Brüggemann **Safety data sheet**

according to Regulation (EC) No 1907/2006, Article 31

Printing date 28.08.2024 version 22 Revision: 28.08.2024

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

· **1.1 Product identifier**

· **Trade name:**
060100 ETHANOL 96% PH.E. UNDENATURED
060110 ALCOHOL USP, UNDENATURED
060120 BIOPREMIUM 96% UNDENATURED, KOSHER
060138 KBA-ETHANOL 96% KOSHER
060410 BEVERAGE ALCOHOL
060414 BEVERAGE ALCOHOL FROM GRAIN
060415 WITTENBERG CORN
060417 BEVERAGE ALCOHOL FROM POTATOES
060418 WITTENBERG WHEATFINE
060422 WITTENBERG RYEFINE
060423 BEVERAGE ALCOHOL WITHOUT CORN
060427 Schwarzwaldkorn
060432 BIOPREMIUM FROM POTATOES
060450 ETHANOL 96% UNDENATURED
060470 ETHANOL KA UNDENATURED
060490 ETHANOL 96%, TECHN. NQ, UNDENATURED
060510 BEVERAGE ALCOHOL , EXTRA
060710 PURIUS
064100 ETHANOL 96% PH.E. UNDENATURED, KOSHER
064110 ETHANOL 96%, USP, UNDENATURED, KOSHER
064410 BEVERAGE ALCOHOL, KOSHER
064414 BEVERAGE ALCOHOL FROM GRAIN, KOSHER
064450 ETHANOL 96%, UNDENATURED, KOSHER
064511 ETHANOL FOR FRUIT, KOSHER
065100 ETHANOL 96%, GMP UNDENATURED

ETHANOL undenatured
· **CAS Number:**
64-17-5

· **EC number:**
200-578-6
· **Index number:**
603-002-00-5

· **REACH registration number:** 01-2119457610-43

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

· **Sector of Use**
SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites
SU8 Manufacture of bulk, large scale chemicals (including petroleum products)
SU9 Manufacture of fine chemicals
SU10 Formulation [mixing] of preparations and/or re-packaging (excluding alloys)
SU21 Consumer uses: Private households / general public / consumers
SU22 Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
· **Product category**
PC1 Adhesives, sealants
PC3 Air care products
PC4 Anti-Freeze and de-icing products
PC8 Biocidal products
PC9a Coatings and paints, thinners, paint removers
PC9b Fillers, putties, plasters, modelling clay
PC9c Finger paints
PC13 Fuels
PC14 Metal surface treatment products
PC15 Non-metal-surface treatment products
PC16 Heat transfer fluids

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PC17 Hydraulic fluids
PC18 Ink and toners
PC20 Processing aids such as pH-regulators, flocculants, precipitants, neutralization agents
PC21 Laboratory chemicals
PC23 Leather treatment products
PC24 Lubricants, greases, release products
PC26 Paper and board treatment products
PC27 Plant protection products
PC28 Perfumes, fragrances
PC29 Pharmaceuticals
PC30 Photo-chemicals
PC31 Polishes and wax blends
PC34 Textile dyes, and impregnating products
PC35 Washing and cleaning products (including solvent based products)
PC36 Water softeners
PC37 Water treatment chemicals
PC39 Cosmetics, personal care products

· **Process category**
PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.
PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
PROC4 Chemical production where opportunity for exposure arises
PROC5 Mixing or blending in batch processes
PROC7 Industrial spraying
PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities
PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
PROC10 Roller application or brushing
PROC11 Non industrial spraying
PROC13 Treatment of articles by dipping and pouring
PROC14 Tabletting, compression, extrusion, pelletisation, granulation
PROC15 Use as laboratory reagent
PROC16 Use of fuels
PROC19 Manual activities involving hand contact
PROC20 Use of functional fluids in small devices

· **Environmental release category**
ERC1 Manufacture of the substance
ERC2 Formulation into mixture
ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
ERC6a Use of intermediate
ERC7 Use of functional fluid at industrial site
ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)
ERC8b Widespread use of reactive processing aid (no inclusion into or onto article, indoor)
ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)
ERC9a Widespread use of functional fluid (indoor)

· **1.3 Details of the supplier of the safety data sheet**
· **Manufacturer/Supplier:**
Brüggemann Alcohol Heilbronn GmbH
Salzstraße 129
74076 Heilbronn
phone: +49 7131 1575-0
fax: +49 7131 1575-888
e-mail: alcohol@brueggemann.com

· **Further information obtainable from:** ehs@brueggemann.com

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Brüggemann **Safety data sheet**
according to Regulation (EC) No 1907/2006, Article 31

Printing date 28.08.2024 version 22 Revision: 28.08.2024

Trade name: ETHANOL undenatured

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· **1.4 Emergency telephone number:** +49 761 19240 (english language)

SECTION 2: Hazards identification

· **2.1 Classification of the substance or mixture**
· **Classification according to Regulation (EC) No 1272/2008**
Flam. Liq. 2 H225 Highly flammable liquid and vapour.
Eye Irrit. 2 H319 Causes serious eye irritation.

· **2.2 Label elements**
· **Labelling according to Regulation (EC) No 1272/2008**
The substance is classified and labelled according to the CLP regulation.
· **Hazard pictograms**

GHS02 GHS07

· **Signal word** Danger
· **Hazard statements**
H225 Highly flammable liquid and vapour.
H319 Causes serious eye irritation.
· **Precautionary statements**

P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P233	Keep container tightly closed.
P241	Use explosion-proof [electrical/ventilating/lighting] equipment.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P501	Dispose of contents/container to an approved waste disposal plant.

· **2.3 Other hazards**
· **Results of PBT and vPvB assessment**
· **PBT:** Does not meet the PBT criteria according to annex XIII of Regulation (EC) No 1907/2006.
· **vPvB:** Does not meet the vPvB criteria according to annex XIII of Regulation (EC) No 1907/2006.

SECTION 3: Composition/information on ingredients

· **3.1 Substances**

· **CAS NO. Description:**
64-17-5 ethanol

· **Identification number(s)**

· **EC number:** 200-578-6

· **Index number:** 603-002-00-5
· **Specific concentration limits** Eye Irrit. 2; H319: C ≥ 50 %

SECTION 4: First aid measures

· **4.1 Description of first aid measures**
· **General information:**
Take affected persons out of danger area and lay down.
Take affected persons out into the fresh air.

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Keep warm, position comfortably and cover well.

· **After inhalation:** Supply fresh air; consult doctor in case of complaints.

· **After skin contact:**
Immediately wash with water and soap and rinse thoroughly.
Seek medical treatment in case of complaints.

· **After eye contact:**
Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.

· **After swallowing:**
Rinse out mouth and then drink plenty of water.
If symptoms persist consult doctor.
In case of unconsciousness place patient stably in side position for transportation.

· **4.2 Most important symptoms and effects, both acute and delayed**
Irritation of mucous membranes after eye contact or inhalation.
Dysfunction of inhibiting functions of the central nervous system.
Erythema.
Nausea

· **4.3 Indication of any immediate medical attention and special treatment needed**
Ethanol:
Dermal and inhalative intake of the substance causes besides irritation of the affected mucous membranes solely an indicated interference of the central nervous system's inhibiting function. Simultaneously blush and flush appears due to the dilatation of the blood vessels in the periphery of the body. Use alcohol test tubes to confirm the diagnosis and estimation of the quantity of the alcohol intake.
Notes to the medical first aid: generally no medical treatment required, protection against loss of heat and symptomatical treatment indicated, if needed. Stationary subsequent treatment in the case of poisoning only in exceptional cases necessary.

SECTION 5: Firefighting measures

· **5.1 Extinguishing media**

· **Suitable extinguishing agents:**
Alcohol resistant foam
BC powder
Carbon dioxide
Water spray

· **5.2 Special hazards arising from the substance or mixture**
In case of fire, the following can be released:
CO_2, CO
Can form explosive gas-air mixtures.

· **5.3 Advice for firefighters**

· **Protective equipment:**
Wear self-contained respiratory protective device.
Wear fully protective suit.

· **Additional information**
Remove persons from danger area.
Cool endangered receptacles with water spray.
Collect contaminated fire fighting water separately. It must not enter the sewage system.
In the case of mass fire: close off surrounding areas.

SECTION 6: Accidental release measures

· **6.1 Personal precautions, protective equipment and emergency procedures**
Keep ignition sources away - Do not smoke.
Take precautionary measures against static discharges.

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Ensure adequate ventilation
Use explosion-proof apparatus / fittings and spark-proof tools.
Wear protective equipment. Keep unprotected persons away.
· **6.2 Environmental precautions:** Do not allow to enter sewers/ surface or ground water.
· **6.3 Methods and material for containment and cleaning up:**
Rinse away any residue with plenty of water.
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
In the case of large amounts: Use exhaust device.
Build up barriers, cover drains, do not allow substance to enter sewage water.
· **6.4 Reference to other sections**
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

SECTION 7: Handling and storage

· **7.1 Precautions for safe handling**
Store in cool, dry place in tightly closed receptacles.
Provide solvent resistant, sealed floor.
Prophylactic skin protection recommended.

· **Information about fire - and explosion protection:**
Can form explosive gas-air mixtures.
Ensure good interior ventilation, especially at floor level. (Fumes are heavier than air).
Take precautionary measures against static discharges.
Keep ignition sources away - Do not smoke.

· **7.2 Conditions for safe storage, including any incompatibilities**
· **Storage:**
· **Requirements to be met by storerooms and receptacles:**
Suitable material for receptacles and pipes: Stainless steel.
Store in a cool location.
· **7.3 Specific end use(s)** In the case of use for foodstuff: ensure compliance with HACCP directives.

SECTION 8: Exposure controls/personal protection

· **8.1 Control parameters**
· **Ingredients with limit values that require monitoring at the workplace:**

64-17-5 ethanol (50-100%)

AGW (Germany) Long-term value: 380 mg/m³, 200 ppm
4(II);DFG, Y

· **DNELs**

Oral	syst. 87 mg/kg$_{bw}$/d (consumer, long-term)
Dermal	syst. 206 mg/kg$_{bw}$/d (consumer, long-term)
	343 mg/kg$_{bw}$/d (worker, long-term)
Inhalative	syst. 114 mg/m^3 (consumer, long-term)
	950 mg/m^3 (worker, long-term)

· **PNECs**

Aquatic	0,96 mg/L (freshwater)
	2,75 mg/L (freshwater (intermittent releases))
	0,79 mg/L (marine water)
STP	580 mg/L (STP)
Terrestrial	0,63 mg/kg$_{dw}$ (soil)
oral	0,38 g/kg (food)
Sedimentary	3,6 mg/kg$_{dw}$ (freshwater)

(Contd. on page 6)

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2,9 mg/kg_{dw} (marine water)

· **8.2 Exposure controls**
· **Appropriate engineering controls** No further data; see section 7.
· **Individual protection measures, such as personal protective equipment**

· **General protective and hygienic measures:** Wash hands before breaks and at the end of work.

· **Respiratory protection:**
In exceptional situations (e.g. unintentional release of substance, air limit value exceeded), respiratory protection must be worn.
Observe wearing time limits.
Respirator: gas filter A, identification colour: brown.
For details on conditions of use and maximum use concentrations, see the "Rules for the use of respiratory protective equipment" (BGR 190).
Breathing apparatus: Insulating device
Use at concentrations above the application limit of filtering devices, at oxygen contents below 17 vol% or in unclear conditions.
Use suitable respiratory protective device when high concentrations are present.

· **Hand protection**
The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.


Protective gloves

Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

· **Material of gloves**
Butyl rubber, BR
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.
Recommended thickness of the material: ≥ 0,7 mm

· **Penetration time of glove material**
Value for the permeation: Level ≤ 8 h
The exact break trough time has to be found out by the manufacturer of the protective gloves and has to be observed.
· **As protection from splashes gloves made of the following materials are suitable:**
Nitrile rubber, NBR

· **Eye/face protection**


Safety goggles with side protection (EN166).

· **Body protection:**
Solvent resistant protective clothing
Protective work clothing

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SECTION 9: Physical and chemical properties

· **9.1 Information on basic physical and chemical properties**
· **General Information**

· **Physical state**	Fluid
· **Colour:**	Colourless
· **Odour:**	Alcohol-like
· **Odour threshold:**	178 mg/m^3

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· **Melting point/freezing point:**	-114,5 °C (OECD 102)
· **Boiling point or initial boiling point and boiling range**	78 °C (OECD 103)
· **Lower and upper explosion limit**	
· **Lower:**	2,5 Vol % (ASTM E681-94)
· **Upper:**	13,5 Vol % (ASTM E681-94)
· **Flash point:**	13 - 15 °C (DIN 51758)
· **Auto-ignition temperature:**	363-425 °C (CSA)
· **pH at 20 °C**	5,3 (DIN EN ISO 10523)
· **Viscosity:**	
· **Dynamic at 20 °C:**	1,2 mPas (ISO 3104/3105)
· **Solubility**	
· **water:**	Fully miscible.
· **Partition coefficient n-octanol/water (log value) at 20 °C**	-0,35 log POW (OECD 117)
· **Vapour pressure at 20 °C:**	57,3 hPa (OECD 104)
· **Density and/or relative density**	
· **Density at 20 °C:**	0,81 g/cm³ (DIN EN ISO 787-10)
· **Vapour density at 20 °C**	1,8 g/cm³ (Literatur)
· **9.2 Other information**	Fumes are heavier than air.
· **Appearance:**	
· **Form:**	Fluid
· **Important information on protection of health and environment, and on safety.**	
· **Ignition temperature:**	Product is not selfigniting. (EU A.16)
· **Evaporation rate at 20 °C**	1,4 (ASTM D3539-87)
· **Information with regard to physical hazard classes**	
· **Explosives**	Void
· **Flammable gases**	Void
· **Aerosols**	Void
· **Oxidising gases**	Void
· **Gases under pressure**	Void
· **Flammable liquids**	Highly flammable liquid and vapour.
· **Flammable solids**	Void
· **Self-reactive substances and mixtures**	Void
· **Pyrophoric liquids**	Void
· **Pyrophoric solids**	Void
· **Self-heating substances and mixtures**	Void
· **Substances and mixtures, which emit flammable gases in contact with water**	Void
· **Oxidising liquids**	Void
· **Oxidising solids**	Void
· **Organic peroxides**	Void
· **Corrosive to metals**	Void
· **Desensitised explosives**	Void

SECTION 10: Stability and reactivity

· **10.1 Reactivity** No further relevant information available.
· **10.2 Chemical stability**
Stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.
· **Thermal decomposition / conditions to be avoided:**
No decomposition if used according to specifications.

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· **10.3 Possibility of hazardous reactions:**
Reacts with alkali and metals.
Reacts with strong acids.
Reacts with oxidising agents.
Forms explosive gas mixture with air.
· **10.4 Conditions to avoid:**
> 30 °C
Avoid UV radiation
· **10.5 Incompatible materials:**
alkaline metals
alkaline earth metals
· **10.6 Hazardous decomposition products:** Flammable gases/vapours

SECTION 11: Toxicological information

· **11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008**

· **Acute toxicity**

Oral LD_{50} 10.470 mg/kg (rat) (OECD 401)
Inhalative LC_{50}/4h 116,9 mg/L (rat) (OECD 403)
· **Skin corrosion/irritation** Based on available data, the classification criteria are not met.
· **Serious eye damage/irritation**
Causes serious eye irritation.

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

· **Germ cell mutagenicity** Based on available data, the classification criteria are not met.
· **Carcinogenicity** Based on available data, the classification criteria are not met.
· **Reproductive toxicity** Based on available data, the classification criteria are not met.
· **STOT-single exposure** Based on available data, the classification criteria are not met.
· **STOT-repeated exposure** Based on available data, the classification criteria are not met.
· **Aspiration hazard** Based on available data, the classification criteria are not met.

· **Subacute to chronic toxicity:**

Oral NOAEL (90d) 1.730 mg/kg_{bw}/d (rat) (OECD 408)
Inhalative NOAEL (20d) >20 mg/L (rat) (OECD 403)
· **11.2 Information on other hazards**
· **Endocrine disrupting properties** Substance is not listed.

