

## PRODUCT DATA SHEET

(This booklet incorporates the Specification and M.S.D.S.)

<b>PRODUCT</b>	<b>ETHANOL IDA GRADES (Industrial Denatured Alcohol)</b>
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CAS NO.	8013-52-3
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TARIFF NO.	220720000
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U.N NO.	3-2/1170
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EINECS NO.	
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IMCO CLASS	3-2 HARMFUL
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HAZARDS	HIGHLY FLAMMABLE POSSIBLE RISK OF IRREVERSIBLE EFFECTS
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SPECIFICATION REFERENCE	IMS 3	DATE MAY 02
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REFERENCE NO.	IDA/1	DATE NOV 05
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PREVIOUS EDITION.	IMS/5	DATE AUG 03
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Product Name		Ethanol IDA Grades						
Alternative Name		Industrial Denatured Alcohol						
Product Grade								
Parameter	Units	Value	IDA 94	IDA 95	IDA 96	IDA 99	IDA 100	Test Method
Alcohol Content	% volume at 20°C	93.8 max 93.4 min	95.1 max	94.7 min	96.1 max	99.5 max	100 max	OIML
Water Content	% mass	9.8 max	8.0 max	6.6 max	1.43 max	0.5 max		BS 2511
Acidity	% mass as acetic acid (fixed)	0.003 max	0.003 max	0.003 max	0.003 max	0.003 max		B P Method
Total Carbonyls	% mass as acetaldehyde	0.1 max	0.1 max	0.1 max	0.1 max	0.1 max		BS 6392/3 ISO 1388/4
Appearance		Clear, colourless free from suspended matter	Clear Colourless free from suspended matter	Clear Colourless free from suspended matter	Clear Colourless free from suspended matter	Clear colourless free from suspended matter	Clear colourless free from suspended matter	BP Method
Colour	Hazen	20 max	20 max	20 max	20 max	20 max		B P Method
Miscibility With Water		Complete	Complete	Complete	Complete	Complete		BS6392/9 ISO 1388/2
Residue On Evaporation	% mass	0.010 max	0.010 max	0.010 max	0.010 max	0.010 max	0.010 max	BS 4524 ISO 759
PROPERTY	CONDITIONS	UNIT	VALUE					
Molecular mass			46.07					
Density	20°C	kg/litre (vacuo)	0.7894					
Coefficient of Cubical expansion	20°C	per °C	1.08 x 10 <sup>-3</sup>					
Litres per Tonne	20°C	litres/T (in air)	1268.6					
Melting point		°C	-112.3					
Boiling point	1.013 bar	°C	78.32					
Change in boiling point	1.013 bar	°C/mbar	0.025					
Vapour pressure	20°C	m/bar	58.1					
Flammable limits								
	Upper	20°C	% volume 19.0					
	Lower	20°C	% volume 3.5					
Flash point	Abel closed cup	°C	12					
Auto ignition temperature		°C	365					
Specific heat (liquid)	20°C	kJ/kg°C	2.399					
Specific heat (vapour)	90°C	kJ/kg°C	1.70					
Latent heat								
	(of fusion)		kJ/kg 104.3					
	(of vaporisation)	78.3°C	kJ/kg 855.4					
Heat of combustion	20°C	Mj/kg	30.15					
Critical temperature		°C	240.77					
Critical pressure		bar	64					
Critical volume		m <sup>3</sup> /kg mole	0.1669					
Volume Resistivity	25°C	ohm.m	7.0 x 10 <sup>3</sup>					
Thermal Conductivity	20°C	mW/m.°C	167.26					
Dielectric constant	°C		25.7					
Refractive index	20°C	n <sup>20</sup> <sub>D</sub>	1.3614					
Absolute viscosity	20°C	cP	1.22					
Solubility in water	20°C	g/kg	Complete					
water in solvent	20°C	g/kg	Complete					
Evaporation rate	20°C		3.4					
Relative to n-BuAc = 1								

NOTES

Tennants ETHANOL IMS grades comply with the following regulations/standards:  
Methylated Spirits Regulations S12009, 1987  
BS 3591 1985 "Industrial Methylated Spirits"

**Exclusion of Liability**

Information contained in this publication is accurate to the best of the knowledge and belief of Tennants.

