

SAFETY DATA SHEET
ACCORDING TO EC-REGULATIONS 1907/2006 (REACH) & 1272/2008 (CLP)

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

- 1.1 Product identifier**
GHS Product Identifier ETHANOL DRAA, DRS (ETHYL ALCOHOL)
EC INDEX No. 603-002-00-5
Alternative names Absolute alcohol, ethyl alcohol
REACH Registration No. 01-2119457610-43-0002
- 1.2 Relevant identified uses of the substance or mixture and uses advised against**
Identified use(s) Solvent, anti-freezing agent, heat transfer agent, fuel/fuel additive, chemical intermediate, laboratory chemical
Uses advised against None identified
- 1.3 Details of the supplier of the safety data sheet**
Company Identification INEOS Enterprises Limited
Runcorn Site HQ
South Parade, PO Box 9
Runcorn, Cheshire, WA7 4JE
Tel : (01928) 561111, Fax : (01928) 516632
E-Mail (competent person) msds.enterprises@ineos.com
- 1.4 Emergency telephone number**
IN AN EMERGENCY DIAL 999 (UK only) or 112 (EU)
For specialist advice in an emergency telephone +44 (0) 208 762 8322 (CARECHEM24)

2. HAZARDS IDENTIFICATION

- 2.1 Classification of the substance or mixture**
Directive 67/548/EEC & Directive 1999/45/EC F : R11: Highly flammable.
Regulation (EC) No. 1272/2008 (CLP) Flam. Liq 2
Eye Irrit. 2

- 2.2 Label elements**
Hazard Statements H225: Highly flammable liquid and vapour.
H319: Causes serious eye irritation.

Signal word(s) DANGER

Hazard pictogram(s)

**Precautionary statement(s)**

P210: Keep away from heat, sparks, open flame, hot surfaces - No smoking
P243: Take precautionary measures against static discharge.
P264: Wash (hands and exposed skin) thoroughly after handling.
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.
P403 + P235: Store in a well-ventilated place. Keep cool.

Additional label requirements

None

- 2.3 Other hazards**
Not classified as PBT or vPvB.

Specific concentration limits for eye irritancy (H319): According to the available data, a specific concentration limit of 50% can be applied to the classification of mixtures containing this substance for this end point.

3. COMPOSITION/INFORMATION ON INGREDIENTS**3.1 Substances**

Hazardous ingredient(s)	%(w/w)	CAS No.	EC No.	H - Codes
Ethanol	100	000064-17-5	200-578-6	H225, H319

4. FIRST AID MEASURES**4.1 Description of first aid measures**

Inhalation	Remove patient from exposure, keep warm and at rest. Obtain medical attention if ill effects occur.
Skin Contact	Remove contaminated clothing. Wash skin with water. If symptoms (irritation) occurs obtain medical attention.
Eye Contact	Irrigate with eyewash solution or clean water, holding the eyelids apart, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Obtain medical attention.
Ingestion	Do not induce vomiting. Obtain medical attention if ill effects occur.

4.2 Most important symptoms and effects, both acute and delayed

Liquid or vapour may cause eye irritation. Repeated and/or prolonged contact may cause slight skin irritation. Swallowing may have the following effects: central nervous system depression, nausea / vomiting, symptoms similar to alcohol intoxication. High concentrations of vapour may be irritant to the respiratory tract. May cause headache and nausea.

4.3 Indication of the immediate medical attention and special treatment needed

Treat symptomatically.

5. FIRE-FIGHTING MEASURES**5.1 Extinguishing media**

Suitable Extinguishing Media Water fog, polar resistant foam, dry powder or carbon dioxide extinguishant. Water spray should be used to cool containers and to protect surrounding equipment and buildings.

Unsuitable Extinguishing Media Do not use water jet.

5.2 Special hazards arising from the substance or mixture

Highly flammable liquid and vapour. Can form explosive mixture with air. Vapour may cause flash fire. May re-ignite itself after fire is extinguished. Containers may explode if overheated.

5.3 Advice for fire-fighters

A self contained breathing apparatus and full protective clothing should be worn in fire conditions.

6. ACCIDENTAL RELEASE MEASURES**6.1 Personal precautions, protective equipment and emergency procedures**

Eliminate sources of ignition. Provided it is safe to do so, isolate the source of the leak. Keep unnecessary personnel away. Evacuate if necessary. Avoid breathing vapours. Keep upwind. Keep out of low areas where vapour may accumulate and ignite. Ensure full personal protection (including respiratory protection) during removal of spillages in a confined area.

