.014	0.96	-
In local soil (mg/kg)	0.00013	0.63 (mg/kgwwt)	-
In local marine water (mg/l)	0.0013	0.79	-
Total daily intake via local environment (mg/kgdw/d)	Negligible compared to daily dietary intake and endogenous formation.		
Additional good practice advice beyond the REACH CSA			
Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to the obligations laid down in Article 37 (4) of the REACH regulation.		Use specific measures expected to reduce the predicted exposure beyond the level estimated based on the exposure scenario when possible.	

## 16. Use of Ethanol in products – Consumers

16. Exposure Scenario for Consumer use of Ethanol in washing and cleaning products		
Ethanol REACH Association - reference no. ES9g		
Systematic title based on use descriptors	SU21 PC35 ERC8a, ERC8d	
Processes, tasks, activities covered	Covers the consumer use of washing and cleaning products which contain Ethanol	
Assessment Method	Ecetoc TRA integrated model version 2, ConsExpo v 4.1	
16.1 Exposure Scenario		
16.1.1. Operational conditions and risk management measures		
Washing and cleaning products including for example, toilet/bathroom cleaners, dishwashing liquid, laundry detergent etc. The exposure is possible during the activities related to transfer from the packaging, mixing and application of the product. Environmental Release Categories: Wide dispersive indoor and outdoor use of processing aids by the public at large. Use (usually) results in direct release into the sewage system or environment.		
Number of sites using the substance: Substance widely used.		
16.1.2 Control of consumer exposure		
Substance content in the product	< 5%	5 – 25 %
Product characteristics (including package design affecting exposure)	Laundry liquid detergents and softeners All purpose cleaners Floor and carpet cleaners	All purpose toilet and bathroom cleaners Glass cleaners Special surfaces cleaners. Dish washing liquids
Amounts of product used / applied per event	< 250 gram per event	< 250 gram per event
Frequency and duration of use/exposure	Frequency: daily use	Frequency: daily use
	Duration of exposure: 15 minutes – 1 hour	Duration of exposure: 15 minutes – 1 hour
Setting and external conditions during use	Indoors or outdoors	Indoors or outdoors
Technical (product related) use conditions	When spray application: Controlled spray or delivery device.	When spray application: Controlled spray or delivery device.
Organisational consumer protection measures (e.g. recommendation and/or instructions on use)	No specific measures required.	Do not spray empty in small, enclosed areas.
16.1.3 Control of environmental exposure		
Product characteristics	Physical state	liquid
	Concentration of substance in product	Up to 25 %
Amounts used	Daily at point source	not applicable
	Annually at point source	n.a. (wide dispersive use)
	Annually total	40,000 t/year total market
Frequency and duration of use	Pattern of release	365 days per year
Environment factors not influenced by risk management	Flow rate of receiving surface water	18,000m3/day (default)
Other given operational conditions affecting environmental exposure	Processing setting (indoor/outdoor)	Indoor
	Processing temperature	Environment
	Processing pressure	Environment
Conditions and measures related to municipal	Size of STP	> 2000 m³/day