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**Health and Safety**

A Material Safety Data Sheet has been issued describing the health, safety and environmental properties of this product, identifying the potential hazards and giving advice on the handling precautions and emergency procedures. This must be consulted fully before handling, storage and use.

## SAFETY DATA SHEET

### 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND COMPANY

PRODUCT:	ETHANOL IDA GRADES	
COMPANY:	TENNANTS DISTRIBUTION LIMITED	
	Hazelbottom Road	Botany Way
	Cheetham	Purfleet
	Manchester	Essex
	M8 0GR	RM19 1SN
	Tel No. 44(0)161 205 4454	Tel No. 44(0)1708 860075
	Fax No. 44(0)161 203 4298	Tel No. 44(0)1708 860074
	Emergency Tel No.	01865 407333

### 2. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Formulae	
Chemical Family Name	Non specified preparation
CAS No.	8013-52-3
EINECS No.	
Information on composition	Contains methanol (R23/24/25, R39/23/24/25) at levels between 3 and 5% mass

### 3. HAZARDS IDENTIFICATION

Main Hazards	Highly flammable. Harmful by inhalation, in contact with skin and if swallowed. Harmful: possible risk or irreversible effects through inhalation, in contact with skin and if swallowed.
Health Effects - Eyes	Liquid may cause conjunctival irritation and transient corneal damage.
Health Effects - Skin	Liquid may be absorbed through the skin but not in toxicologically significant amounts, unless the area or contact is large and exposure prolonged. Unlikely to cause appreciable irritation even on repeated contact
Health Effects - Ingestion	Swallowing may have the following effects: central nervous system depression, nausea, vomiting, loss of co-ordination, temporary or permanent blindness, coma and death.
Health Effects - Inhalation	Exposure to vapour may have the following effects: headache. Exposure to vapour at concentrations of 1000ppm and above may have the following effects: irritation of nose, throat and respiratory tract, central nervous system depression, systemic effects similar to those resulting from ingestion.

### 4. FIRST AID MEASURES

First Aid - Eyes	Immediately flood the eye with plenty of water for at least 10 minutes, holding the eye open. Avoid contaminating unaffected eye. Obtain medical attention if soreness or redness persists
First Aid - Skin	Immediately wash skin thoroughly with soap and water. Remove contaminated clothing as washing proceeds. Get medical attention urgently if large areas of skin exposed. If symptoms of poisoning develop, treat as for inhalation.
First Aid - Ingestion:	Wash out mouth with water. Do not induce vomiting. Have victim drink 240-300ml of water. If vomiting occurs naturally, rinse mouth and repeat administration of water. Never administer anything by mouth if a victim is losing consciousness, is unconscious or is convulsing. If there is difficulty breathing give oxygen, but only under strict medical supervision. If breathing stops or shows signs of failing, apply artificial respiration. If heartbeat absent, give external cardiac compression. Obtain medical attention.
First Aid - Inhalation	Remove from exposure. Keep warm and at rest. If there is difficulty in breathing give oxygen, but only under strict medical supervision. If breathing stops or shows signs of failing, apply artificial respiration. If heartbeat absent, give external cardiac compression. Obtain medical attention.
Advice To Physicians	Treat symptomatically

### 5. FIRE FIGHTING MEASURES

Extinguishing Media	Use water spray, fog or alcohol resistant foam. Keep containers and surroundings cool with water spray.
Unsuitable Extinguishing Media	Do not use water jet.
Special Hazards of Product	Be aware of possible re-ignition. Vapours can travel a considerable distance to a source of ignition and flashback. This product gives off flammable vapours which may form explosive mixtures with air. Containers may explode in heat of