6.2 Environmental precautions

Provide bunding to hold 110% of the largest container's volume. Keep away from fire, sparks and heated surfaces - no smoking. Do not allow to enter drains, sewers or watercourses.

6.3 Methods and material for containment and cleaning up

Use only non-sparking tools. Do not use electrical equipment unless it is intrinsically safe.

Small spillages:

Contain spillages with sand, earth or any suitable adsorbent material. Transfer to a container for disposal or recovery. Allow small spillages to evaporate provided there is adequate ventilation.

Large spillages:

Immediately contact emergency personnel. Earth may be shovelled to contain spillage and to avoid contamination of sewers and watercourses.

6.4 Reference to other sections

See Section: 8, 13

6.5 Additional information

None

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Wherever possible should be handled in high containment systems. Do not breathe vapour/spray. Avoid contact with eyes, skin and clothing. Do not eat, drink or smoke at the work place. Earth (ground) lines and equipment used. Use non-sparking ventilation systems, approved explosion-proof equipment, and intrinsically safe electrical systems. Suitable equipment for dealing with fires, spills and leaks must be readily available.

7.2 Conditions for safe storage, including any incompatibilities

Keep container tightly closed. Keep in a cool, well ventilated place. Store in a segregated and approved area. Keep only in the original container. Keep away from heat, sources of ignition and direct sunlight. Keep containers properly sealed when not in use. Provide bunding to hold 110% of the largest container's volume. To avoid fire or explosion, dissipate static electricity during transfer by earthing and bonding containers and equipment before transferring material. Keep away from oxidising agents , strong mineral acids

Incompatible materials: natural rubber, PVC, methyl-methacrylate plastics, polyamides, zinc, brass, aluminium under certain conditions.

Compatible materials: stainless steel, titanium, cast bronze, cast iron, carbon steel, polypropylene, neoprene, nylon, Viton, ceramic, carbon, glass

7.3 Specific end use(s)

None anticipated

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control Parameters

Atmospheric levels should be controlled in compliance with the occupational exposure limit. Do not breathe vapour/spray. Avoid contact with skin and eyes. Wash hands and exposed skin after use.

Environmental exposure controls: Ethanol is classed as a VOC under Solvent Emissions directive 99/13. Abatement control measures such as incineration or solvent recovery should be used in combination with fugitive emission controls to ensure compliance with this directive.

HAZARDOUS INGREDIENT(S)	CAS No.	LTEL 8 hr TWA ppm	LTEL 8 hr TWA mg/m3	STEL ppm	STEL mg/m3	Note:
Ethanol	000064-17-5	1000	1920	-	-	WEL

DNEL	oral	Inhalation	Dermal
Industry - Long Term - Local effects	-	-	-
Industry - Long Term - Systemic effects	-	950 mg/m ³	343 mg/kg bw/d
Industry - Short term - Local effects	-	1900 mg/m ³	-
Industry - Short term - Systemic effects	-	-	-
Consumer. - Long Term - Local effects	-	-	-
Consumer. - Long Term - Systemic effects	87 mg/kg bw/d	114 mg/m ³	206 mg/kg bw/d
Consumer. - Short term - Local effects	-	950 mg/m ³	-
Consumer. - Short term - Systemic effects	-	-	-

Environment	PNEC
Aquatic Compartment (including sediment)	0.96 mg/l (Fresh water) 0.79 mg/l (Marine water) 2.75 mg/l Intermittent releases 3.6 mg/kg Sediment dw (Fresh water) 2.9 mg/kg Sediment dw (Marine water) 580 mg/l sewage treatment plant
Terrestrial Compartment	0.63 mg/kg dw (Soil)
Atmospheric Compartment	-

8.2 Exposure controls*Appropriate engineering controls*

Provide adequate ventilation when using the material and follow the principles of good occupational hygiene to control personal exposures.