SECTION 12: Ecological information

· **12.1 Toxicity**
· **Aquatic toxicity:**
ethanol:

EC_{50} 275 mg/L /72h (chlorella vulgaris)
EC_{10} 11,5 mg/L /72h (chlorella vulgaris)
EC_{50} 857 mg/L (artemia salina, marine water, 48h)
5.012 mg/L (ceriodaphnia dubia, freshwater, 48h)
NOEC 9,6 mg/L (ceriodaphnia dubia, freshwater 10d)
79 mg/L /10d (palaemonetes pugio, marine water)
NOEC 250 mg/L (fish) (OECD 212)
LC_{50} 11.200 mg/L (oncorhynchus mykiss) (ASTN E729-80)
· **12.2 Persistence and degradability**
Biodegradability (ethanol):
Readily biodegradable (OECD 301 B), >60% in 10d, freshwater)

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· **12.3 Bioaccumulative potential**
Does not accumulate in organisms
No remarkable bioaccumulation potential (log K_{ow} < 4 and BCF < 500)
BCF = 3.2 (estimation based on a calculation method)
· **12.4 Mobility in soil** Koc = 0,2 (Literatur) henry's law constant: 3,3 x 10-1 Pa•m³/mol
· **12.5 Results of PBT and vPvB assessment**
· **PBT:** Does not meet the PBT criteria according to annex XIII of Regulation (EC) No 1907/2006.
· **vPvB:** Does not meet the vPvB criteria according to annex XIII of Regulation (EC) No 1907/2006.
· **12.6 Endocrine disrupting properties**
The product does not contain substances with endocrine disrupting properties.
· **12.7 Other adverse effects:**

· **Behaviour in sewage processing plants:**
EC_{50}(4h) 5.800 mg/L (paramaecium caudatum) (non-guideline study)
EC_5(72h) 65 mg/L (entosiphon sulcatumi) (DIN 38412, part 8)

· **Additional ecological information:**
· **COD-value:** ~ 1900 mg/g
· **BOD5-value:** ~ 1000 mg/g
· **According to the formulation contains the following heavy metals and compounds from the EU guideline 2006/11/EC:**
None.

SECTION 13: Disposal considerations

· **13.1 Waste treatment methods**
· **Recommendation**
Must not be disposed together with household garbage. Do not allow product to reach sewage system.
Disposal must be made according to official regulations.
· **Waste disposal key:** 07 01 04

· **Uncleaned packaging:**
· **Recommendation:** Dispose of packaging according to regulations on the disposal of packagings.

SECTION 14: Transport information

· **14.1 UN number or ID number**
· **ADR, IMDG, IATA** UN1170
· **14.2 UN proper shipping name**
· **ADR** 1170 ETHANOL (ETHYLALKOHOL)
· **IMDG** ETHANOL (ETHYLALKOHOL)
· **IATA** ETHANOL
· **14.3 Transport hazard class(es)**

· **ADR, IMDG, IATA**

· **Class** 3 Flammable liquids.
· **Label** 3
· **14.4 Packing group**
· **ADR, IMDG, IATA** II
· **14.5 Environmental hazards:**
· **Marine pollutant:** No
· **14.6 Special precautions for user** Warning: Flammable liquids.

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· **Hazard identification number (Kemler code):** 33
· **EMS Number:** F-E,S-D
· **Stowage Category** A
· **14.7 Maritime transport in bulk according to IMO instruments** Not applicable.

· **Transport/Additional information:**

· **ADR**
· **Limited quantities (LQ)** 1L
· **Excepted quantities (EQ)** Code: E2
Maximum net quantity per inner packaging: 30 ml
Maximum net quantity per outer packaging: 500 ml
· **Transport category** 2
· **Tunnel restriction code** D/E

· **IMDG**
· **Limited quantities (LQ)** 1L
· **Excepted quantities (EQ)** Code: E2
Maximum net quantity per inner packaging: 30 ml
Maximum net quantity per outer packaging: 500 ml
· **UN "Model Regulation":** UN 1170 ETHANOL (ETHYLALKOHOL), 3, II

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SECTION 15: Regulatory information

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

· **Directive 2012/18/EU**
· **Named dangerous substances - ANNEX I** Substance is not listed.
· **Seveso category** P5c FLAMMABLE LIQUIDS
· **Qualifying quantity (tonnes) for the application of lower-tier requirements** 5.000 t
· **Qualifying quantity (tonnes) for the application of upper-tier requirements** 50.000 t

· **REGULATION (EU) 2019/1021 on persistent organic pollutants (POP)** Substance is not listed.

· **LIST OF SUBSTANCES SUBJECT TO AUTHORISATION (ANNEX XIV)** Substance is not listed.

· **REGULATION (EC) No 1907/2006 ANNEX XVII** Conditions of restriction: 3, 40, 75

· **Regulation (EU) No 649/2012** Substance is not listed.

· **DIRECTIVE 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment – Annex II**
Substance is not listed.

· **REGULATION (EU) 2019/1148**

· **Annex I - RESTRICTED EXPLOSIVES PRECURSORS (Upper limit value for the purpose of licensing under Article 5(3))**
Substance is not listed.

· **Annex II - REPORTABLE EXPLOSIVES PRECURSORS** Substance is not listed.

· **Regulation (EC) No 273/2004 on drug precursors** Substance is not listed.

· **Regulation (EC) No 111/2005 laying down rules for the monitoring of trade between the Community and third countries in drug precursors**
Substance is not listed.

· **REGULATION (EU) 2024/590 on substances that deplete the ozone layer**
Substance is not listed.

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· **Substances of very high concern (SVHC) according to REACH, Article 57**
Substance is not listed.

· **National regulations:**
· **Information about limitation of use:**
Employment restrictions concerning juveniles must be observed.
Employment restrictions concerning pregnant and lactating women must be observed.

· **15.2 Chemical safety assessment:** A Chemical Safety Assessment has been carried out.

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SECTION 16: Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Classification and procedure used to derive the classification for mixtures according to Regulation (EC) 1272/2008 (CLP)**
· **Classification according to Regulation (EC) No 1272/2008** On basis of test data
· **Date of previous version:** 24.01.2024
· **Abbreviations and acronyms:**
RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
ICAO: International Civil Aviation Organisation
ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association
GHS: Globally Harmonised System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
DNEL: Derived No-Effect Level (REACH)
PNEC: Predicted No-Effect Concentration (REACH)
PBT: Persistent, Bioaccumulative and Toxic
SVHC: Substances of Very High Concern
vPvB: very Persistent and very Bioaccumulative
Flam. Liq. 2: Flammable liquids – Category 2
Eye Irrit. 2: Serious eye damage/eye irritation – Category 2

· **Sources** ECHA: Information on Registred Substances
· *** Data compared to the previous version altered.**

Exposure scenario 1. Manufacture of substance. Large process.

Based on ECHA Template CSA&IR Part D June 08 combined with the GES Narrative Format.

Section 1	
Title.	**Ethanol.** **Manufacture of substance. Large process.** **EC:64-17-5.**
Life cycle stage:	Manufacture.
Environmental Release Category(ies):	ERC1.; ESVOC SpERC 1.1.v1.
Process Category(ies):	PROC1, PROC2, PROC3, PROC8b, PROC15, PROC28.
Processes, tasks, activities covered:	Manufacture of the substance or use as a process chemical or extraction agent. Includes recycling/ recovery, material transfers, storage, maintenance and loading (including marine vessel/barge, road/rail car and bulk container), sampling and associated laboratory activities.
Assessment method:	Health: Used ECETOC TRA model. (v3). Environment: Used ECETOC TRA model. (v3). Assessment based on measured data.
Section 2:	**Operational conditions and risk management measures.**

Section 2.1	**Control of environmental exposure:**
Product Characteristics:	Substance is a unique structure. Non-hydrophobic. Liquid, vapour pressure 0.5 - 10 kPa at STP. Miscible in water. Practically non-toxic to aquatic species. Readily biodegradable. Low bioaccumulation potential.
Amounts used per site (tonne per year).	400000. (1330000 kg/day.)
Frequency and duration of use:	Continuous process. 300 days per year of operation.
Environmental factors not influenced by risk management:	Local freshwater dilution factor: 10. Local marine water dilution factor: 100.
Other operational conditions of use affecting environmental exposure.	none. Emission Days (days/year): 300. Continuous release.
Technical onsite conditions and measures to reduce or limit discharges, air emissions.	Treatment of air emissions is not required for the purposes of REACH compliance but may be needed to comply with other environmental legislation. Soil emission controls are not applicable as there is no direct release to soil. Onsite wastewater treatment required. Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of ≥ (%): 87. Assumed industrial waste water treatment plant flow (m3/d): 2000. All waste water and surface water run off from process area must be collected for treatment.
Organisation measures to prevent/limit release from site.	Bund storage facilities to prevent soil and water pollution in the event of spillage. Prevent environmental discharge consistent with regulatory requirements Site should have a spill plan to ensure that adequate safeguards are in place to minimize the impact of episodic releases.
Conditions and measures related to municipal sewage treatment plant.	Do not discharge to sewers or drains.
Conditions and measures related to external treatment of waste for disposal.	Estimated amount entering waste treatment no greater than: .2%. Type of treatment suitable for waste: incineration. Removal efficiency (%): 99.98. Type of treatment suitable for waste: cement kiln fuels. Removal efficiency (%): 99.98. Treat as hazardous waste. Dispose of waste product or used containers according to local regulations. External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste.	Not applicable.
Other environmental control measures additional to above:	none.

Section 2.2:	**Control of worker exposure.**
Product Characteristics:	
Physical form of product:	Liquid, vapour pressure 0.5 - 10 kPa at STP.
Concentration of substance in product:	Covers percentage substance in the product up to 100 % (unless stated differently).
Amounts used:	Not applicable.
Frequency and duration of use:	Covers daily exposures up to 8 hours (unless stated differently). Continuous process.
Human factors not influenced by risk management:	none.
Other operational conditions affecting worker exposure:	Assumes a good basic standard of occupational hygiene is implemented . Assumes activities are at ambient temperature (unless stated differently).
Technical conditions and measures at a process level to prevent release and technical conditions and measures to control dispersion from source towards workers:	Handle substance within a closed system.
	Contributing Scenarios:
General measures (eye irritants).	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands. Avoid splashing.
ES1-CS1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions..	No other specific measures identified.
ES1-CS2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions.	No other specific measures identified.

ES1-CS3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition.	No other specific measures identified.
ES1-CS4: Transfer of substance or mixture (charging and discharging) at dedicated facilities.	No other specific measures identified.
ES1-CS5: Use as laboratory reagent.	No other specific measures identified.
ES1-CS6: Manual maintenance (cleaning and repair) of machinery.	No other specific measures identified.
Section 3:	**Exposure estimation:**
Environment:	Maximum exposure resulting from contributing scenarios described.
ES1-E1: ERC1.	Conditions given in SPERC fact sheet give rise to following releases fractions. (ESVOC SpERC 1.1.v1.). Release fraction to air from process (initial release prior to RMM): 450kg/day. Release fraction to wastewater from process (initial release prior to RMM): 25kg/day. Release fraction to soil from process (initial release prior to RMM): 0.
	PEC for microorganisms in STP: 1.58E+00mg/l. Risk characterisation ratio: 2.72E-03. Local PEC in surface water: 2.29E-01mg/l. Risk characterisation ratio: 2.39E-01. Local PEC in fresh water sediment: 8.78E-01mg/kgdw. Risk characterisation ratio: 2.44E-01. Local PEC in sea water during emission episode: 2.46E-02mg/l. Risk characterisation ratio: 3.11E-02. Local PEC in marine sediment: 9.42E-02mg/kgdw. Risk characterisation ratio: 3.25E-02. Local PEC in soil: 2.62E-02mg/kgdw. Risk characterisation ratio: 4.16E-02. Risk from environmental exposure is driven by freshwater sediment.
Health:	exposure resulting from contributing scenario ES1-CS1: Inhalation (vapour). 8 hour average 0.019mg/m3.Risk characterisation ratio: <0.001. Dermal: 0.03mg/kg/day.
	exposure resulting from contributing scenario ES1-CS2: Inhalation (vapour). 8 hour average 9.6mg/m3.Risk characterisation ratio: 0.025. Dermal: 1.4mg/kg/day.
	exposure resulting from contributing scenario ES1-CS3: Inhalation (vapour). 8 hour average 19mg/m3.Risk characterisation ratio: 0.05. Dermal: 0.69mg/kg/day.
	exposure resulting from contributing scenario ES1-CS4: Inhalation (vapour). 8 hour average 48mg/m3.Risk characterisation ratio: 0.126. Dermal: 14mg/kg/day.
	exposure resulting from contributing scenario ES1-CS5: Inhalation (vapour). 8 hour average 19mg/m3.Risk characterisation ratio: 0.05. Dermal: 0.34mg/kg/day.
	exposure resulting from contributing scenario ES1-CS6: Inhalation (vapour). 8 hour average 96mg/m3.Risk characterisation ratio: 0.252. Dermal: 27mg/kg/day.
	It is not possible to derive a DNEL for this end point. Available hazard data do not enable the derivation of a DNEL for eye irritant effects.
Section 4:	**Guidance to check compliance with the exposure scenario**
Environment:	Msafe: 42900000kg/day. Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
	$\frac{m_{spERC} * (1 - E_{ER,spERC}) * F_{release,spERC}}{DF_{spERC}} \geq \frac{m_{site} * (1 - E_{ER,site}) * F_{release,site}}{DF_{site}}$ where: mspERC: Substance use rate in spERC. EER,spERC: Efficacy of RMM in spERC. Frelease,,spERC: Initial release fraction in spERC. DFspERC: dilution factor of STP effluent in river. msite: Susbstance use rate at site. EER,site: Efficacy of RMM at site. Frelease,,site: Initial release fraction at site. DFsite: dilution factor of STP effluent in river.
Health:	No corrections required as all exposures are assumed to be for 8 hours (worse case assessment). No corrections required as all exposures are assumed to be substance concentrations of up to 100%.
	No corrections required as all exposures are assumed to be substance concentrations of up to 100%. No corrections required as all exposures are assumed to be for 8 hours (worse case assessment).

Exposure scenario 2. Manufacture of substance. Small to medium sized process.

Based on ECHA Template CSA&IR Part D June 08 combined with the GES Narrative Format.

Section 1	
Title.	**Ethanol.** **Manufacture of substance. Small to medium sized process.** **EC:64-17-5.**
Life cycle stage:	Manufacture.
Environmental Release Category(ies):	ERC1.; ESVOC SpERC 1.1.v1.
Process Category(ies):	PROC1, PROC2, PROC3, PROC8b, PROC15, PROC28.
Processes, tasks, activities covered:	Manufacture of the substance or use as a process chemical or extraction agent. Includes recycling/ recovery, material transfers, storage, maintenance and loading (including marine vessel/barge, road/rail car and bulk container), sampling and associated laboratory activities.
Assessment method:	Health: Used ECETOC TRA model (v3). Environment: Used ECETOC TRA model (v3). Used ESVOC SpERCs (with modifications).
Section 2:	**Operational conditions and risk management measures.**

Section 2.1	**Control of environmental exposure:**
Product Characteristics:	Substance is a unique structure. Non-hydrophobic. Liquid, vapour pressure 0.5 - 10 kPa at STP. Miscible in water. Practically non-toxic to aquatic species. Readily biodegradable. Low bioaccumulation potential.
Amounts used per site (tonne per year).	50000. (167000 kg/day.)
Frequency and duration of use:	Continuous process. 300 days per year of operation.
Environmental factors not influenced by risk management:	Local freshwater dilution factor: 10. Local marine water dilution factor: 100.
Other operational conditions of use affecting environmental exposure.	none. Emission Days (days/year): 300. Continuous release.
Technical onsite conditions and measures to reduce or limit discharges, air emissions.	Treatment of air emissions is not required for the purposes of REACH compliance but may be needed to comply with other environmental legislation. Onsite wastewater treatment required. Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of ≥ (%): 87. Assumed industrial waste water treatment plant flow (m3/d): 2000. All waste water and surface water run off from process area must be collected for treatment.
Organisation measures to prevent/limit release from site.	Bund storage facilities to prevent soil and water pollution in the event of spillage. Prevent environmental discharge consistent with regulatory requirements Site should have a spill plan to ensure that adequate safeguards are in place to minimize the impact of episodic releases.
Conditions and measures related to municipal sewage treatment plant.	Do not discharge to sewers or drains.
Conditions and measures related to external treatment of waste for disposal.	Estimated amount entering waste treatment no greater than: 0.2%. Type of treatment suitable for waste: incineration. Removal efficiency (%): 99.98. Type of treatment suitable for waste: cement kiln fuels. Removal efficiency (%): 99.98. Treat as hazardous waste. Dispose of waste product or used containers according to local regulations. External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste.	Not applicable.
Other environmental control measures additional to above:	none.