# Ethanol

Product code: ETHANOL

## Safety data sheet

Compliant with Regulation (EU) no. 830/2015

Date of revision of the SDS: 13/04/2016

Version of the SDS: 2.0

sewage treatment plant	Degradation efficacy	90%	
	Sludge treatment (disposal or recovery)	Disposal or recovery	
Conditions and measures related to disposal of waste resulting from the use of the products	No specific measures required.		
16.2. Exposure estimate			
The consumer exposure estimation provided below is only indicative for one particular PC. The estimates are calculated with the industry model (draft version MasterCSA_8April2010)) CSA (for category all-purpose liquid cleaners with concentration of the substance at 15%)			
Consumer exposure	Exposure estimate	DNEL	Comment
Dermal (mg/kg/day)	10.7	LTS 206	Daily use
Oral (mg/kg/day)	0.00	LTS 87	
Inhalation (mg/m3 for 24hr day)	1.73	LTS 144	
All routes systemic	-	-	
The environmental exposure estimation is based on Ecetoc TRA model v2 based on ERC8a and total volume of 40,000 t/year. Ethanol is fully soluble in water, readily biodegradable, not bio-accumulative, does not accumulate in the sediments or soil and is assumed to be degraded by >90% in the STP under evaluated conditions.			
Release times per year (days/year)	365	Local release to air (kg/day)	n.a. wide dispersive
Fraction used at main local source	0.002	Local release to waste water (kg/day)	n.a. wide dispersive
Amount used locally (kg/day)	not applicable	Local release to soil (kg/day)	n.a. wide dispersive
Environmental exposure	PEC	PNEC	Comment
In STP (mg/l)	0.681	580	-
In local freshwater (mg/l)	0.0818	0.96	-
In local soil (mg/kg)	0.000451	0.63 (mg/kgwwt)	-
In local marine water (mg/l)	0.00808	0.79	-
Total daily intake via local environment (mg/kgdw/d)	Negligible compared to daily dietary intake and endogenous formation.		
Additional good practice advice beyond the REACH CSA			
Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to the obligations laid down in Article 37 (4) of the REACH regulation.		Use specific measures expected to reduce the predicted exposure beyond the level estimated based on the exposure scenario when possible.	

## 17. Use of Ethanol in the lab – Industrial and Professional

17. Exposure Scenario for Industrial and Professional use of Ethanol as laboratory agent		
Ethanol REACH Association - reference no. ES10		
Systematic title based on use descriptors	SU3, SU22 PROC15 ERC2, ERC4, ERC8a	
Processes, tasks, activities covered	Use as small scale laboratory reagent	
Assessment Method	Ecetoc TRA integrated model version 2	
17.1 Exposure Scenario		
17.1.1. Operational conditions and risk management measures		
Process category: Use of substances at small-scale laboratory at production locations, quality control utilities etc.( $< 1\text{ l}$ or $1\text{ kg}$ ). Larger laboratories and R+D installations should be treated as industrial processes.		
Environmental Release Categories: Industrial use of processing aids in a batch process, not becoming part of an article using dedicated or multi-purpose equipment, either technically controlled or operated by manual interventions.		
Number of sites using the substance: Substance widely used.		
17.1.2 Control of workers exposure		
Product characteristics (including package design affecting exposure)	Physical state	liquid
	Concentration of substance in product	Up to 100 %
	Vapour pressure of substance	5.73 kPa
Amounts used	n.a. in tier1 TRA model	
Frequency and duration of use/exposure	Frequency of exposure (weekly)	$> 4\text{ Days/week}$
	Frequency of exposure (annual)	240 Days/year
	Duration of exposure	1 - 4 Hours/day
Human factors not influenced by risk management	Potentially exposed body parts	One hand, face side only
	Exposed skin surface	$240\text{ cm}^2$
Other given operational conditions affecting workers exposure	Assumes a good basic standard of occupational hygiene is implemented.	
	Setting (indoor/outdoor)	Indoor
Technical conditions and measures at process level (source) to prevent release	No specific measures identified.	
Technical conditions and measures to control dispersion from source towards the worker	No specific measures identified.	
Organisational measures to prevent /limit releases, dispersion and exposure	No specific measures identified.	
Conditions and measures related to personal protection, hygiene and health evaluation	PPE: Eye Protection – suitable eye protection should be worn when handling product if there is a risk of splashing.	
17.1.3 Control of environmental exposure		
Product characteristics	Physical state	liquid
	Concentration of substance in product	Up to 100 %
Amounts used	Daily at point source	not applicable
	Annually to the region	500 t/year
	Annually total	5,000 t/year total market
Frequency and duration of use	Pattern of release	Continuous 300 days per year
Environment factors not influenced by risk management	Flow rate of receiving surface water	18,000m3/day (default)