Protective Equipment for Fire Fighting	fire. Wear self-contained breathing apparatus.
<b>6. ACCIDENTAL RELEASE MEASURES</b>	
Personal Precautions:	Wear appropriate protective clothing. Wear respiratory protection. Consider need for evacuation. Eliminate all sources of ignition. Vapours can accumulate in low areas. Ventilate contaminated area thoroughly. Vapour may form an explosive mixture with air.
Environmental Precautions:	Prevent spread of material by use of temporary bund or impervious barrier. Try to prevent the material from entering drains or water courses. Advise Authorities if spillage has entered water course or sewer or has contaminated soil or vegetation.
Spillage	Allow to evaporate if safe to do so or contain and absorb using earth, sand or other inert material. Transfer into suitable containers for recovery or disposal. Finally flush area with plenty of water. Spillages will create a fire hazard.
<b>7. HANDLING AND STORAGE</b>	
Handling	Use in well ventilated area. Avoid inhaling vapour. Avoid contact with eyes, skin and clothing. Remove ignition sources. Avoid sparks. Do not smoke. Keep container tightly closed when not in use. Vessels should preferably be bottom filled. Where top filling has to be carried out, the filling arrangement should exclude, as far as possible, the possibility of splashing. Suitable equipment for dealing with fires, spills and leaks must be readily available.
Storage	Storage area should be: dry, well ventilated. Store away from sources of heat or ignition, away from incompatible materials. Storage and transfer equipment should be adequately earthed and bonded to prevent the accumulation of static charges. Storage tanks must be positioned within a bunded area. Electrical equipment should be flameproof or dust-tight according to local circumstances. Suitable storage materials are: mild steel, stainless steel, copper and its alloys, glass. Do not store in: aluminium and its alloys. For gaskets and seals use: compressed asbestos, butyl rubber, PTFE
<b>8. EXPOSURE CONTROLS/PERSONAL PROTECTION</b>	
Occupational Exposure Limits	Data for ethanol given below UK EH40: OES 1000ppm (1920 mg/m <sup>3</sup> ) 8 h TWA Data for methanol given below UK EH40: OES 200ppm (266 mg/m <sup>3</sup> ) 8h TWA. UK EH40: OES 250 ppm (333mg/m <sup>3</sup> ) 15 min TWA. Can be absorbed through skin.
Eye Protection	Chemical goggles or face shield
Skin Protection	For maximum resistance. Butyl rubber gloves. Splash resistance only: Nitrile rubber gloves. Polychloroprene (Neoprene™)
Respiratory Protection	Respiratory protection if there is a risk of exposure to high vapour concentrations.
Engineering Control Measures	Exposure to this material may be controlled in a number of ways. The measures appropriate for a particular work-site depend on how the material is used and on the potential for exposure. Use of the basic principles of Industrial Hygiene will enable this material to be used safely. Engineering methods to prevent or control exposure are preferred. Methods include process or personnel enclosure, mechanical ventilation (dilution and local exhaust) and control of process conditions. Administrative controls and personal protective equipment may also be required. If engineering controls and work practices are not effective in preventing or controlling exposure, then suitable personal protective equipment, which is known to perform satisfactorily, should be used. There should be local procedures for the selection, training, inspection and maintenance of this equipment.
<b>9. PHYSICAL AND CHEMICAL PROPERTIES</b>	
Physical State	Liquid
Colour	Colourless
Odour	Alcoholic
Boiling Range/Point (°C)	77-78
Melting Point (°C)	-114
Flash Point (PMCC) (°C)	13
Explosion Limits (%)	Lower limit 3.3 Upper limit 19
Partition Coefficient (Log Pow)	-0.32 ethanol

Vapour Pressure (kPa)	5.81 at 20°C.
Density (kg/m <sup>3</sup> )	789 at 20°C
Auto-flammability	Classified as "Highly Flammable" in the EEC
Viscosity (cSt)	1.52 at 20°C
Relative Vapour Density (Air = 1)	1.57
Evaporation Rate	3.4 (referenced as n-butyl acetate = 1)

## 10. STABILITY AND REACTIVITY

Stability	Stable under normal conditions.
Conditions to Avoid	High temperatures. Sources of ignition.
Materials to Avoid	Oxidising agents, sulphuric acid, nitric acid
Hazardous Decomposition Products	Combustion will generate: oxides of carbon