Section 2.2:	**Control of worker exposure.**
Product Characteristics:	
Physical form of product:	Liquid, vapour pressure 0.5 - 10 kPa at STP.
Concentration of substance in product:	Covers percentage substance in the product up to 100 % (unless stated differently).
Amounts used:	Not applicable.
Frequency and duration of use:	Covers daily exposures up to 8 hours (unless stated differently). Continuous process.
Human factors not influenced by risk management:	none.
Other operational conditions affecting worker exposure:	Assumes a good basic standard of occupational hygiene is implemented . Assumes activities are at ambient temperature (unless stated differently).
Technical conditions and measures at a process level to prevent release and technical conditions and measures to control dispersion from source towards workers:	Handle substance within a closed system.
	Contributing Scenarios:
General measures (eye irritants).	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands. Avoid splashing.
ES2-CS1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions..	No other specific measures identified.
ES2-CS2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions.	No other specific measures identified.

ES2-CS3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition.	No other specific measures identified.
ES2-CS4: Transfer of substance or mixture (charging and discharging) at dedicated facilities.	No other specific measures identified.
ES2-CS5: Use as laboratory reagent.	No other specific measures identified.
ES2-CS6: Manual maintenance (cleaning and repair) of machinery.	No other specific measures identified.
Section 3:	**Exposure estimation:**
Environment:	Maximum exposure resulting from contributing scenarios described.
ES2-E1: ERC1.	Conditions given in SPERC fact sheet give rise to following releases fractions. (ESVOC SpERC 1.1.v1.). Release fraction to air from process (initial release prior to RMM): 0.01. Release fraction to wastewater from process (initial release prior to RMM): 0.0005. Release fraction to soil from process (initial release prior to RMM): 0.0001.
	PEC for microorganisms in STP: 5.26E+00mg/l. Risk characterisation ratio: 9.07E-03. Local PEC in surface water: 5.64E-01mg/l. Risk characterisation ratio: 5.88E-01. Local PEC in fresh water sediment: 2.16E+00mg/kgdw. Risk characterisation ratio: 6.00E-01. Local PEC in sea water during emission episode: 6.14E-02mg/l. Risk characterisation ratio: 7.77E-02. Local PEC in marine sediment: 2.35E-01mg/kgdw. Risk characterisation ratio: 8.10E-02. Local PEC in soil: 6.82E-02mg/kgdw. Risk characterisation ratio: 1.08E-01. Risk from environmental exposure is driven by freshwater sediment.
Health:	exposure resulting from contributing scenario ES2-CS1: Inhalation (vapour). 8 hour average 0.019mg/m3.Risk characterisation ratio: <0.001. Dermal: 0.03mg/kg/day.
	exposure resulting from contributing scenario ES2-CS2: Inhalation (vapour). 8 hour average 9.6mg/m3.Risk characterisation ratio: 0.025. Dermal: 1.4mg/kg/day.
	exposure resulting from contributing scenario ES2-CS3: Inhalation (vapour). 8 hour average 19mg/m3.Risk characterisation ratio: 0.05. Dermal: 0.69mg/kg/day.
	exposure resulting from contributing scenario ES2-CS4: Inhalation (vapour). 8 hour average 48mg/m3.Risk characterisation ratio: 0.126. Dermal: 14mg/kg/day.
	exposure resulting from contributing scenario ES2-CS5: Inhalation (vapour). 8 hour average 19mg/m3.Risk characterisation ratio: 0.05. Dermal: 0.34mg/kg/day.
	exposure resulting from contributing scenario ES2-CS6: Inhalation (vapour). 8 hour average 96mg/m3.Risk characterisation ratio: 0.252. Dermal: 27mg/kg/day.
	It is not possible to derive a DNEL for this end point. Available hazard data do not enable the derivation of a DNEL for eye irritant effects.
Section 4:	**Guidance to check compliance with the exposure scenario**
Environment:	Msafe: 2150000kg/day. Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
	$\frac{m_{spERC} * (1 - E_{ER,spERC}) * F_{release,spERC}}{DF_{spERC}} \geq \frac{m_{site} * (1 - E_{ER,site}) * F_{release,site}}{DF_{site}}$ where: mspERC: Substance use rate in spERC. EER,spERC: Efficacy of RMM in spERC. Frelease,,spERC: Initial release fraction in spERC. DFspERC: dilution factor of STP effluent in river. msite: Susbstance use rate at site. EER,site: Efficacy of RMM at site. Frelease,,site: Initial release fraction at site. DFsite: dilution factor of STP effluent in river.
Health:	No corrections required as all exposures are assumed to be for 8 hours (worse case assessment). No corrections required as all exposures are assumed to be substance concentrations of up to 100%.
	No corrections required as all exposures are assumed to be substance concentrations of up to 100%. No corrections required as all exposures are assumed to be for 8 hours (worse case assessment).

Exposure scenario 3. Manufacture of substance. Synthetic manufacture from ethylene

Based on ECHA Template CSA&IR Part D June 08 combined with the GES Narrative Format.

Section 1	
Title.	**Ethanol.** **Manufacture of substance. Synthetic manufacture from ethylene** **EC:64-17-5.**
Life cycle stage:	Manufacture.
Environmental Release Category(ies):	ERC1.; ESVOC SpERC 1.1.v1.
Process Category(ies):	PROC1, PROC2, PROC3, PROC8b, PROC15, PROC28.
Processes, tasks, activities covered:	Manufacture of the substance or use as a process chemical or extraction agent. Includes recycling/ recovery, material transfers, storage, maintenance and loading (including marine vessel/barge, road/rail car and bulk container), sampling and associated laboratory activities.
Assessment method:	Health: Used ECETOC TRA model. (v3). Environment: Used ECETOC TRA model. (v3). Assessment based on measured data.
Section 2:	**Operational conditions and risk management measures.**

Section 2.1	**Control of environmental exposure:**
Product Characteristics:	Substance is a unique structure. Non-hydrophobic. Liquid, vapour pressure 0.5 - 10 kPa at STP. Miscible in water. Practically non-toxic to aquatic species. Readily biodegradable. Low bioaccumulation potential.
Amounts used per site (tonne per year).	Confidential information.
Frequency and duration of use:	Continuous process. 300 days per year of operation.
Environmental factors not influenced by risk management:	Local freshwater dilution factor: 10. Local marine water dilution factor: 100.
Other operational conditions of use affecting environmental exposure.	none. Emission Days (days/year): 300. Continuous release.
Technical onsite conditions and measures to reduce or limit discharges, air emissions.	Treatment of air emissions is not required for the purposes of REACH compliance but may be needed to comply with other environmental legislation. Soil emission controls are not applicable as there is no direct release to soil. Not applicable. Wastewater emission controls are not applicable as there is no direct release to wastewater.
Organisation measures to prevent/limit release from site.	Bund storage facilities to prevent soil and water pollution in the event of spillage. Prevent environmental discharge consistent with regulatory requirements Site should have a spill plan to ensure that adequate safeguards are in place to minimize the impact of episodic releases.
Conditions and measures related to municipal sewage treatment plant.	Not applicable as there is no release to wastewater.
Conditions and measures related to external treatment of waste for disposal.	Estimated amount entering waste treatment no greater than: .2%. Type of treatment suitable for waste: incineration. Removal efficiency (%): 99.98. Type of treatment suitable for waste: cement kiln fuels. Removal efficiency (%): 99.98. Treat as hazardous waste. Dispose of waste product or used containers according to local regulations. External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste.	Not applicable.
Other environmental control measures additional to above:	none.

Section 2.2:	**Control of worker exposure.**
Product Characteristics:	
Physical form of product:	Liquid, vapour pressure 0.5 - 10 kPa at STP.
Concentration of substance in product:	Covers percentage substance in the product up to 100 % (unless stated differently).
Amounts used:	Not applicable.
Frequency and duration of use:	Covers daily exposures up to 8 hours (unless stated differently). Continuous process.
Human factors not influenced by risk management:	none.
Other operational conditions affecting worker exposure:	Assumes a good basic standard of occupational hygiene is implemented . Assumes activities are at ambient temperature (unless stated differently).
Technical conditions and measures at a process level to prevent release and technical conditions and measures to control dispersion from source towards workers:	Handle substance within a closed system.
	Contributing Scenarios:
General measures (eye irritants).	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands. Avoid splashing.
ES3-CS1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions..	No other specific measures identified.
ES3-CS2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions.	No other specific measures identified.

ES3-CS3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition.	No other specific measures identified.
ES3-CS4: Transfer of substance or mixture (charging and discharging) at dedicated facilities.	No other specific measures identified.
ES3-CS5: Use as laboratory reagent.	No other specific measures identified.
ES3-CS6: Manual maintenance (cleaning and repair) of machinery.	No other specific measures identified.
Section 3:	**Exposure estimation:**
Environment:	Maximum exposure resulting from contributing scenarios described.
ES3-E1: ERC1.	Conditions given in SPERC fact sheet give rise to following releases fractions. (ESVOC SpERC 1.1.v1.). Release fraction to air from process (initial release prior to RMM): 0.00054kg/day. Release fraction to wastewater from process (initial release prior to RMM): 0kg/day. Release fraction to soil from process (initial release prior to RMM): 0.
	PEC for microorganisms in STP: 0.00E+00mg/l. Risk characterisation ratio: 0.00E+00. Local PEC in surface water: 8.55E-02mg/l. Risk characterisation ratio: 8.91E-02. Local PEC in fresh water sediment: 3.28E-01mg/kgdw. Risk characterisation ratio: 9.11E-02. Local PEC in sea water during emission episode: 8.79E-03mg/l. Risk characterisation ratio: 1.11E-02. Local PEC in marine sediment: 3.37E-02mg/kgdw. Risk characterisation ratio: 1.16E-02. Local PEC in soil: 2.62E-02mg/kgdw. Risk characterisation ratio: 4.16E-02. Risk from environmental exposure is driven by freshwater sediment.
Health:	exposure resulting from contributing scenario ES3-CS1: Inhalation (vapour). 8 hour average 0.019mg/m3.Risk characterisation ratio: <0.001. Dermal: 0.03mg/kg/day.
	exposure resulting from contributing scenario ES3-CS2: Inhalation (vapour). 8 hour average 9.6mg/m3.Risk characterisation ratio: 0.025. Dermal: 1.4mg/kg/day.
	exposure resulting from contributing scenario ES3-CS3: Inhalation (vapour). 8 hour average 19mg/m3.Risk characterisation ratio: 0.05. Dermal: 0.69mg/kg/day.
	exposure resulting from contributing scenario ES3-CS4: Inhalation (vapour). 8 hour average 48mg/m3.Risk characterisation ratio: 0.126. Dermal: 14mg/kg/day.
	exposure resulting from contributing scenario ES3-CS5: Inhalation (vapour). 8 hour average 19mg/m3.Risk characterisation ratio: 0.05. Dermal: 0.34mg/kg/day.
	exposure resulting from contributing scenario ES3-CS6: Inhalation (vapour). 8 hour average 96mg/m3.Risk characterisation ratio: 0.252. Dermal: 27mg/kg/day.
	It is not possible to derive a DNEL for this end point. Available hazard data do not enable the derivation of a DNEL for eye irritant effects.
Section 4:	**Guidance to check compliance with the exposure scenario**
Environment:	Msafe: 75000000kg/day. Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
	$\frac{m_{spERC} * (1 - E_{ER,spERC}) * F_{release,spERC}}{DF_{spERC}} \geq \frac{m_{site} * (1 - E_{ER,site}) * F_{release,site}}{DF_{site}}$ where: mspERC: Substance use rate in spERC. EER,spERC: Efficacy of RMM in spERC. Frelease,,spERC: Initial release fraction in spERC. DFspERC: dilution factor of STP effluent in river. msite: Susbstance use rate at site. EER,site: Efficacy of RMM at site. Frelease,,site: Initial release fraction at site. DFsite: dilution factor of STP effluent in river.
Health:	No corrections required as all exposures are assumed to be for 8 hours (worse case assessment). No corrections required as all exposures are assumed to be substance concentrations of up to 100%.
	No corrections required as all exposures are assumed to be substance concentrations of up to 100%. No corrections required as all exposures are assumed to be for 8 hours (worse case assessment).

Exposure scenario 4. Use as an intermediate.

Based on ECHA Template CSA&IR Part D June 08 combined with the GES Narrative Format.

Section 1	
Title.	**Ethanol.** **Use as an intermediate.** **EC:64-17-5.**
Life cycle stage: Sector(s) of Use:	Use at industrial sites. SU8, SU9.
Environmental Release Category(ies):	ERC6a.; ESVOC SpERC 6.1a.v1. (with modifications).
Process Category(ies):	PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC15, PROC28.
Processes, tasks, activities covered:	Use of substance as an intermediate (not related to Strictly Controlled Conditions). Includes recycling/ recovery, material transfers, storage, sampling, associated laboratory activities, maintenance and loading (including marine vessel/barge, road/rail car and bulk container).
Assessment method:	Health: Used ECETOC TRA model (v3). Environment: Used ECETOC TRA model (v3). Used ESVOC SpERCs (with modifications).
Section 2:	**Operational conditions and risk management measures.**

Section 2.1	**Control of environmental exposure:**
Product Characteristics:	Substance is a unique structure. Non-hydrophobic. Liquid, vapour pressure 0.5 - 10 kPa at STP. Miscible in water. Practically non-toxic to aquatic species. Readily biodegradable. Low bioaccumulation potential.
Amounts used per site (tonne per year).	12000. (40000 kg/day.)
Frequency and duration of use:	Continuous process. 300 days per year of operation.
Environmental factors not influenced by risk management:	Local freshwater dilution factor: 10. Local marine water dilution factor: 100.
Other operational conditions of use affecting environmental exposure.	none. Emission Days (days/year): 300. Continuous release.
Technical onsite conditions and measures to reduce or limit discharges, air emissions.	Treatment of air emissions is not required for the purposes of REACH compliance but may be needed to comply with other environmental legislation. Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of ≥ (%): 87. Assumed industrial waste water treatment plant flow (m3/d): 2000. If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.
Organisation measures to prevent/limit release from site.	Bund storage facilities to prevent soil and water pollution in the event of spillage. Prevent environmental discharge consistent with regulatory requirements Site should have a spill plan to ensure that adequate safeguards are in place to minimize the impact of episodic releases.
Conditions and measures related to municipal sewage treatment plant.	Estimated substance removal from wastewater via domestic sewage treatment (%): 87. Assumed domestic sewage treatment plant flow (m3/d): 2000.
Conditions and measures related to external treatment of waste for disposal.	Estimated amount entering waste treatment no greater than: 2%. Type of treatment suitable for waste: incineration. Removal efficiency (%): 99.98. Type of treatment suitable for waste: cement kiln fuels. Removal efficiency (%): 99.98. Treat as hazardous waste. Dispose of waste product or used containers according to local regulations. External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste.	Not applicable.
Other environmental control measures additional to above:	none.