Personal Protection

Eyeface protection	If splashing is likely: Wear protective eyewear (goggles, face shield, or safety glasses).
Skin protection	Wear suitable protective clothing and gloves. The following materials are suitable for protective gloves (permeation time \geq 8 hours): Butyl rubber (0.5 mm), Fluorocarbon rubber (0.4 mm), Check with protective equipment manufacturer's data. Gloves should be changed if excessive exposure has occurred.
Respiratory protection	Wear suitable respiratory protective equipment if exposure to levels above the occupational exposure limit is likely. Where a cartridge/canister respirator is suitable use: Type A

9. PHYSICAL AND CHEMICAL PROPERTIES**9.1 Information on basic physical and chemical properties**

Molecular weight:	46.07
Form	liquid
Colour	colourless
Odour	alcohol-like
Odour Threshold (ppm)	84 approx
Boiling Point (Deg C)	78 Deg C
Flash Point (Deg C)	12.77 Deg C
Flammable Limits (Lower) (%v/v)	3.3
Flammable Limits (Upper) (%v/v)	19
Auto Ignition Temperature (Deg C)	363
Vapour Pressure (Pascals)	5726 at 20 Deg C
Density (g/ml)	0.789 at 20 Deg C
Solubility (Water)	soluble in all proportions
Solubility (Other)	Miscible with most organic solvents.
Partition Coefficient (n-Octanol/water)	-0.35 at 20 Deg C
Vapour Density (Air= 1)	1.59

9.2 Other information**10. STABILITY AND REACTIVITY****10.1 Reactivity**

Can react violently if in contact with - Strong oxidising agents

10.2 Chemical Stability

Stable under normal conditions.

10.3 Possibility of hazardous reactions

Avoid contact with: oxidising agents , strong mineral acids

10.4 Conditions to avoid

Keep away from heat, sources of ignition and direct sunlight.

10.5 Incompatible materials

Aluminium at elevated temperatures, strong mineral acids oxidising agents

10.6 Hazardous Decomposition Product(s)

Oxides of carbon

11. TOXICOLOGICAL INFORMATION**11.1 Information on toxicological effects***Test result / data***Acute oral toxicity**

LD50 (rat, oral) 6.2 - 15 g/kg bw
 Value used for Chemical Safety Assessment 10.47 g/kg bw
 May cause headache, fatigue, dizziness, incoordination and loss of consciousness.

Acute inhalation toxicity	Inhalation, (LC50 Rat) (4 hrs) >50 mg/l When inhaled at concentrations above the occupational exposure limit, it may cause headache, fatigue, drowsiness, dizziness, nausea, incoordination and loss of consciousness.
Acute dermal toxicity	Anticipated to have low dermal toxicity Value used for Chemical Safety Assessment LD50 (rat, dermal) 15.8 g/kg
Skin irritation.	Slight/mild irritant. Repeated and/or prolonged contact may cause slight skin irritation.
Serious eye damage/irritation	The vapour and liquid are irritant to eyes. May cause strong stinging sensation. May cause conjunctivitis. May cause transient corneal damage. Permanent damage is unlikely.
Respiratory irritation	High concentrations of vapour may be irritant to the respiratory tract.
Sensitisation	It is not a skin sensitiser in animal tests. Respiratory system : No data.
Germ cell mutagenicity	There is some evidence from in-vitro and in-vivo studies that ethanol causes either genotoxic or clastogenic effects. However, the effects are weak and only occur at very high doses. The evidence is insufficient to conclude that ethanol is mutagenic.
Carcinogenicity	There is evidence from animal studies that repeated ingestion of high concentrations of ethanol in drinking water results in an increase in some tumours. In humans, the consumption of alcoholic beverages is associated with an increased incidence of various tumours (IARC 2007). There is no evidence that the inhalation of ethanol will result in an increase in cancer incidence.
Reproductive toxicity	Adverse effects on the male reproductive system have been reported in laboratory animals following repeated exposure at high levels. A study in animals has shown that high doses produce adverse development effects in offspring in the presence of maternal toxicity. In humans excessive consumption of alcoholic beverages during pregnancy is associated with the induction of Fetal Alcohol Syndrome in the offspring. Reduced birth weight and physical and mental defects occur. In humans, excessive consumption of alcoholic beverages has been associated with adverse effects on male fertility. There is no evidence that such effects might be caused by exposures to ethanol other than by the direct ingestion of alcoholic drinks.
Specific target organ toxicity — single exposure (STOT SE)	Not classified
Specific target organ toxicity — repeated exposure (STOT RE)	Not classified. The liver and kidneys are the most sensitive organs. NOAELs ranged from 1.73g/kg to 3.9g/kg insubchronic feeding or drinking water studies in rats. Effects are only seen at doses well above the levels that would require classification.
Aspiration hazard	Based on animal evidence and its physical properties, ethanol can be aspirated into the lungs during ingestion or vomiting. Aspiration can cause potentially fatal injury to the lungs.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Low toxicity to aquatic organisms.