## 11. TOXICOLOGICAL INFORMATION

Acute Toxicity	This product contains components that are harmful by the following route of exposure: inhalation, ingestion, skin contact.
Irritancy - Eyes	Available data indicates that this material does not warrant labelling as an eye irritant.
Irritancy - Skin	Data available for a related material suggests that this product is unlikely to be irritating to the skin.
Skin Sensitisation	No known reports of skin sensitisation.
Sub-acute/Subchronic Toxicity	Data for Ethanol given below. Treatment related changes have been observed in laboratory animals after repeated inhalation exposure to closely related material. Adverse effects were seen in the following species: rats, rabbits. The following tissues were affected: liver.
Chronic Toxicity/Carcinogenicity	No convincing evidence of such effects.
Genotoxicity	Data for Ethanol given below. The product has been tested in a number of bacterial and mammalian systems. The product did not exhibit mutagenic activity in the following systems (with and without metabolic activation): <i>Drosophila</i> , <i>Salmonella typhimurium</i> , Human lymphocytes in vitro. The product did not induce micronuclei in mouse bone marrow in vitro. Chromosomal changes have been reported in the following species of laboratory animal: rats, mice. Overall no consistent mutagenic activity has been reported.
Reproductive./Development Toxicity	Data for the ethanol given below. Adverse effects on the male reproductive system have been reported in laboratory animals following repeated exposure. Developmental effects have been observed in laboratory animals.
Human Data	In humans excessive consumption of alcoholic beverages during pregnancy is associated with the induction of Foetal Alcohol Syndrome in the offspring. Reduced birth weight and physical and mental defects occur. There is no evidence that such effects might be caused by exposures other than direct ingestion of alcoholic drinks.

## 12. ECOLOGICAL INFORMATION

Mobility	The product will partition to the aqueous phase. If released to air it will disperse rapidly. The product will dissolve rapidly in water. If released to soil it will evaporate at a rapid rate. The product is poorly absorbed onto soils or sediments.
Degradability	The product is expected to be readily biodegradable. Considered by the United Nations as "less important" in the formation of episodic zone.
Bio-accumulation	Data for a closely related material suggest that it is unlikely to bioaccumulate.
Environmental Hazard	Data for Ethanol given below. Tests on the following species gave a 24h LC50 of 9000mg/litre: <i>daphnia</i> . Toxicity threshold concentration (cell multiplication inhibition test) 5000 mg/litre: algae. Bacterial inhibition tests show that the material is not inhibitory to biomass.

## 13. DISPOSAL CONSIDERATIONS

Product Disposal	Incineration is the recommended method of disposal. Dispose of in accordance with all applicable local and national regulations. If correctly incinerated this material will decompose to carbon dioxide and water only. Use an approved disposal company.
Container Disposal	Labels should not be removed from containers until they have been cleaned. Do not cut, puncture or weld on or near to the container. Containers should be cleaned by appropriate methods and then re-used or disposed of by landfill or incineration as appropriate. Do not incinerate closed containers.

**14. TRANSPORT INFORMATION**

UK Transport Information	UK Transport Emergency Action Code: 2(Y)E
	UK Transport - Class: 3
	UK Transport - Designation: See proper shipping name
UN No.	1170
Proper Shipping Name	Ethanol
Packaging Group	II
ADR/RID Substance Identification No.	1170
ADR/RID - Class	3
ADR/RID - Item No.	3(b)
ADR/RID - Hazard Identification No.	33
IMDG - Class	3.2
IMDG - Marine Pollutant	No
IMDG - Ems No.	3-06
IMDG - MFAG Table Number	305
IATA - Class	3
Tremcard No. TEC(R)	32

**15. REGULATORY INFORMATION**

Labelling Information	
Health	Harmful
Physico-Chemical Properties	Highly Flammable
Environment	Not classified
R phrases	R11: Highly flammable R20/21/22: Harmful by inhalation, in contact with skin and if swallowed R68/20/21/22: Harmful: Possible risk of irreversible effects through inhalation, in contact with skin and if swallowed
S phrases	S1/2: Keep locked up and out of reach of children. S7: Keep container tightly closed. S16: Keep away from sources of ignition - No Smoking. S36/37: Wear suitable protective clothing and gloves. S45: In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
EC Annex 1 Classification	Not classified

**16. OTHER INFORMATION**

*Distillation Range @ 1.013 bar	
Initial Boiling Point (IBP)	76.5
Dry Point (DP)	78.5
The product has been renamed to reflect Denatured Alcohol Regulations	
Revision Date: 08/11/05	