Section 2.2:	**Control of worker exposure.**
Product Characteristics:	
Physical form of product:	Liquid, vapour pressure 0.5 - 10 kPa at STP.
Concentration of substance in product:	Covers percentage substance in the product up to 100 % (unless stated differently).
Amounts used:	Not applicable.
Frequency and duration of use:	Covers daily exposures up to 8 hours (unless stated differently). Continuous process.
Human factors not influenced by risk management:	none.
Other operational conditions affecting worker exposure:	Assumes a good basic standard of occupational hygiene is implemented . Assumes activities are at ambient temperature (unless stated differently).
Technical conditions and measures at a process level to prevent release and technical conditions and measures to control dispersion from source towards workers:	Handle substance within a closed system.
	Contributing Scenarios:
General measures (eye irritants).	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands. Avoid splashing.
ES4-CS1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions..	No other specific measures identified.
ES4-CS2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions.	No other specific measures identified.

ES4-CS3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition.	No other specific measures identified.
ES4-CS4: Chemical production where opportunity for exposure arises.	No other specific measures identified.
ES4-CS5: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities.	No other specific measures identified.
ES4-CS6: Transfer of substance or mixture (charging and discharging) at dedicated facilities.	No other specific measures identified.
ES4-CS7: Use as laboratory reagent.	No other specific measures identified.
ES4-CS8: Manual maintenance (cleaning and repair) of machinery.	No other specific measures identified.
Section 3:	**Exposure estimation:**
Environment:	Maximum exposure resulting from contributing scenarios described.
ES4-E1: ERC6a.	Conditions given in SPERC fact sheet give rise to following releases fractions. (ESVOC SpERC 6.1a.v1. (with modifications).). Release fraction to air from process (initial release prior to RMM): 0.01. Release fraction to wastewater from process (initial release prior to RMM): 0.003. Release fraction to soil from process (initial release prior to RMM): 0.001.
	PEC for microorganisms in STP: 7.58E+00mg/l. Risk characterisation ratio: 1.31E-02. Local PEC in surface water: 7.75E-01mg/l. Risk characterisation ratio: 8.07E-01. Local PEC in fresh water sediment: 2.97E+00mg/kgdw. Risk characterisation ratio: 8.25E-01. Local PEC in sea water during emission episode: 8.46E-02mg/l. Risk characterisation ratio: 1.07E-01. Local PEC in marine sediment: 3.24E-01mg/kgdw. Risk characterisation ratio: 1.12E-01. Local PEC in soil: 2.45E-02mg/kgdw. Risk characterisation ratio: 3.89E-02. Risk from environmental exposure is driven by freshwater sediment.
Health:	exposure resulting from contributing scenario ES4-CS1: Inhalation (vapour). 8 hour average 0.019mg/m3.Risk characterisation ratio: <0.001. Dermal: 0.03mg/kg/day.
	exposure resulting from contributing scenario ES4-CS2: Inhalation (vapour). 8 hour average 9.6mg/m3.Risk characterisation ratio: 0.025. Dermal: 1.4mg/kg/day.
	exposure resulting from contributing scenario ES4-CS3: Inhalation (vapour). 8 hour average 19mg/m3.Risk characterisation ratio: 0.05. Dermal: 0.69mg/kg/day.
	exposure resulting from contributing scenario ES4-CS4: Inhalation (vapour). 8 hour average 38mg/m3.Risk characterisation ratio: 0.101. Dermal: 6.9mg/kg/day.
	exposure resulting from contributing scenario ES4-CS5: Inhalation (vapour). 8 hour average 96mg/m3.Risk characterisation ratio: 0.252. Dermal: 2.7mg/kg/day.
	exposure resulting from contributing scenario ES4-CS6: Inhalation (vapour). 8 hour average 48mg/m3.Risk characterisation ratio: 0.126. Dermal: 14mg/kg/day.
	exposure resulting from contributing scenario ES4-CS7: Inhalation (vapour). 8 hour average 19mg/m3.Risk characterisation ratio: 0.05. Dermal: 0.34mg/kg/day.
	exposure resulting from contributing scenario ES4-CS8: Inhalation (vapour). 8 hour average 96mg/m3.Risk characterisation ratio: 0.252. Dermal: 27mg/kg/day.
	It is not possible to derive a DNEL for this end point. Available hazard data do not enable the derivation of a DNEL for eye irritant effects.
Section 4:	**Guidance to check compliance with the exposure scenario**
Environment:	Msafe: 374000kg/day. Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
	$\frac{m_{spERC} * (1 - E_{ER,spERC}) * F_{release,spERC}}{DF_{spERC}} \geq \frac{m_{site} * (1 - E_{ER,site}) * F_{release,site}}{DF_{site}}$ where: mspERC: Substance use rate in spERC. EER,spERC: Efficacy of RMM in spERC. Frelease,,spERC: Initial release fraction in spERC. DFspERC: dilution factor of STP effluent in river. msite: Susbstance use rate at site. EER,site: Efficacy of RMM at site. Frelease,,site: Initial release fraction at site. DFsite: dilution factor of STP effluent in river.
Health:	No corrections required as all exposures are assumed to be for 8 hours (worse case assessment). No corrections required as all exposures are assumed to be substance concentrations of up to 100%.
	No corrections required as all exposures are assumed to be substance concentrations of up to 100%. No corrections required as all exposures are assumed to be for 8 hours (worse case assessment).

Exposure scenario 5. Use as a process chemical or extraction solvent.

Based on ECHA Template CSA&IR Part D June 08 combined with the GES Narrative Format.

Section 1	
Title.	**Ethanol.** **Use as a process chemical or extraction solvent.** **EC:64-17-5.**
Life cycle stage: Sector(s) of Use:	Use at industrial sites. SU9.
Environmental Release Category(ies):	ERC4.; ESVOC SpERC 1.1.v1. (with modifications).
Process Category(ies):	PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC15, PROC28.
Processes, tasks, activities covered:	Covers the use a process chemical or extraction solvent, including exposures during use (including product transfer, mixing and preparation plus manual and automated application) and equipment cleaning.
Assessment method:	Health: Used ECETOC TRA model (v3). Environment: Used ECETOC TRA model (v3). Used ESVOC SpERCs A&B table approach.
Section 2:	**Operational conditions and risk management measures.**

Section 2.1	**Control of environmental exposure:**
Product Characteristics:	Substance is a unique structure. Non-hydrophobic. Liquid, vapour pressure 0.5 - 10 kPa at STP. Miscible in water. Practically non-toxic to aquatic species. Readily biodegradable. Low bioaccumulation potential.
Amounts used per site (tonne per year).	5000. (16700 kg/day.)
Frequency and duration of use:	Continuous process. 300 days per year of operation.
Environmental factors not influenced by risk management:	Local freshwater dilution factor: 10. Local marine water dilution factor: 100.
Other operational conditions of use affecting environmental exposure.	none. Emission Days (days/year): 300. Continuous release.
Technical onsite conditions and measures to reduce or limit discharges, air emissions.	Treatment of air emissions is not required for the purposes of REACH compliance but may be needed to comply with other environmental legislation. Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of ≥ (%): 87. Assumed industrial waste water treatment plant flow (m3/d): 2000. If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.
Organisation measures to prevent/limit release from site.	Bund storage facilities to prevent soil and water pollution in the event of spillage. Prevent environmental discharge consistent with regulatory requirements Site should have a spill plan to ensure that adequate safeguards are in place to minimize the impact of episodic releases.
Conditions and measures related to municipal sewage treatment plant.	Estimated substance removal from wastewater via domestic sewage treatment (%): 87. Assumed domestic sewage treatment plant flow (m3/d): 2000.
Conditions and measures related to external treatment of waste for disposal.	Estimated amount entering waste treatment no greater than: 5%. Type of treatment suitable for waste: incineration. Removal efficiency (%): 99.98. Type of treatment suitable for waste: cement kiln fuels. Removal efficiency (%): 99.98. Treat as hazardous waste. Dispose of waste product or used containers according to local regulations. External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste.	Estimated amount entering waste treatment no greater than: 95%. Type of treatment suitable for waste: redistillation.
Other environmental control measures additional to above:	none.

Section 2.2:	**Control of worker exposure.**
Product Characteristics:	
Physical form of product:	Liquid, vapour pressure 0.5 - 10 kPa at STP.
Concentration of substance in product:	Covers percentage substance in the product up to 100 % (unless stated differently).
Amounts used:	Not applicable.
Frequency and duration of use:	Covers daily exposures up to 8 hours (unless stated differently). Continuous process.
Human factors not influenced by risk management:	none.
Other operational conditions affecting worker exposure:	Assumes a good basic standard of occupational hygiene is implemented . Assumes activities are at ambient temperature (unless stated differently).
Technical conditions and measures at a process level to prevent release and technical conditions and measures to control dispersion from source towards workers:	Handle substance within a closed system.
	Contributing Scenarios:
General measures (eye irritants).	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands. Avoid splashing.
ES5-CS1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions..	No other specific measures identified.
ES5-CS2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions.	No other specific measures identified.

ES5-CS3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition.	No other specific measures identified.
ES5-CS4: Chemical production where opportunity for exposure arises.	No other specific measures identified.
ES5-CS5: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities.	No other specific measures identified.
ES5-CS6: Transfer of substance or mixture (charging and discharging) at dedicated facilities.	No other specific measures identified.
ES5-CS7: Use as laboratory reagent.	No other specific measures identified.
ES5-CS8: Manual maintenance (cleaning and repair) of machinery.	No other specific measures identified.
Section 3:	**Exposure estimation:**
Environment:	Maximum exposure resulting from contributing scenarios described.
ES5-E1: ERC4.	Conditions given in SPERC fact sheet give rise to following releases fractions. (ESVOC SpERC 1.1.v1. (with modifications).). Release fraction to air from process (initial release prior to RMM): 0.05. Release fraction to wastewater from process (initial release prior to RMM): 0.003. Release fraction to soil from process (initial release prior to RMM): 0.0001.
	PEC for microorganisms in STP: 3.16E+00mg/l. Risk characterisation ratio: 5.45E-03. Local PEC in surface water: 3.73E-01mg/l. Risk characterisation ratio: 3.89E-01. Local PEC in fresh water sediment: 1.43E+00mg/kgdw. Risk characterisation ratio: 3.97E-01. Local PEC in sea water during emission episode: 4.04E-02mg/l. Risk characterisation ratio: 5.11E-02. Local PEC in marine sediment: 1.55E-01mg/kgdw. Risk characterisation ratio: 5.34E-02. Local PEC in soil: 3.94E-02mg/kgdw. Risk characterisation ratio: 6.25E-02. Risk from environmental exposure is driven by freshwater sediment.
Health:	exposure resulting from contributing scenario ES5-CS1: Inhalation (vapour). 8 hour average 0.019mg/m3.Risk characterisation ratio: <0.001. Dermal: 0.03mg/kg/day.
	exposure resulting from contributing scenario ES5-CS2: Inhalation (vapour). 8 hour average 9.6mg/m3.Risk characterisation ratio: 0.025. Dermal: 1.4mg/kg/day.
	exposure resulting from contributing scenario ES5-CS3: Inhalation (vapour). 8 hour average 19mg/m3.Risk characterisation ratio: 0.05. Dermal: 0.69mg/kg/day.
	exposure resulting from contributing scenario ES5-CS4: Inhalation (vapour). 8 hour average 38mg/m3.Risk characterisation ratio: 0.101. Dermal: 6.9mg/kg/day.
	exposure resulting from contributing scenario ES5-CS5: Inhalation (vapour). 8 hour average 96mg/m3.Risk characterisation ratio: 0.252. Dermal: 27mg/kg/day.
	exposure resulting from contributing scenario ES5-CS6: Inhalation (vapour). 8 hour average 48mg/m3.Risk characterisation ratio: 0.126. Dermal: 14mg/kg/day.
	exposure resulting from contributing scenario ES5-CS7: Inhalation (vapour). 8 hour average 19mg/m3.Risk characterisation ratio: 0.05. Dermal: 0.34mg/kg/day.
	exposure resulting from contributing scenario ES5-CS8: Inhalation (vapour). 8 hour average 96mg/m3.Risk characterisation ratio: 0.252. Dermal: 27mg/kg/day.
	It is not possible to derive a DNEL for this end point. Available hazard data do not enable the derivation of a DNEL for eye irritant effects.
Section 4:	**Guidance to check compliance with the exposure scenario**
Environment:	Msafe: 326000kg/day. Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
	$\frac{m_{spERC} * (1 - E_{ER,spERC}) * F_{release,spERC}}{DF_{spERC}} \geq \frac{m_{site} * (1 - E_{ER,site}) * F_{release,site}}{DF_{site}}$ where: mspERC: Substance use rate in spERC. EER,spERC: Efficacy of RMM in spERC. Frelease,,spERC: Initial release fraction in spERC. DFspERC: dilution factor of STP effluent in river. msite: Susbstance use rate at site. EER,site: Efficacy of RMM at site. Frelease,,site: Initial release fraction at site. DFsite: dilution factor of STP effluent in river.
Health:	No corrections required as all exposures are assumed to be for 8 hours (worse case assessment). No corrections required as all exposures are assumed to be substance concentrations of up to 100%.
	No corrections required as all exposures are assumed to be substance concentrations of up to 100%. No corrections required as all exposures are assumed to be for 8 hours (worse case assessment).

Exposure scenario 6. Distribution of substance.

Based on ECHA Template CSA&IR Part D June 08 combined with the GES Narrative Format.

Section 1	
Title.	**Ethanol.** **Distribution of substance.** **EC:64-17-5.**
Life cycle stage:	Formulation or (re)packaging.
Environmental Release Category(ies):	ERC2.; ESVOC SpERC 1.1b.v1.
Process Category(ies):	PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC15, PROC28.
Processes, tasks, activities covered:	Loading (including marine vessel/barge, rail/road car and IBC loading) and repacking (including drums and small packs) of substance, including its sampling, storage, unloading distribution and associated laboratory activities.
Assessment method:	Health: Used ECETOC TRA model (v3). Environment: Used ECETOC TRA model (v3). Used ESVOC SpERCs (with modifications).
Section 2:	**Operational conditions and risk management measures.**

Section 2.1	**Control of environmental exposure:**
Product Characteristics:	Substance is a unique structure. Non-hydrophobic. Liquid, vapour pressure 0.5 - 10 kPa at STP. Miscible in water. Practically non-toxic to aquatic species. Readily biodegradable. Low bioaccumulation potential.
Amounts used per site (tonne per year).	8000. (30000 kg/day.)
Frequency and duration of use:	Continuous and batch operation. 267 days per year of operation.
Environmental factors not influenced by risk management:	Local freshwater dilution factor: 10. Local marine water dilution factor: 100.
Other operational conditions of use affecting environmental exposure.	none. Emission Days (days/year): 267.
Technical onsite conditions and measures to reduce or limit discharges, air emissions.	Treatment of air emissions is not required for the purposes of REACH compliance but may be needed to comply with other environmental legislation. Soil emission controls are not applicable as there is no direct release to soil. Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of ≥ (%): 87. Assumed industrial waste water treatment plant flow (m3/d): 2000. If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.
Organisation measures to prevent/limit release from site.	Bund storage facilities to prevent soil and water pollution in the event of spillage. Prevent environmental discharge consistent with regulatory requirements Site should have a spill plan to ensure that adequate safeguards are in place to minimize the impact of episodic releases.
Conditions and measures related to municipal sewage treatment plant.	Estimated substance removal from wastewater via domestic sewage treatment (%): 87. Assumed domestic sewage treatment plant flow (m3/d): 2000.
Conditions and measures related to external treatment of waste for disposal.	Not applicable. All waste product is assumed to be collected and returned for re-processing or use as a fuel.
Conditions and measures related to external recovery of waste.	Not applicable.
Other environmental control measures additional to above:	none.