# Ethanol

Product code: ETHANOL

## Safety data sheet

Compliant with Regulation (EU) no. 830/2015

Date of revision of the SDS: 13/04/2016

Version of the SDS: 2.0

Other given operational conditions affecting environmental exposure	Processing setting (indoor/outdoor)		Indoor	
	Processing temperature		Environment	
	Processing pressure		Environment	
Technical conditions and measures at process level (source) to prevent release	No specific onsite measures identified			
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	No specific onsite measures identified			
Organisational measures to prevent/limit release from site	Do not release wastewater directly into environment	Wastewater release into municipal STP.		
Conditions and measures related to municipal sewage treatment plant	Size of STP	>2000 m³/day		
	Degradation efficacy	90%		
	Sludge treatment	Disposal or recovery		
Conditions and measures related to treatment of waste	Contain and dispose of waste in accordance with environmental legislation and according to local regulations.			
17.2. Exposure estimate				
The workers exposure estimation is calculated with Ecetoc TRA model v2..				
Workers exposure	Exposure estimate	DNEL	Comment	
Inhalation (mg/m³)	19.21	950	-	
Dermal (mg/kd/day)	0.34	343		
Combined (mg/kg/day)	3.09	343		
The environmental exposure estimation is based on Ecetoc TRA model v2 based on ERC 8a for professional use and TGD A&B table (MC-Ic, IC-15, UC-48) for industrial use. Below values are estimates based on the ERC8a approach calculation resulting in more conservative values. All other settings result in lower exposure estimation values. Ethanol is fully soluble in water, readily biodegradable, not bio-accumulative, does not accumulate in the sediments or soil and is assumed to degrade by >90% in the STP under evaluated conditions				
Release times per year (days/year)		365	Local release to air (kg/day)	3
Fraction used at main local source		0.1	Local release to sewage (kg/day)	3
Amount used locally (kg/day)		2.47	Local release to soil (kg/day)	1
Environmental exposure		PEC	PNEC	Comment
In STP (mg/l)		0.170	580	-
In local freshwater (mg/l)		0.027	0.96	-
In local soil (mg/kg)		0.0002	0.63 (mg/kgwwt)	-
In local marine water (mg/l)		0.0027	0.79	-
Total daily intake via local environment (mg/kgdw/d)		Negligible compared to daily dietary intake and endogenous formation.		
Guidance to DU to evaluate whether he works inside the boundaries set by the ES				
The workers exposure and environmental emissions have been evaluated using Ecetoc TRA integrated tool version 2.				
If the local environmental emission conditions deviate significantly from the used default values, please use the algorithm below to estimate the correct local emissions and RCRs:				
PECcorrected = PECcalculated * (local emission fraction) * (local WWTP flow rate fraction) * (local river flow rate fraction) * (local STP efficiency fraction)				
Example for calculating your local freshwater PEC:				
Corrected local freshwater PEC = 0.027 * (your local emission [kg/day] / 3) * (2000 / your local WWTP flow rate [m3/day]) * (18000 / your local river flow rate [m3/day]) * ((1 – your local WWTP efficiency)/0.1)				
Additional good practice advice beyond the REACH CSA			Use specific measures expected to reduce the predicted exposure beyond the level estimated based on the exposure scenario when possible.	
Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to the obligations laid down in Article 37 (4) of the REACH regulation.				

## 18. Use of Ethanol in functional fluids – Industrial and Professional

**18. Exposure Scenario for Industrial and Professional use of Ethanol as heat transfer fluid, or other functional fluid**

Ethanol REACH Association - reference no. ES11

Systematic title based on use descriptors	SU3, PROC20 ERC7, ERC9a, ERC9b	SU22
Processes, tasks, activities covered	Covers use in heat and pressure transfer fluids in dispersive, professional use but closed systems	
Assessment Method	Ectoc TRA integrated model version 2	

**18.1 Exposure Scenario****18.1.1. Operational conditions and risk management measures**

Process category: Heat and pressure transfer fluids in dispersive, professional use but closed systems.

Environmental Release Categories: Industrial use of substances in closed systems. Use in closed equipment, such as the use of liquids in hydraulic systems, cooling liquids in refrigerators and lubricants in engines and dielectric fluids in electric transformers and oil in heat exchangers. No intended contact with the product produced. Indoor use of substances by the public at large or professional (small scale) use in closed systems. Use in closed equipment, such as the use of cooling liquids in refrigerators, oil-based electric heaters.

Number of sites using the substance: Substance widely used.