Acute aquatic toxicity

LC50 (96 hour) (Fish) Fresh water >10 g/l

EC50 (48 hour) (Aquatic invertebrates:) Daphnia magna Fresh water 12.34 g/l

EC50 (48 hour) (Aquatic invertebrates:) Marine water 0.857 g/l

12.2 Persistence and degradability

Liquid with high volatility. Readily biodegradable. The product is soluble in water.

Anticipated to be readily biodegraded in sewage treatment plants. Atmospheric lifetime (Half-life time in air) 38 d

12.3 Bioaccumulative potential

The product has low potential for bioaccumulation.

12.4 Mobility in soil

Will evaporate quickly. The product is poorly absorbed onto soils or sediments.

12.5 Results of PBT and vPvB assessment

Not classified as PBT or vPvB.

12.6 Other adverse effects

None

13. DISPOSAL CONSIDERATIONS**13.1 Waste treatment methods**

Recover or recycle if possible. Disposal should be in accordance with local, state or national legislation. Transfer solvent residues to a labelled, sealed container for disposal or recovery. Waste disposal must be by an accredited contractor. Large volumes may be suitable for redistillation by solvent recovery contractors. Solvent residues must not be allowed to enter drains, sewers or watercourses or to contaminate the ground.

13.2 Additional information

Empty containers must be treated with care due to the presence of product residues and recycled or disposed of properly. Containers must not be punctured or destroyed by burning, even when empty.

14. TRANSPORT INFORMATION**14.1 Road/Rail**

UN No.	1170
Proper Shipping Name	ETHANOL
ADR/RID Class	3
Packing Group	II
Label.	3
Tunnel Restriction Code	(D/E)

14.2 SEA (IMDG)

UN No.	1170
Proper Shipping Name	ETHANOL
IMDG Class	3
Packing Group	II
Label.	3
Marine Pollutant	Not classified as a Marine Pollutant.

14.3 Air (ICAO/IATA)

UN No.	1170
Proper Shipping Name	ETHANOL
ICAO-TI Class	3
Packing Group	II
Label.	3

14.4 Additional Information

None

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

Control of Substances Hazardous to Health Regulations (COSHH) 2002 SI 2002/2677 and COSHH Essentials: Easy steps to control chemicals - Control of Substances Hazardous to Health Regulations HSG193.

Wassergefährdungsklasse (Germany) WGK class 1 (official).

Inventory Status

Listed in: Australia (AICS), United States (TSCA), Philippines (PICCS), New Zealand Inventory (NZIoC), Japan (ENCS), Switzerland, South Korea (KECI), Canada (DSL/NDL), China (IECSC), European Union (EINECS/ELINCS)

15.2 Chemical Safety Assessment

A Chemical Safety Assessment (CSA) has been completed for this substance.

16. OTHER INFORMATION**Indication of changes**

All sections revised according to CLP/GHS requirements.

LEGEND

WEL : Workplace Exposure Limit (UK HSE EH40)

COM : The company aims to control exposure in its workplace to this limit

TLV : The company aims to control exposure in its workplace to the ACGIH limit

TLV-C: The company aims to control exposure in its workplace to the ACGIH Ceiling limit

MAK : The company aims to control exposure in its workplace to the German limit

Sk : Can be absorbed through skin

Sen : Capable of causing respiratory sensitisation

Bmgv : Biological monitoring guidance value (UK HSE EH40)

ILV : Indicative Limit Value (UK HSE EH40)

IOELV : Indicative Occupational Exposure Limit Value

PBT Persistent, Bioaccumulative and Toxic

vPvB very Persistent very Bioaccumulative

Key literature references

Chemical Safety Report: Ethanol 05/2010

GESTIS -database on hazardous substances

Further information

Information in this publication is believed to be accurate and is given in good faith, but it is for the Customer to satisfy itself of the suitability for its own particular purpose. Accordingly, INEOS Enterprises Limited gives no warranty as to the fitness of the Product for any particular purpose and any implied warranty or condition (statutory or otherwise) is excluded except to the extent that such exclusion is prevented by law. Freedom under Patent, Copyright and Designs cannot be assumed.

INEOS™ is a trade mark, the property of INEOS Capital Limited.