Section 2.2:	**Control of worker exposure.**
Product Characteristics:	
Physical form of product:	Liquid, vapour pressure 0.5 - 10 kPa at STP.
Concentration of substance in product:	Covers percentage substance in the product up to 100 % (unless stated differently).
Amounts used:	Not applicable.
Frequency and duration of use:	Covers daily exposures up to 8 hours (unless stated differently). Continuous and batch operation.
Human factors not influenced by risk management:	none.
Other operational conditions affecting worker exposure:	Assumes a good basic standard of occupational hygiene is implemented . Assumes activities are at ambient temperature (unless stated differently).
Technical conditions and measures at a process level to prevent release and technical conditions and measures to control dispersion from source towards workers:	Handle substance within a closed system.
	Contributing Scenarios:
General measures (eye irritants).	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands. Avoid splashing.
ES6-CS1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions..	No other specific measures identified.
ES6-CS2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions.	No other specific measures identified.
ES6-CS3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition.	No other specific measures identified.

ES6-CS4: Chemical production where opportunity for exposure arises.	No other specific measures identified.
ES6-CS5: Mixing or blending in batch processes.	No other specific measures identified.
ES6-CS6: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities.	No other specific measures identified.
ES6-CS7: Transfer of substance or mixture (charging and discharging) at dedicated facilities.	No other specific measures identified.
ES6-CS8: Use as laboratory reagent.	No other specific measures identified.
ES6-CS9: Manual maintenance (cleaning and repair) of machinery.	No other specific measures identified.
Section 3:	**Exposure estimation:**
Environment:	Maximum exposure resulting from contributing scenarios described.
ES6-E1: ERC2.	Conditions given in SPERC fact sheet give rise to following releases fractions. (ESVOC SpERC 1.1b.v1.). Release fraction to air from process (initial release prior to RMM): 0.0001. Release fraction to wastewater from process (initial release prior to RMM): 0.00001. Release fraction to soil from process (initial release prior to RMM): 0.
	PEC for microorganisms in STP: 1.89E-01mg/l. Risk characterisation ratio: 3.26E-04. Local PEC in surface water: 1.03E-01mg/l. Risk characterisation ratio: 1.07E-01. Local PEC in fresh water sediment: 3.94E-01mg/kgdw. Risk characterisation ratio: 1.09E-01. Local PEC in sea water during emission episode: 1.07E-02mg/l. Risk characterisation ratio: 1.35E-02. Local PEC in marine sediment: 4.09E-02mg/kgdw. Risk characterisation ratio: 1.41E-02. Local PEC in soil: 1.16E-02mg/kgdw. Risk characterisation ratio: 1.84E-02. Risk from environmental exposure is driven by freshwater sediment.
Health:	exposure resulting from contributing scenario ES6-CS1: Inhalation (vapour). 8 hour average 0.019mg/m3.Risk characterisation ratio: <0.001. Dermal: 0.03mg/kg/day.
	exposure resulting from contributing scenario ES6-CS2: Inhalation (vapour). 8 hour average 9.6mg/m3.Risk characterisation ratio: 0.025. Dermal: 1.4mg/kg/day.
	exposure resulting from contributing scenario ES6-CS3: Inhalation (vapour). 8 hour average 19mg/m3.Risk characterisation ratio: 0.05. Dermal: 0.69mg/kg/day.
	exposure resulting from contributing scenario ES6-CS4: Inhalation (vapour). 8 hour average 38mg/m3.Risk characterisation ratio: 0.101. Dermal: 6.9mg/kg/day.
	exposure resulting from contributing scenario ES6-CS5: Inhalation (vapour). 8 hour average 96mg/m3.Risk characterisation ratio: 0.252. Dermal: 14mg/kg/day.
	exposure resulting from contributing scenario ES6-CS6: Inhalation (vapour). 8 hour average 96mg/m3.Risk characterisation ratio: 0.252. Dermal: 27mg/kg/day.
	exposure resulting from contributing scenario ES6-CS7: Inhalation (vapour). 8 hour average 48mg/m3.Risk characterisation ratio: 0.126. Dermal: 14mg/kg/day.
	exposure resulting from contributing scenario ES6-CS8: Inhalation (vapour). 8 hour average 19mg/m3.Risk characterisation ratio: 0.05. Dermal: 0.34mg/kg/day.
	exposure resulting from contributing scenario ES6-CS9: Inhalation (vapour). 8 hour average 96mg/m3.Risk characterisation ratio: 0.252. Dermal: 27mg/kg/day.
	It is not possible to derive a DNEL for this end point. Available hazard data do not enable the derivation of a DNEL for eye irritant effects.
Section 4:	**Guidance to check compliance with the exposure scenario**
Environment:	Msafe: 22200000kg/day. Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
	$\frac{m_{spERC} * (1 - E_{ER,spERC}) * F_{release,spERC}}{DF_{spERC}} \geq \frac{m_{site} * (1 - E_{ER,site}) * F_{release,site}}{DF_{site}}$ where: mspERC: Substance use rate in spERC. EER,spERC: Efficacy of RMM in spERC. Frelease,,spERC: Initial release fraction in spERC. DFspERC: dilution factor of STP effluent in river. msite: Susbstance use rate at site. EER,site: Efficacy of RMM at site. Frelease,,site: Initial release fraction at site. DFsite: dilution factor of STP effluent in river.
Health:	No corrections required as all exposures are assumed to be for 8 hours (worse case assessment). No corrections required as all exposures are assumed to be substance concentrations of up to 100%.
	No corrections required as all exposures are assumed to be substance concentrations of up to 100%. No corrections required as all exposures are assumed to be for 8 hours (worse case assessment).

Exposure scenario 7. Formulation & (re)packing of substances and mixtures . Use as a fuel , use as a fuel additive diluent.

Based on ECHA Template CSA&IR Part D June 08 combined with the GES Narrative Format.

Section 1	
Title.	**Ethanol.** **Formulation & (re)packing of substances and mixtures . Use as a fuel , use as a fuel additive diluent.** **EC:64-17-5.**
Life cycle stage:	Formulation or (re)packaging.
Environmental Release Category(ies):	ERC2.; ESVOC SpERC 2.2.v1. (with modifications).
Process Category(ies):	PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC15, PROC28.
Processes, tasks, activities covered:	Use as a fuel , Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, tabletting, compression, pelletisation, extrusion, large and small scale packing, sampling, maintenance and associated laboratory activities.
Assessment method:	Health: Used ECETOC TRA model (v3). Environment: Used ECETOC TRA model (v3). Used ESVOC SpERCs. (with modifications).
Section 2:	**Operational conditions and risk management measures.**

Section 2.1	**Control of environmental exposure:**
Product Characteristics:	Substance is a unique structure. Non-hydrophobic. Liquid, vapour pressure 0.5 - 10 kPa at STP. Miscible in water. Practically non-toxic to aquatic species. Readily biodegradable. Low bioaccumulation potential.
Amounts used per site (tonne per year).	20000. (66700 kg/day.)
Frequency and duration of use:	Continuous process. 300 days per year of operation.
Environmental factors not influenced by risk management:	Local freshwater dilution factor: 10. Local marine water dilution factor: 100.
Other operational conditions of use affecting environmental exposure.	none. Emission Days (days/year): 300. Continuous release.
Technical onsite conditions and measures to reduce or limit discharges, air emissions.	Treatment of air emissions is not required for the purposes of REACH compliance but may be needed to comply with other environmental legislation. Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of ≥ (%): 87. Assumed industrial waste water treatment plant flow (m3/d): 2000. If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.
Organisation measures to prevent/limit release from site.	Bund storage facilities to prevent soil and water pollution in the event of spillage. Prevent environmental discharge consistent with regulatory requirements Site should have a spill plan to ensure that adequate safeguards are in place to minimize the impact of episodic releases.
Conditions and measures related to municipal sewage treatment plant.	Estimated substance removal from wastewater via domestic sewage treatment (%): 87. Assumed domestic sewage treatment plant flow (m3/d): 2000.
Conditions and measures related to external treatment of waste for disposal.	Not applicable. All waste product is assumed to be collected and returned for re-processing or use as a fuel.
Conditions and measures related to external recovery of waste.	Not applicable.
Other environmental control measures additional to above:	none.

Section 2.2:	**Control of worker exposure.**
Product Characteristics:	
Physical form of product:	Liquid, vapour pressure 0.5 - 10 kPa at STP.
Concentration of substance in product:	Covers percentage substance in the product up to 100 % (unless stated differently).
Amounts used:	Not applicable.
Frequency and duration of use:	Covers daily exposures up to 8 hours (unless stated differently). Continuous process.
Human factors not influenced by risk management:	none.
Other operational conditions affecting worker exposure:	Assumes a good basic standard of occupational hygiene is implemented . Assumes activities are at ambient temperature (unless stated differently).
Technical conditions and measures at a process level to prevent release and technical conditions and measures to control dispersion from source towards workers:	Handle substance within a closed system. Formulation activity is assumed to be a predominantly enclosed process.
	Contributing Scenarios:
General measures (eye irritants).	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands. Avoid splashing.
ES7-CS1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions..	No other specific measures identified.
ES7-CS2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions.	No other specific measures identified.

ES7-CS3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition.	No other specific measures identified.
ES7-CS4: Chemical production where opportunity for exposure arises.	No other specific measures identified.
ES7-CS5: Mixing or blending in batch processes.	No other specific measures identified.
ES7-CS6: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities.	No other specific measures identified.
ES7-CS7: Transfer of substance or mixture (charging and discharging) at dedicated facilities.	No other specific measures identified.
ES7-CS8: Transfer of substance or preparation into small containers (dedicated filling line, including weighing).	No other specific measures identified.
ES7-CS9: Use as laboratory reagent.	No other specific measures identified.
ES7-CS10: Manual maintenance (cleaning and repair) of machinery.	No other specific measures identified.
Section 3:	**Exposure estimation:**
Environment:	Maximum exposure resulting from contributing scenarios described.
ES7-E1: ERC2.	Conditions given in SPERC fact sheet give rise to following releases fractions. (ESVOC SpERC 2.2.v1. (with modifications).). Release fraction to air from process (initial release prior to RMM): 0.025. Release fraction to wastewater from process (initial release prior to RMM): 0.0015. Release fraction to soil from process (initial release prior to RMM): 0.0001.
	PEC for microorganisms in STP: 6.32E+00mg/l. Risk characterisation ratio: 1.09E-02. Local PEC in surface water: 6.60E-01mg/l. Risk characterisation ratio: 6.88E-01. Local PEC in fresh water sediment: 2.53E+00mg/kgdw. Risk characterisation ratio: 7.03E-01. Local PEC in sea water during emission episode: 7.20E-02mg/l. Risk characterisation ratio: 9.11E-02. Local PEC in marine sediment: 2.76E-01mg/kgdw. Risk characterisation ratio: 9.52E-02. Local PEC in soil: 6.82E-02mg/kgdw. Risk characterisation ratio: 1.08E-01. Risk from environmental exposure is driven by freshwater sediment.
Health:	exposure resulting from contributing scenario ES7-CS1: Inhalation (vapour). 8 hour average 0.019mg/m3.Risk characterisation ratio: <0.001. Dermal: 0.03mg/kg/day.
	exposure resulting from contributing scenario ES7-CS2: Inhalation (vapour). 8 hour average 9.6mg/m3.Risk characterisation ratio: 0.025. Dermal: 1.4mg/kg/day.
	exposure resulting from contributing scenario ES7-CS3: Inhalation (vapour). 8 hour average 19mg/m3.Risk characterisation ratio: 0.05. Dermal: 0.69mg/kg/day.
	exposure resulting from contributing scenario ES7-CS4: Inhalation (vapour). 8 hour average 38mg/m3.Risk characterisation ratio: 0.101. Dermal: 6.9mg/kg/day.
	exposure resulting from contributing scenario ES7-CS5: Inhalation (vapour). 8 hour average 96mg/m3.Risk characterisation ratio: 0.252. Dermal: 14mg/kg/day.
	exposure resulting from contributing scenario ES7-CS6: Inhalation (vapour). 8 hour average 96mg/m3.Risk characterisation ratio: 0.252. Dermal: 27mg/kg/day.
	exposure resulting from contributing scenario ES7-CS7: Inhalation (vapour). 8 hour average 48mg/m3.Risk characterisation ratio: 0.126. Dermal: 14mg/kg/day.
	exposure resulting from contributing scenario ES7-CS8: Inhalation (vapour). 8 hour average 96mg/m3.Risk characterisation ratio: 0.252. Dermal: 6.9mg/kg/day.
	exposure resulting from contributing scenario ES7-CS9: Inhalation (vapour). 8 hour average 19mg/m3.Risk characterisation ratio: 0.05. Dermal: 0.34mg/kg/day.
	exposure resulting from contributing scenario ES7-CS10: Inhalation (vapour). 8 hour average 96mg/m3.Risk characterisation ratio: 0.252. Dermal: 27mg/kg/day.
	It is not possible to derive a DNEL for this end point. Available hazard data do not enable the derivation of a DNEL for eye irritant effects.
Section 4:	**Guidance to check compliance with the exposure scenario**
Environment:	Msafe: 733000kg/day. Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
	$\frac{m_{spERC} * (1 - E_{ER,spERC}) * F_{release,spERC}}{DF_{spERC}} \geq \frac{m_{site} * (1 - E_{ER,site}) * F_{release,site}}{DF_{site}}$

	where: mspERC: Substance use rate in spERC. EER,spERC: Efficacy of RMM in spERC. Frelease,,spERC: Initial release fraction in spERC. DFspERC: dilution factor of STP effluent in river. msite: Susbstance use rate at site. EER,site: Efficacy of RMM at site. Frelease,,site: Initial release fraction at site. DFsite: dilution factor of STP effluent in river.
Health:	No corrections required as all exposures are assumed to be for 8 hours (worse case assessment). No corrections required as all exposures are assumed to be substance concentrations of up to 100%.
	No corrections required as all exposures are assumed to be substance concentrations of up to 100%. No corrections required as all exposures are assumed to be for 8 hours (worse case assessment).

Exposure scenario 8. Formulation & (re)packing of substances and mixtures .

Based on ECHA Template CSA&IR Part D June 08 combined with the GES Narrative Format.

Section 1	
Title.	**Ethanol.** **Formulation & (re)packing of substances and mixtures .** **EC:64-17-5.**
Life cycle stage:	Formulation or (re)packaging.
Environmental Release Category(ies):	ERC2.; ESVOC SpERC 2.2.v1. (with modifications).
Process Category(ies):	PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC15, PROC28.
Processes, tasks, activities covered:	Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, tabletting, compression, pelletisation, extrusion, large and small scale packing, sampling, maintenance and associated laboratory activities.
Assessment method:	Health: Used ECETOC TRA model (v3). Environment: Used ECETOC TRA model (v3). Used ESVOC SpERCs. (with modifications).
Section 2:	**Operational conditions and risk management measures.**

Section 2.1	**Control of environmental exposure:**
Product Characteristics:	Substance is a unique structure. Non-hydrophobic. Liquid, vapour pressure 0.5 - 10 kPa at STP. Miscible in water. Practically non-toxic to aquatic species. Readily biodegradable. Low bioaccumulation potential.
Amounts used per site (tonne per year).	17500. (58300 kg/day.)
Frequency and duration of use:	Continuous process. 300 days per year of operation.
Environmental factors not influenced by risk management:	Local freshwater dilution factor: 10. Local marine water dilution factor: 100.
Other operational conditions of use affecting environmental exposure.	none. Emission Days (days/year): 300. Continuous release.
Technical onsite conditions and measures to reduce or limit discharges, air emissions.	Treatment of air emissions is not required for the purposes of REACH compliance but may be needed to comply with other environmental legislation. Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of ≥ (%): 87. Assumed industrial waste water treatment plant flow (m3/d): 2000. If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.
Organisation measures to prevent/limit release from site.	Bund storage facilities to prevent soil and water pollution in the event of spillage. Prevent environmental discharge consistent with regulatory requirements Site should have a spill plan to ensure that adequate safeguards are in place to minimize the impact of episodic releases.
Conditions and measures related to municipal sewage treatment plant.	Estimated substance removal from wastewater via domestic sewage treatment (%): 87. Assumed domestic sewage treatment plant flow (m3/d): 2000.
Conditions and measures related to external treatment of waste for disposal.	Not applicable. All waste product is assumed to be collected and returned for re-processing or use as a fuel.
Conditions and measures related to external recovery of waste.	Not applicable.
Other environmental control measures additional to above:	none.