**18.1.2 Control of workers exposure**

Product characteristics (including package design affecting exposure)	Physical state	liquid
	Concentration of substance in product	Up to 100 %
	Vapour pressure of substance	5.73 kPa
Amounts used	n.a. in tier1 TRA model	
Frequency and duration of use/exposure	Frequency of exposure (weekly)	not applicable
	Frequency of exposure (annual)	not applicable
	Duration of exposure	not applicable
Human factors not influenced by risk management	Potentially exposed body parts	Two hands, face side only
	Exposed skin surface	480 cm <sup>2</sup>
Other given operational conditions affecting workers exposure	Assumes a good basic standard of occupational hygiene is implemented.	
	Setting (indoor/outdoor)	Indoor and outdoor
Technical conditions and measures at process level (source) to prevent release	Handle substance within a closed system.	
Technical conditions and measures to control dispersion from source towards the worker	Store substance within a closed system.	
Organisational measures to prevent /limit releases, dispersion and exposure	Substance in a closed system. No intended exposure to the substance.	
Conditions and measures related to personal protection, hygiene and health evaluation	PPE: Eye Protection – suitable eye protection should be worn when handling product if there is a risk of splashing.	

**18.1.3 Control of environmental exposure**

Product characteristics	Physical state	liquid
	Concentration of substance in product	Up to 100 %
Amounts used	Daily at point source	not applicable
	Annually to the region	1000 t/year
	Annually total	10,000 t/year total market
Frequency and duration of use	Pattern of release	No release into environment (closed system)

# Ethanol

Product code: ETHANOL

## Safety data sheet

Compliant with Regulation (EU) no. 830/2015

Date of revision of the SDS: 13/04/2016

Version of the SDS: 2.0

Environment factors not influenced by risk management	Flow rate of receiving surface water		not applicable
Other given operational conditions affecting environmental exposure	Processing setting (indoor/outdoor)		Indoor and outdoor
	Processing temperature		Environment
	Processing pressure		Environment
Technical conditions and measures at process level (source) to prevent release	No specific measures identified. Handle substance within a closed system.		
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	No specific measures identified. Store substance within a closed system.		
Organisational measures to prevent/limit release from site	Use in closed systems; no intended release into environment.		
Conditions and measures related to municipal sewage treatment plant	Size of STP		>2000 m³/day
	Degradation efficacy		90%
	Sludge treatment		Disposal or recovery
Conditions and measures related to treatment of waste	All waste products are assumed to be collected and returned for re-processing or re-use. Contain and dispose of waste in accordance with environmental legislation and according to local regulations.		
18.2. Exposure estimate			
The workers exposure estimation is calculated with Ecetoc TRA model v2..			
Workers exposure	Exposure estimate	DNEL	Comment
Inhalation (mg/m³)	38.42	950	-
Dermal (mg/kd/day)	1.71	343	
Combined (mg/kg/day)	7.20	343	
The environmental exposure estimation is based on Ecetoc TRA model v2. Below values are estimates based on the ERC9a approach calculation. Ethanol is fully soluble in water, readily biodegradable, not bio-accumulative, does not accumulate in the sediments or soil and is assumed to be degraded by >90% in the STP under evaluated conditions.			
Release times per year (days/year)	365	Local release to air (kg/day)	~ 0 (negligible)
Fraction used at main local source	0.1	Local release to sewage (kg/day)	~ 0 (negligible)
Amount used locally (kg/day)	5.5	Local release to soil (kg/day)	~ 0 (negligible)
Environmental exposure	PEC	PNEC	Comment
In STP (mg/l)	~ 0 (negligible)	580	-
In local freshwater (mg/l)	0.0107	0.96	-
In local soil (mg/kg)	0.0002	0.63 (mg/kgwwt)	-
In local marine water (mg/l)	0.0010	0.79	-
Total daily intake via local environment (mg/kgdw/d)	Negligible compared to daily dietary intake and endogenous formation.		
Guidance to DU to evaluate whether he works inside the boundaries set by the ES			
The workers exposure and environmental emissions have been evaluated using Ecetoc TRA integrated tool version 2.			
If the local environmental emission conditions deviate significantly from the used default values, please use the algorithm below to estimate the correct local emissions and RCRs:			
PECcorrected = PECcalculated * (local emission fraction) * (local WWTP flow rate fraction) * (local river flow rate fraction) * (local STP efficiency fraction)			
Additional good practice advice beyond the REACH CSA		Use specific measures expected to reduce the predicted exposure beyond the level estimated based on the exposure scenario when possible.	
Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to the obligations laid down in Article 37 (4) of the REACH regulation.			