Section 2.2:	**Control of worker exposure.**
Product Characteristics:	
Physical form of product:	Liquid, vapour pressure 0.5 - 10 kPa at STP.
Concentration of substance in product:	Covers percentage substance in the product up to 100 % (unless stated differently).
Amounts used:	Not applicable.
Frequency and duration of use:	Covers daily exposures up to 8 hours (unless stated differently). Continuous process.
Human factors not influenced by risk management:	none.
Other operational conditions affecting worker exposure:	Assumes a good basic standard of occupational hygiene is implemented . Assumes activities are at ambient temperature (unless stated differently).
Technical conditions and measures at a process level to prevent release and technical conditions and measures to control dispersion from source towards workers:	Handle substance within a closed system. Formulation activity is assumed to be a predominantly enclosed process.
	Contributing Scenarios:
General measures (eye irritants).	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands. Avoid splashing.
ES8-CS1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions..	No other specific measures identified.
ES8-CS2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions.	No other specific measures identified.
ES8-CS3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition.	No other specific measures identified.

ES8-CS4: Chemical production where opportunity for exposure arises.	No other specific measures identified.
ES8-CS5: Mixing or blending in batch processes.	No other specific measures identified.
ES8-CS6: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities.	No other specific measures identified.
ES8-CS7: Transfer of substance or mixture (charging and discharging) at dedicated facilities.	No other specific measures identified.
ES8-CS8: Transfer of substance or preparation into small containers (dedicated filling line, including weighing).	No other specific measures identified.
ES8-CS9: Use as laboratory reagent.	No other specific measures identified.
ES8-CS10: Manual maintenance (cleaning and repair) of machinery.	No other specific measures identified.
Section 3:	**Exposure estimation:**
Environment:	Maximum exposure resulting from contributing scenarios described.
ES8-E1: ERC2.	Conditions given in SPERC fact sheet give rise to following releases fractions. (ESVOC SpERC 2.2.v1. (with modifications).). Release fraction to air from process (initial release prior to RMM): 0.025. Release fraction to wastewater from process (initial release prior to RMM): 0.0015. Release fraction to soil from process (initial release prior to RMM): 0.0001.
	PEC for microorganisms in STP: 5.50E+00mg/l. Risk characterisation ratio: 9.48E-03. Local PEC in surface water: 5.86E-01mg/l. Risk characterisation ratio: 6.10E-01. Local PEC in fresh water sediment: 2.24E+00mg/kgdw. Risk characterisation ratio: 6.22E-01. Local PEC in sea water during emission episode: 6.38E-02mg/l. Risk characterisation ratio: 8.08E-02. Local PEC in marine sediment: 2.44E-01mg/kgdw. Risk characterisation ratio: 8.41E-02. Local PEC in soil: 6.08E-02mg/kgdw. Risk characterisation ratio: 9.65E-02. Risk from environmental exposure is driven by freshwater sediment.
Health:	exposure resulting from contributing scenario ES8-CS1: Inhalation (vapour). 8 hour average 0.019mg/m3.Risk characterisation ratio: <0.001. Dermal: 0.03mg/kg/day.
	exposure resulting from contributing scenario ES8-CS2: Inhalation (vapour). 8 hour average 9.6mg/m3.Risk characterisation ratio: 0.025. Dermal: 1.4mg/kg/day.
	exposure resulting from contributing scenario ES8-CS3: Inhalation (vapour). 8 hour average 19mg/m3.Risk characterisation ratio: 0.05. Dermal: 0.69mg/kg/day.
	exposure resulting from contributing scenario ES8-CS4: Inhalation (vapour). 8 hour average 38mg/m3.Risk characterisation ratio: 0.101. Dermal: 6.9mg/kg/day.
	exposure resulting from contributing scenario ES8-CS5: Inhalation (vapour). 8 hour average 96mg/m3.Risk characterisation ratio: 0.252. Dermal: 14mg/kg/day.
	exposure resulting from contributing scenario ES8-CS6: Inhalation (vapour). 8 hour average 96mg/m3.Risk characterisation ratio: 0.252. Dermal: 27mg/kg/day.
	exposure resulting from contributing scenario ES8-CS7: Inhalation (vapour). 8 hour average 48mg/m3.Risk characterisation ratio: 0.126. Dermal: 14mg/kg/day.
	exposure resulting from contributing scenario ES8-CS8: Inhalation (vapour). 8 hour average 96mg/m3.Risk characterisation ratio: 0.252. Dermal: 6.9mg/kg/day.
	exposure resulting from contributing scenario ES8-CS9: Inhalation (vapour). 8 hour average 19mg/m3.Risk characterisation ratio: 0.05. Dermal: 0.34mg/kg/day.
	exposure resulting from contributing scenario ES8-CS10: Inhalation (vapour). 8 hour average 96mg/m3.Risk characterisation ratio: 0.252. Dermal: 27mg/kg/day.
	It is not possible to derive a DNEL for this end point. Available hazard data do not enable the derivation of a DNEL for eye irritant effects.
Section 4:	**Guidance to check compliance with the exposure scenario**
Environment:	Msafe: 720000kg/day. Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
	$\frac{m_{spERC} * (1 - E_{ER,spERC}) * F_{release,spERC}}{DF_{spERC}} \geq \frac{m_{site} * (1 - E_{ER,site}) * F_{release,site}}{DF_{site}}$ where: mspERC: Substance use rate in spERC. EER,spERC: Efficacy of RMM in spERC. Frelease,,spERC: Initial release fraction in spERC. DFspERC: dilution factor of STP effluent in river. msite: Susbstance use rate at site. EER,site: Efficacy of RMM at site. Frelease,,site: Initial release fraction at site. DFsite: dilution factor of STP effluent in river.
Health:	No corrections required as all exposures are assumed to be for 8 hours (worse case assessment). No corrections required as all exposures are assumed to be substance concentrations of up to 100%.

	No corrections required as all exposures are assumed to be substance concentrations of up to 100%. No corrections required as all exposures are assumed to be for 8 hours (worse case assessment).

Exposure scenario 9. Industrial use. Use as a solvent.

Based on ECHA Template CSA&IR Part D June 08 combined with the GES Narrative Format.

Section 1	
Title.	**Ethanol.** **Industrial use. Use as a solvent.** **EC:64-17-5.**
Life cycle stage: Chemical Products Categories (PC):	Use at industrial sites. PC13.
Environmental Release Category(ies):	ERC4.; ESVOC SpERC 4.3a.v1. (with modifications).
Process Category(ies):	PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC10, PROC13, PROC15, PROC28.
Processes, tasks, activities covered:	Covers use as a processing aid, cleaning agent, solvent or component of a coating, polishes, cleaners etc.). Application methods included: brushing, roller application, treatment by dipping, pouring, immersion or soaking.. Application methods include: manual or automated spraying..
Assessment method:	Health: Used ECETOC TRA model (v3). Environment: Used ECETOC TRA model (v3). Used ESVOC SpERCs (with modifications).
Section 2:	**Operational conditions and risk management measures.**

Section 2.1	**Control of environmental exposure:**
Product Characteristics:	Substance is a unique structure. Non-hydrophobic. Liquid, vapour pressure 0.5 - 10 kPa at STP. Miscible in water. Practically non-toxic to aquatic species. Readily biodegradable. Low bioaccumulation potential.
Amounts used per site (tonne per year).	1500. (5000 kg/day.)
Frequency and duration of use:	Continuous process. 300 days per year of operation.
Environmental factors not influenced by risk management:	Local freshwater dilution factor: 10. Local marine water dilution factor: 100.
Other operational conditions of use affecting environmental exposure.	none. Emission Days (days/year): 300. Continuous release.
Technical onsite conditions and measures to reduce or limit discharges, air emissions.	Treat air emission to provide a typical removal efficiency of (%): 90. Soil emission controls are not applicable as there is no direct release to soil. Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of ≥ (%): 87. Assumed industrial waste water treatment plant flow (m3/d): 2000. If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.
Organisation measures to prevent/limit release from site.	Bund storage facilities to prevent soil and water pollution in the event of spillage. Prevent environmental discharge consistent with regulatory requirements
Conditions and measures related to municipal sewage treatment plant.	Estimated substance removal from wastewater via domestic sewage treatment (%): 87. Assumed domestic sewage treatment plant flow (m3/d): 2000.
Conditions and measures related to external treatment of waste for disposal.	Estimated amount entering waste treatment no greater than: 5%. Type of treatment suitable for waste: incineration. Removal efficiency (%): 99.98. Type of treatment suitable for waste: cement kiln fuels. Removal efficiency (%): 99.98. Treat as hazardous waste. Dispose of waste product or used containers according to local regulations. External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste.	Not applicable.
Other environmental control measures additional to above:	none.

Section 2.2:	**Control of worker exposure.**
Product Characteristics:	
Physical form of product:	Liquid, vapour pressure 0.5 - 10 kPa at STP.
Concentration of substance in product:	Covers percentage substance in the product up to 100 % (unless stated differently).
Amounts used:	Not applicable.
Frequency and duration of use:	Covers daily exposures up to 8 hours (unless stated differently). Continuous process.
Human factors not influenced by risk management:	none.
Other operational conditions affecting worker exposure:	Assumes a good basic standard of occupational hygiene is implemented . Assumes activities are at ambient temperature (unless stated differently).
Technical conditions and measures at a process level to prevent release and technical conditions and measures to control dispersion from source towards workers:	Handle substance within a closed system.
	Contributing Scenarios:
General measures (eye irritants).	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands. Avoid splashing.
ES9-CS1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions..	No other specific measures identified.
ES9-CS2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions.	No other specific measures identified.

ES9-CS3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition.	No other specific measures identified.
ES9-CS4: Chemical production where opportunity for exposure arises.	No other specific measures identified.
ES9-CS5: Mixing or blending in batch processes.	No other specific measures identified.
ES9-CS6: Industrial spraying. Indoor .	Provide a good standard of controlled ventilation (10 to 15 air changes per hour).
ES9-CS7: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities.	No other specific measures identified.
ES9-CS8: Transfer of substance or mixture (charging and discharging) at dedicated facilities.	No other specific measures identified.
ES9-CS9: Roller application or brushing.	No other specific measures identified.
ES9-CS10: Treatment of articles by dipping and pouring.	No other specific measures identified.
ES9-CS11: Use as laboratory reagent.	No other specific measures identified.
ES9-CS12: Manual maintenance (cleaning and repair) of machinery.	No other specific measures identified.
Section 3:	**Exposure estimation:**
Environment:	Maximum exposure resulting from contributing scenarios described.
ES9-E1: ERC4.	Conditions given in SPERC fact sheet give rise to following releases fractions. (ESVOC SpERC 4.3a.v1. (with modifications).). Release fraction to air from process (initial release prior to RMM): 0.098. Release fraction to wastewater from process (initial release prior to RMM): 0.02. Release fraction to soil from process (initial release prior to RMM): 0.
	PEC for microorganisms in STP: 6.32E+00mg/l. Risk characterisation ratio: 1.09E-02. Local PEC in surface water: 6.60E-01mg/l. Risk characterisation ratio: 6.88E-01. Local PEC in fresh water sediment: 2.53E+00mg/kgdw. Risk characterisation ratio: 7.03E-01. Local PEC in sea water during emission episode: 7.20E-02mg/l. Risk characterisation ratio: 9.11E-02. Local PEC in marine sediment: 2.76E-01mg/kgdw. Risk characterisation ratio: 9.52E-02. Local PEC in soil: 2.76E-02mg/kgdw. Risk characterisation ratio: 4.38E-02. Risk from environmental exposure is driven by freshwater sediment.
Health:	exposure resulting from contributing scenario ES9-CS1: Inhalation (vapour). 8 hour average 0.019mg/m3.Risk characterisation ratio: <0.001. Dermal: 0.03mg/kg/day.
	exposure resulting from contributing scenario ES9-CS2: Inhalation (vapour). 8 hour average 9.6mg/m3.Risk characterisation ratio: 0.025. Dermal: 1.4mg/kg/day.
	exposure resulting from contributing scenario ES9-CS3: Inhalation (vapour). 8 hour average 19mg/m3.Risk characterisation ratio: 0.05. Dermal: 0.69mg/kg/day.
	exposure resulting from contributing scenario ES9-CS4: Inhalation (vapour). 8 hour average 38mg/m3.Risk characterisation ratio: 0.101. Dermal: 6.9mg/kg/day.
	exposure resulting from contributing scenario ES9-CS5: Inhalation (vapour). 8 hour average 96mg/m3.Risk characterisation ratio: 0.252. Dermal: 14mg/kg/day.
	exposure resulting from contributing scenario ES9-CS6: Inhalation (vapour). 8 hour average 140mg/m3.Risk characterisation ratio: 0.378. Dermal: 43mg/kg/day.
	exposure resulting from contributing scenario ES9-CS7: Inhalation (vapour). 8 hour average 96mg/m3.Risk characterisation ratio: 0.252. Dermal: 27mg/kg/day.
	exposure resulting from contributing scenario ES9-CS8: Inhalation (vapour). 8 hour average 48mg/m3.Risk characterisation ratio: 0.126. Dermal: 14mg/kg/day.
	exposure resulting from contributing scenario ES9-CS9: Inhalation (vapour). 8 hour average 190mg/m3.Risk characterisation ratio: 0.504. Dermal: 27mg/kg/day.
	exposure resulting from contributing scenario ES9-CS10: Inhalation (vapour). 8 hour average 96mg/m3.Risk characterisation ratio: 0.252. Dermal: 14mg/kg/day.
	exposure resulting from contributing scenario ES9-CS11: Inhalation (vapour). 8 hour average 19mg/m3.Risk characterisation ratio: 0.05. Dermal: 0.34mg/kg/day.
	exposure resulting from contributing scenario ES9-CS12: Inhalation (vapour). 8 hour average 96mg/m3.Risk characterisation ratio: 0.252. Dermal: 14mg/kg/day.
	It is not possible to derive a DNEL for this end point. Available hazard data do not enable the derivation of a DNEL for eye irritant effects.
Section 4:	**Guidance to check compliance with the exposure scenario**
Environment:	Msafe: 55000kg/day. Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
	$\frac{m_{spERC} * (1 - E_{ER,spERC}) * F_{release,spERC}}{DF_{spERC}} \geq \frac{m_{site} * (1 - E_{ER,site}) * F_{release,site}}{DF_{site}}$

	where: mspERC: Substance use rate in spERC. EER,spERC: Efficacy of RMM in spERC. Frelease,,spERC: Initial release fraction in spERC. DFspERC: dilution factor of STP effluent in river. msite: Susbstance use rate at site. EER,site: Efficacy of RMM at site. Frelease,,site: Initial release fraction at site. DFsite: dilution factor of STP effluent in river.
Health:	No corrections required as all exposures are assumed to be for 8 hours (worse case assessment). No corrections required as all exposures are assumed to be substance concentrations of up to 100%.
	No corrections required as all exposures are assumed to be substance concentrations of up to 100%. No corrections required as all exposures are assumed to be for 8 hours (worse case assessment).

Exposure scenario 10. Use as a fuel .

Based on ECHA Template CSA&IR Part D June 08 combined with the GES Narrative Format.

Section 1	
Title.	**Ethanol.** **Use as a fuel .** **EC:64-17-5.**
Life cycle stage: Chemical Products Categories (PC):	Use at industrial sites. PC13.
Environmental Release Category(ies):	ERC7.; ESVOC SpERC 7.12a.v1. (with modifications).
Process Category(ies):	PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC15, PROC16, PROC28.
Processes, tasks, activities covered:	Covers the use as a fuel (or fuel additive) and includes activities associated with its transfer, use, equipment maintenance and handling of waste.
Assessment method:	Health: Used ECETOC TRA model (v3). Environment: Used ECETOC TRA model (v3). Used ESVOC SpERCs (with modifications).
Section 2:	**Operational conditions and risk management measures.**

Section 2.1	**Control of environmental exposure:**
Product Characteristics:	Substance is a unique structure. Non-hydrophobic. Liquid, vapour pressure 0.5 - 10 kPa at STP. Miscible in water. Practically non-toxic to aquatic species. Readily biodegradable. Low bioaccumulation potential.
Amounts used per site (tonne per year).	12000. (40000 kg/day.)
Frequency and duration of use:	Continuous process. 300 days per year of operation.
Environmental factors not influenced by risk management:	Local freshwater dilution factor: 10. Local marine water dilution factor: 100.
Other operational conditions of use affecting environmental exposure.	none. Emission Days (days/year): 300. Continuous release.
Technical onsite conditions and measures to reduce or limit discharges, air emissions.	Treatment of air emissions is not required for the purposes of REACH compliance but may be needed to comply with other environmental legislation. Soil emission controls are not applicable as there is no direct release to soil. Do not release wastewater directly into the environment. Onsite wastewater treatment plant is not assumed. Do not release wastewater directly into the environment.
Organisation measures to prevent/limit release from site.	Bund storage facilities to prevent soil and water pollution in the event of spillage. Prevent environmental discharge consistent with regulatory requirements
Conditions and measures related to municipal sewage treatment plant.	Estimated substance removal from wastewater via domestic sewage treatment (%): 87. Assumed domestic sewage treatment plant flow (m3/d): 2000.
Conditions and measures related to external treatment of waste for disposal.	This substance is consumed during use and no waste of the substance is generated. Dispose of waste product or used containers according to local regulations.
Conditions and measures related to external recovery of waste.	Not applicable.
Other environmental control measures additional to above:	none.

Section 2.2:	**Control of worker exposure.**
Product Characteristics:	
Physical form of product:	Liquid, vapour pressure 0.5 - 10 kPa at STP.
Concentration of substance in product:	Covers percentage substance in the product up to 100 % (unless stated differently).
Amounts used:	Not applicable.
Frequency and duration of use:	Covers daily exposures up to 8 hours (unless stated differently). Continuous process.
Human factors not influenced by risk management:	none.
Other operational conditions affecting worker exposure:	Assumes a good basic standard of occupational hygiene is implemented .
Technical conditions and measures at a process level to prevent release and technical conditions and measures to control dispersion from source towards workers:	Handle substance within a closed system.
	Contributing Scenarios:
General measures (eye irritants).	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands. Avoid splashing.
ES10-CS1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions..	No other specific measures identified.
ES10-CS2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions.	No other specific measures identified.
ES10-CS3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition.	No other specific measures identified.

ES10-CS4: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities.	No other specific measures identified.
ES10-CS5: Transfer of substance or mixture (charging and discharging) at dedicated facilities.	No other specific measures identified.
ES10-CS6: Use as laboratory reagent.	No other specific measures identified.
ES10-CS7: Use of fuels.	No other specific measures identified.
ES10-CS8: Manual maintenance (cleaning and repair) of machinery.	No other specific measures identified.
Section 3:	**Exposure estimation:**
Environment:	Maximum exposure resulting from contributing scenarios described.
ES10-E1: ERC7.	Conditions given in SPERC fact sheet give rise to following releases fractions. (ESVOC SpERC 7.12a.v1. (with modifications).). Release fraction to air from process (initial release prior to RMM): 0.0025. Release fraction to wastewater from process (initial release prior to RMM): 0.00001. Release fraction to soil from process (initial release prior to RMM): 0.
	PEC for microorganisms in STP: 2.50E-02mg/l. Risk characterisation ratio: 4.31E-05. Local PEC in surface water: 8.78E-02mg/l. Risk characterisation ratio: 9.15E-02. Local PEC in fresh water sediment: 3.36E-01mg/kgdw. Risk characterisation ratio: 9.33E-02. Local PEC in sea water during emission episode: 9.04E-03mg/l. Risk characterisation ratio: 1.14E-02. Local PEC in marine sediment: 3.46E-02mg/kgdw. Risk characterisation ratio: 1.19E-02. Local PEC in soil: 1.41E-02mg/kgdw. Risk characterisation ratio: 2.24E-02. Risk from environmental exposure is driven by freshwater sediment.
Health:	exposure resulting from contributing scenario ES10-CS1: Inhalation (vapour). 8 hour average 0.019mg/m3.Risk characterisation ratio: <0.001. Dermal: 0.03mg/kg/day.
	exposure resulting from contributing scenario ES10-CS2: Inhalation (vapour). 8 hour average 9.6mg/m3.Risk characterisation ratio: 0.025. Dermal: 1.4mg/kg/day.
	exposure resulting from contributing scenario ES10-CS3: Inhalation (vapour). 8 hour average 19mg/m3.Risk characterisation ratio: 0.05. Dermal: 0.69mg/kg/day.
	exposure resulting from contributing scenario ES10-CS4: Inhalation (vapour). 8 hour average 96mg/m3.Risk characterisation ratio: 0.252. Dermal: 27mg/kg/day.
	exposure resulting from contributing scenario ES10-CS5: Inhalation (vapour). 8 hour average 48mg/m3.Risk characterisation ratio: 0.126. Dermal: 14mg/kg/day.
	exposure resulting from contributing scenario ES10-CS6: Inhalation (vapour). 8 hour average 19mg/m3.Risk characterisation ratio: 0.05. Dermal: 0.34mg/kg/day.
	exposure resulting from contributing scenario ES10-CS7: Inhalation (vapour). 8 hour average 9.6mg/m3.Risk characterisation ratio: 0.025. Dermal: 0.34mg/kg/day.
	exposure resulting from contributing scenario ES10-CS8: Inhalation (vapour). 8 hour average 96mg/m3.Risk characterisation ratio: 0.252. Dermal: 27mg/kg/day.
	It is not possible to derive a DNEL for this end point. Available hazard data do not enable the derivation of a DNEL for eye irritant effects.
Section 4:	**Guidance to check compliance with the exposure scenario**
Environment:	Msafe: 3460000kg/day. Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
	$\frac{m_{spERC} * (1 - E_{ER,spERC}) * F_{release,spERC}}{DF_{spERC}} \geq \frac{m_{site} * (1 - E_{ER,site}) * F_{release,site}}{DF_{site}}$ where: mspERC: Substance use rate in spERC. EER,spERC: Efficacy of RMM in spERC. Frelease,,spERC: Initial release fraction in spERC. DFspERC: dilution factor of STP effluent in river. msite: Susbstance use rate at site. EER,site: Efficacy of RMM at site. Frelease,,site: Initial release fraction at site. DFsite: dilution factor of STP effluent in river.
Health:	No corrections required as all exposures are assumed to be for 8 hours (worse case assessment). No corrections required as all exposures are assumed to be substance concentrations of up to 100%.
	No corrections required as all exposures are assumed to be substance concentrations of up to 100%. No corrections required as all exposures are assumed to be for 8 hours (worse case assessment).

Exposure scenario 11. Professional use. Use as a solvent.

Based on ECHA Template CSA&IR Part D June 08 combined with the GES Narrative Format.

Section 1	
Title.	**Ethanol.** **Professional use. Use as a solvent.** **EC:64-17-5.**
Life cycle stage: Chemical Products Categories (PC):	Widespread use by professional workers. PC13.
Environmental Release Category(ies):	ERC8d.; ESVOC SpERC 8.3b.v1.
Process Category(ies):	PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC10, PROC11, PROC13, PROC19, PROC28.
Processes, tasks, activities covered:	Covers use as a processing aid, cleaning agent, solvent or component of a coating, polishes, cleaners etc.). Application methods included: brushing, roller application, treatment by dipping, pouring, immersion or soaking.. Application methods include: manual or automated spraying..
Assessment method:	Health: Used ECETOC TRA model (v3). Environment: Used ECETOC TRA model (v3). Used ESVOC SpERCs.
Section 2:	**Operational conditions and risk management measures.**

Section 2.1	**Control of environmental exposure:**
Product Characteristics:	Substance is a unique structure. Non-hydrophobic. Liquid, vapour pressure 0.5 - 10 kPa at STP. Miscible in water. Practically non-toxic to aquatic species. Readily biodegradable. Low bioaccumulation potential.
Amounts used per site (tonne per year).	Not applicable. Dispersive use.
Frequency and duration of use:	Continuous process. 365 days per year of operation.
Other operational conditions of use affecting environmental exposure.	none. Dispersive use.
Technical onsite conditions and measures to reduce or limit discharges, air emissions.	Treatment of air emissions is not required for the purposes of REACH compliance but may be needed to comply with other environmental legislation. Do not release wastewater directly into the environment. Onsite wastewater treatment plant is not assumed.
Organisation measures to prevent/limit release from site.	Prevent environmental discharge consistent with regulatory requirements
Conditions and measures related to external treatment of waste for disposal.	Estimated amount entering waste treatment no greater than: 10%. Type of treatment suitable for waste: incineration. Removal efficiency (%): 99.98. Treat as hazardous waste. Dispose of waste product or used containers according to local regulations. External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste.	Not applicable.
Other environmental control measures additional to above:	none.

Section 2.2:	**Control of worker exposure.**
Product Characteristics:	
Physical form of product:	Liquid, vapour pressure 0.5 - 10 kPa at STP.
Concentration of substance in product:	Covers percentage substance in the product up to 100 % (unless stated differently).
Amounts used:	Not applicable.
Frequency and duration of use:	Covers daily exposures up to 8 hours (unless stated differently). Continuous process.
Human factors not influenced by risk management:	none.
Other operational conditions affecting worker exposure:	Assumes a good basic standard of occupational hygiene is implemented . Assumes activities are at ambient temperature (unless stated differently).
Technical conditions and measures at a process level to prevent release and technical conditions and measures to control dispersion from source towards workers:	Keep container tightly closed.
	Contributing Scenarios:
General measures (eye irritants).	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands. Avoid splashing.
ES11-CS1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions..	No other specific measures identified.
ES11-CS2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions.	No other specific measures identified.
ES11-CS3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition.	No other specific measures identified.
ES11-CS4: Chemical production where opportunity for exposure arises.	No other specific measures identified.
ES11-CS5: Mixing or blending in batch processes.	No other specific measures identified.

ES11-CS6: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities.	No other specific measures identified.
ES11-CS7: Roller application or brushing.	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) . , or, Ensure operation is undertaken outdoors .
ES11-CS8: Non industrial spraying. Indoor .	Provide a good standard of controlled ventilation (10 to 15 air changes per hour) , or, Avoid carrying out activities involving exposure for more than 1 hour.
ES11-CS9: Non industrial spraying. Outdoor .	Ensure operation is undertaken outdoors . Wear a respirator conforming to EN140 with Type A filter or better. Change filter cartridge on respirator daily.
ES11-CS10: Treatment of articles by dipping and pouring.	No other specific measures identified.
ES11-CS11: Manual activities involving hand contact.	No other specific measures identified.
ES11-CS12: Manual maintenance (cleaning and repair) of machinery.	No other specific measures identified.
Section 3:	**Exposure estimation:**
Environment:	Maximum exposure resulting from contributing scenarios described.
ES11-E1: ERC8d.	Conditions given in SPERC fact sheet give rise to following releases fractions. (ESVOC SpERC 8.3b.v1.). Release fraction to air from wide dispersive use (regional only): 0.98. Release fraction to wastewater from wide dispersive use: 0.01. Release fraction to soil from wide dispersive use (regional only): 0.01.
	PEC for microorganisms in STP: 6.49E-03mg/l. Risk characterisation ratio: 1.12E-05. Local PEC in surface water: 3.32E-02mg/l. Risk characterisation ratio: 3.46E-02. Local PEC in fresh water sediment: 1.27E-01mg/kgdw. Risk characterisation ratio: 3.53E-02. Local PEC in sea water during emission episode: 4.08E-03mg/l. Risk characterisation ratio: 5.16E-03. Local PEC in marine sediment: 1.56E-02mg/kgdw. Risk characterisation ratio: 5.38E-03. Local PEC in soil: 1.40E-02mg/kgdw. Risk characterisation ratio: 2.22E-02. Risk from environmental exposure is driven by freshwater sediment.
Health:	exposure resulting from contributing scenario ES11-CS1: Inhalation (vapour). 8 hour average 0.019mg/m3.Risk characterisation ratio: <0.001. Dermal: 0.03mg/kg/day.
	exposure resulting from contributing scenario ES11-CS2: Inhalation (vapour). 8 hour average 38mg/m3.Risk characterisation ratio: 0.101. Dermal: 1.4mg/kg/day.
	exposure resulting from contributing scenario ES11-CS3: Inhalation (vapour). 8 hour average 48mg/m3.Risk characterisation ratio: 0.126. Dermal: 0.69mg/kg/day.
	exposure resulting from contributing scenario ES11-CS4: Inhalation (vapour). 8 hour average 96mg/m3.Risk characterisation ratio: 0.252. Dermal: 6.9mg/kg/day.
	exposure resulting from contributing scenario ES11-CS5: Inhalation (vapour). 8 hour average 190mg/m3.Risk characterisation ratio: 0.504. Dermal: 14mg/kg/day.
	exposure resulting from contributing scenario ES11-CS6: Inhalation (vapour). 8 hour average 190mg/m3.Risk characterisation ratio: 0.504. Dermal: 27mg/kg/day.
	exposure resulting from contributing scenario ES11-CS7: Inhalation (vapour). 8 hour average 270mg/m3.Risk characterisation ratio: 0.706. Dermal: 27mg/kg/day.
	exposure resulting from contributing scenario ES11-CS8: Inhalation (vapour). 8 hour average 290mg/m3.Risk characterisation ratio: 0.757. Dermal: 110mg/kg/day.
	exposure resulting from contributing scenario ES11-CS9: Inhalation (vapour). 8 hour average 67mg/m3.Risk characterisation ratio: 0.177. Dermal: 110mg/kg/day.
	exposure resulting from contributing scenario ES11-CS10: Inhalation (vapour). 8 hour average 190mg/m3.Risk characterisation ratio: 0.504. Dermal: 14mg/kg/day.
	exposure resulting from contributing scenario ES11-CS11: Inhalation (vapour). 8 hour average 190mg/m3.Risk characterisation ratio: 0.504. Dermal: 140mg/kg/day.
	exposure resulting from contributing scenario ES11-CS12: Inhalation (vapour). 8 hour average 190mg/m3.Risk characterisation ratio: 0.504. Dermal: 27mg/kg/day.
	It is not possible to derive a DNEL for this end point. Available hazard data do not enable the derivation of a DNEL for eye irritant effects.
Section 4:	**Guidance to check compliance with the exposure scenario**
Environment:	Msafe: 1990kg/day. Not applicable for wide dispersive uses.
Health:	No corrections required as all exposures are assumed to be for 8 hours (worse case assessment). No corrections required as all exposures are assumed to be substance concentrations of up to 100%.
	No corrections required as all exposures are assumed to be substance concentrations of up to 100%. No corrections required as all exposures are assumed to be for 8 hours (worse case assessment).

Exposure scenario 12. Use as a fuel .

Based on ECHA Template CSA&IR Part D June 08 combined with the GES Narrative Format.

Section 1	
Title.	**Ethanol.** **Use as a fuel .** **EC:64-17-5.**
Life cycle stage: Chemical Products Categories (PC):	Widespread use by professional workers. PC13.
Environmental Release Category(ies):	ERC9b.; ESVOC SpERC 9.12b.v1.
Process Category(ies):	PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC16, PROC28.
Processes, tasks, activities covered:	Covers the use as a fuel (or fuel additive) and includes activities associated with its transfer, use, equipment maintenance and handling of waste.
Assessment method:	Health: Used ECETOC TRA model (v3). Environment: Used ECETOC TRA model (v3). Used ESVOC SpERCs
Section 2:	**Operational conditions and risk management measures.**

Section 2.1	**Control of environmental exposure:**
Product Characteristics:	Substance is a unique structure. Non-hydrophobic. Liquid, vapour pressure 0.5 - 10 kPa at STP. Miscible in water. Practically non-toxic to aquatic species. Readily biodegradable. Low bioaccumulation potential.
Amounts used per site (tonne per year).	Not applicable. Dispersive use.
Frequency and duration of use:	Continuous process. 365 days per year of operation.
Other operational conditions of use affecting environmental exposure.	none. Dispersive use.
Technical onsite conditions and measures to reduce or limit discharges, air emissions.	No air emission controls required; required removal efficiency is 0%. Do not release wastewater directly into the environment. Onsite wastewater treatment plant is not assumed.
Organisation measures to prevent/limit release from site.	Prevent environmental discharge consistent with regulatory requirements
Conditions and measures related to external treatment of waste for disposal.	This substance is consumed during use and no waste of the substance is generated. Dispose of waste product or used containers according to local regulations.
Conditions and measures related to external recovery of waste.	Not applicable.
Other environmental control measures additional to above:	none.

Section 2.2:	**Control of worker exposure.**
Product Characteristics:	
Physical form of product:	Liquid, vapour pressure 0.5 - 10 kPa at STP.
Concentration of substance in product:	Covers percentage substance in the product up to 100 % (unless stated differently).
Amounts used:	Not applicable.
Frequency and duration of use:	Covers daily exposures up to 8 hours (unless stated differently). Continuous process.
Human factors not influenced by risk management:	none.
Other operational conditions affecting worker exposure:	Assumes a good basic standard of occupational hygiene is implemented .
Technical conditions and measures at a process level to prevent release and technical conditions and measures to control dispersion from source towards workers:	Handle substance within a closed system. Keep container tightly closed.
	Contributing Scenarios:
General measures (eye irritants).	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands. Avoid splashing.
ES12-CS1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions..	No other specific measures identified.
ES12-CS2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions.	No other specific measures identified.
ES12-CS3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition.	No other specific measures identified.
ES12-CS4: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities.	No other specific measures identified.
ES12-CS5: Transfer of substance or mixture (charging and discharging) at dedicated facilities.	No other specific measures identified.
ES12-CS6: Use of fuels.	No other specific measures identified.

ES12-CS7: Manual maintenance (cleaning and repair) of machinery.	No other specific measures identified.
Section 3:	**Exposure estimation:**
Environment:	Maximum exposure resulting from contributing scenarios described.
ES12-E1: ERC9b.	Conditions given in SPERC fact sheet give rise to following releases fractions. (ESVOC SpERC 9.12b.v1.). Release fraction to air from wide dispersive use (regional only): 0.01. Release fraction to wastewater from wide dispersive use: 0.00001. Release fraction to soil from wide dispersive use (regional only): 0.00001.
	PEC for microorganisms in STP: 3.11E-05mg/l. Risk characterisation ratio: 5.36E-08. Local PEC in surface water: 3.25E-02mg/l. Risk characterisation ratio: 3.39E-02. Local PEC in fresh water sediment: 1.25E-01mg/kgdw. Risk characterisation ratio: 3.47E-02. Local PEC in sea water during emission episode: 4.02E-03mg/l. Risk characterisation ratio: 5.09E-03. Local PEC in marine sediment: 1.54E-02mg/kgdw. Risk characterisation ratio: 5.31E-03. Local PEC in soil: 1.40E-02mg/kgdw. Risk characterisation ratio: 2.22E-02. Risk from environmental exposure is driven by freshwater sediment.
Health:	exposure resulting from contributing scenario ES12-CS1: Inhalation (vapour). 8 hour average 0.019mg/m3.Risk characterisation ratio: <0.001. Dermal: 0.03mg/kg/day.
	exposure resulting from contributing scenario ES12-CS2: Inhalation (vapour). 8 hour average 38mg/m3.Risk characterisation ratio: 0.101. Dermal: 1.4mg/kg/day.
	exposure resulting from contributing scenario ES12-CS3: Inhalation (vapour). 8 hour average 48mg/m3.Risk characterisation ratio: 0.126. Dermal: 0.69mg/kg/day.
	exposure resulting from contributing scenario ES12-CS4: Inhalation (vapour). 8 hour average 190mg/m3.Risk characterisation ratio: 0.504. Dermal: 27mg/kg/day.
	exposure resulting from contributing scenario ES12-CS5: Inhalation (vapour). 8 hour average 96mg/m3.Risk characterisation ratio: 0.252. Dermal: 14mg/kg/day.
	exposure resulting from contributing scenario ES12-CS6: Inhalation (vapour). 8 hour average 19mg/m3.Risk characterisation ratio: 0.05. Dermal: 0.34mg/kg/day.
	exposure resulting from contributing scenario ES12-CS7: Inhalation (vapour). 8 hour average 190mg/m3.Risk characterisation ratio: 0.504. Dermal: 27mg/kg/day.
	It is not possible to derive a DNEL for this end point. Available hazard data do not enable the derivation of a DNEL for eye irritant effects.
Section 4:	**Guidance to check compliance with the exposure scenario**
Environment:	Msafe: 9710kg/day. Not applicable for wide dispersive uses.
Health:	No corrections required as all exposures are assumed to be for 8 hours (worse case assessment). No corrections required as all exposures are assumed to be substance concentrations of up to 100%.
	No corrections required as all exposures are assumed to be substance concentrations of up to 100%. No corrections required as all exposures are assumed to be for 8 hours (worse case assessment).

Exposure scenario 13. Functional Fluids.

Based on ECHA Template CSA&IR Part D June 08 combined with the GES Narrative Format.

Section 1	
Title.	**Ethanol.** **Functional Fluids.** **EC:64-17-5.**
Life cycle stage: Chemical Products Categories (PC):	Widespread use by professional workers. PC16.
Environmental Release Category(ies):	ERC9b.; ESVOC SpERC 9.13b.v1.
Process Category(ies):	PROC1, PROC2, PROC8a, PROC20, PROC28.
Processes, tasks, activities covered:	Use as functional fluids e.g. cable oils, transfer oils, coolants, insulators, refrigerants, hydraulic fluids in professional equipment including maintenance and related material transfers.
Assessment method:	Health: Used ECETOC TRA model (v3). Environment: Used ECETOC TRA model (v3). Used ESVOC SpERCs.
Section 2:	**Operational conditions and risk management measures.**

Section 2.1	**Control of environmental exposure:**
Product Characteristics:	Substance is a unique structure. Non-hydrophobic. Liquid, vapour pressure 0.5 - 10 kPa at STP. Miscible in water. Practically non-toxic to aquatic species. Readily biodegradable. Low bioaccumulation potential.
Amounts used per site (tonne per year).	Not applicable. Dispersive use.
Frequency and duration of use:	Continuous process. 365 days per year of operation.
Other operational conditions of use affecting environmental exposure.	none. Dispersive use.
Technical onsite conditions and measures to reduce or limit discharges, air emissions.	No air emission controls required; required removal efficiency is 0%. Do not release wastewater directly into the environment. Onsite wastewater treatment plant is not assumed.
Organisation measures to prevent/limit release from site.	Prevent environmental discharge consistent with regulatory requirements
Conditions and measures related to external treatment of waste for disposal.	Estimated amount entering waste treatment no greater than: 10%. Type of treatment suitable for waste: incineration. Treat as hazardous waste. Dispose of waste product or used containers according to local regulations. External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste.	Estimated amount entering waste treatment no greater than: 80%. Type of treatment suitable for waste: redistillation.
Other environmental control measures additional to above:	none.

Section 2.2:	**Control of worker exposure.**
Product Characteristics:	
Physical form of product:	Liquid, vapour pressure 0.5 - 10 kPa at STP.
Concentration of substance in product:	Covers percentage substance in the product up to 100 % (unless stated differently).
Amounts used:	Not applicable.
Frequency and duration of use:	Covers daily exposures up to 8 hours (unless stated differently). Continuous process.
Human factors not influenced by risk management:	none.
Other operational conditions affecting worker exposure:	Assumes a good basic standard of occupational hygiene is implemented . Assumes activities are at ambient temperature (unless stated differently).
Technical conditions and measures at a process level to prevent release and technical conditions and measures to control dispersion from source towards workers:	Keep container tightly closed.
	Contributing Scenarios:
General measures (eye irritants).	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands. Avoid splashing.
ES13-CS1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.. Operation is carried out at elevated temperature (> 20°C above ambient temperature). (elevated temperature. 60C)	No other specific measures identified.
ES13-CS2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions.	No other specific measures identified.
ES13-CS3: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities.	No other specific measures identified.
ES13-CS4: Use of functional fluids in small devices.	No other specific measures identified.
ES13-CS5: Manual maintenance (cleaning and repair) of machinery.	No other specific measures identified.
Section 3:	**Exposure estimation:**

Environment:	Maximum exposure resulting from contributing scenarios described.
ES13-E1: ERC9b.	Conditions given in SPERC fact sheet give rise to following releases fractions. (ESVOC SpERC 9.13b.v1.). Release fraction to air from wide dispersive use (regional only): 0.05. Release fraction to wastewater from wide dispersive use: 0.025. Release fraction to soil from wide dispersive use (regional only): 0.025.
	PEC for microorganisms in STP: 4.33E-03mg/l. Risk characterisation ratio: 7.47E-06. Local PEC in surface water: 3.29E-02mg/l. Risk characterisation ratio: 3.43E-02. Local PEC in fresh water sediment: 1.26E-01mg/kgdw. Risk characterisation ratio: 3.50E-02. Local PEC in sea water during emission episode: 4.06E-03mg/l. Risk characterisation ratio: 5.14E-03. Local PEC in marine sediment: 1.56E-02mg/kgdw. Risk characterisation ratio: 5.38E-03. Local PEC in soil: 1.40E-02mg/kgdw. Risk characterisation ratio: 2.22E-02. Risk from environmental exposure is driven by freshwater sediment.
Health:	exposure resulting from contributing scenario ES13-CS1: Inhalation (vapour). 8 hour average 0.19mg/m3.Risk characterisation ratio: <0.001. Dermal: 0.03mg/kg/day.
	exposure resulting from contributing scenario ES13-CS2: Inhalation (vapour). 8 hour average 38mg/m3.Risk characterisation ratio: 0.101. Dermal: 1.4mg/kg/day.
	exposure resulting from contributing scenario ES13-CS3: Inhalation (vapour). 8 hour average 190mg/m3.Risk characterisation ratio: 0.504. Dermal: 27mg/kg/day.
	exposure resulting from contributing scenario ES13-CS4: Inhalation (vapour). 8 hour average 38mg/m3.Risk characterisation ratio: 0.101. Dermal: 1.7mg/kg/day.
	exposure resulting from contributing scenario ES13-CS5: Inhalation (vapour). 8 hour average 190mg/m3.Risk characterisation ratio: 0.504. Dermal: 27mg/kg/day.
	It is not possible to derive a DNEL for this end point. Available hazard data do not enable the derivation of a DNEL for eye irritant effects.
Section 4:	**Guidance to check compliance with the exposure scenario**
Environment:	Msafe: 534kg/day. Not applicable for wide dispersive uses.
Health:	No corrections required as all exposures are assumed to be for 8 hours (worse case assessment). No corrections required as all exposures are assumed to be substance concentrations of up to 100%.
	No corrections required as all exposures are assumed to be substance concentrations of up to 100%. No corrections required as all exposures are assumed to be for 8 hours (worse case assessment).

Exposure scenario 14. Use in laboratories.

Based on ECHA Template CSA&IR Part D June 08 combined with the GES Narrative Format.

Section 1	
Title.	**Ethanol.** **Use in laboratories.** **EC:64-17-5.**
Life cycle stage: Chemical Products Categories (PC):	Widespread use by professional workers. PC16.
Environmental Release Category(ies):	ERC8a.; ESVOC SpERC 8.17.v1.
Process Category(ies):	PROC10, PROC15.
Processes, tasks, activities covered:	Use of small quantities within laboratory settings, including material transfers and equipment cleaning.
Assessment method:	Health: Used ECETOC TRA model (v3). Environment: Used ECETOC TRA model (v3). Used ESVOC SpERCs
Section 2:	**Operational conditions and risk management measures.**

Section 2.1	**Control of environmental exposure:**
Product Characteristics:	Substance is a unique structure. Non-hydrophobic. Liquid, vapour pressure 0.5 - 10 kPa at STP. Miscible in water. Practically non-toxic to aquatic species. Readily biodegradable. Low bioaccumulation potential.
Amounts used per site (tonne per year).	Not applicable. Dispersive use.
Frequency and duration of use:	Continuous process. 365 days per year of operation.
Other operational conditions of use affecting environmental exposure.	none. Dispersive use.
Technical onsite conditions and measures to reduce or limit discharges, air emissions.	No air emission controls required; required removal efficiency is 0%. Soil emission controls are not applicable as there is no direct release to soil. Do not release wastewater directly into the environment. Onsite wastewater treatment plant is not assumed.
Organisation measures to prevent/limit release from site.	Prevent environmental discharge consistent with regulatory requirements
Conditions and measures related to external treatment of waste for disposal.	Estimated amount entering waste treatment no greater than: 10%. Type of treatment suitable for waste: incineration. Prevent environmental discharge consistent with regulatory requirements Dispose of waste product or used containers according to local regulations.
Conditions and measures related to external recovery of waste.	Not applicable.
Other environmental control measures additional to above:	none.

Section 2.2:	**Control of worker exposure.**
Product Characteristics:	
Physical form of product:	Liquid, vapour pressure 0.5 - 10 kPa at STP.
Concentration of substance in product:	Covers percentage substance in the product up to 100 % (unless stated differently).
Amounts used:	Not applicable.
Frequency and duration of use:	Covers daily exposures up to 8 hours (unless stated differently). Continuous process.
Human factors not influenced by risk management:	none.
Other operational conditions affecting worker exposure:	Assumes a good basic standard of occupational hygiene is implemented . Assumes activities are at ambient temperature (unless stated differently).
Technical conditions and measures at a process level to prevent release and technical conditions and measures to control dispersion from source towards workers:	Keep container tightly closed.
	Contributing Scenarios:
General measures (eye irritants).	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands. Avoid splashing.
ES14-CS1: Roller application or brushing.	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) .
ES14-CS2: Use as laboratory reagent.	No other specific measures identified.
Section 3:	**Exposure estimation:**

Environment:	Maximum exposure resulting from contributing scenarios described.
ES14-E1: ERC8a.	Conditions given in SPERC fact sheet give rise to following releases fractions. (ESVOC SpERC 8.17.v1.). Release fraction to air from wide dispersive use (regional only): 0.5. Release fraction to wastewater from wide dispersive use: 0.5. Release fraction to soil from wide dispersive use (regional only): 0.
	PEC for microorganisms in STP: 4.33E-02mg/l. Risk characterisation ratio: 7.47E-05. Local PEC in surface water: 3.68E-02mg/l. Risk characterisation ratio: 3.83E-02. Local PEC in fresh water sediment: 1.41E-01mg/kgdw. Risk characterisation ratio: 3.92E-02. Local PEC in sea water during emission episode: 4.45E-03mg/l. Risk characterisation ratio: 5.63E-03. Local PEC in marine sediment: 1.70E-02mg/kgdw. Risk characterisation ratio: 5.86E-03. Local PEC in soil: 1.41E-02mg/kgdw. Risk characterisation ratio: 2.24E-02. Risk from environmental exposure is driven by freshwater sediment.
Health:	exposure resulting from contributing scenario ES14-CS1: Inhalation (vapour). 8 hour average 270mg/m3.Risk characterisation ratio: 0.706. Dermal: 27mg/kg/day.

	exposure resulting from contributing scenario ES14-CS2: Inhalation (vapour). 8 hour average 19mg/m3.Risk characterisation ratio: 0.05. Dermal: 0.34mg/kg/day.
	It is not possible to derive a DNEL for this end point. Available hazard data do not enable the derivation of a DNEL for eye irritant effects.
Section 4:	**Guidance to check compliance with the exposure scenario**
Environment:	Msafe: 244kg/day. Not applicable for wide dispersive uses.
Health:	No corrections required as all exposures are assumed to be for 8 hours (worse case assessment). No corrections required as all exposures are assumed to be substance concentrations of up to 100%.
	No corrections required as all exposures are assumed to be substance concentrations of up to 100%. No corrections required as all exposures are assumed to be for 8 hours (worse case assessment).