



MATERIAL SAFETY DATA SHEET

MAY 82

ETHANOL

PRODUCT NAME:	ETHANOL		
CHEMICAL NAME:	Ethyl alcohol		
FORMULA:	C ₂ H ₅ OH	MOLECULAR WEIGHT:	46.08
CAS REGISTRY No.	64-17-5	ACQIN	Ref Pg 62
RTECS ACCESSION No.	KQ6300000		
SYNONYMS:	Methylated spirits, denatured alcohol, SVR, SVI, SVM. Absolute alcohol		
HAZARD CLASSIFICATION:	Dangerous goods, flammable liquid		

PHYSICAL DATA

APPEARANCE AND ODOUR	Clear colourless liquid, characteristic odour, burning taste		
BOILING POINT	78.3°C	MELTING POINT:	- 117.3°C
VAPOUR PRESURE	58.1 mbar : 20°C	SPECIFIC GRAVITY (H ₂ O = 1) : 20°C	0.7904
VAPOUR DENSITY (AIR = 1)	1.59	PERCENT VOLATILE BY VOLUME (%)	100%
SOLUBILITY IN WATER	Complete	EVAPORATION RATE (n-butyl acetate = 100)	253

INTERNATIONAL MARITIME DANGEROUS GOOD CODE (IMDG Code) Amendment 20-82

SUBSTANCE	IMDG CODE PAGE	UN NO	CLASS	PACK- AGING GROUP	SUBSID- IARY RISK LABEL(S)	EMS NO	MFAG TABLE NO
Ethanol or Solutions	3074	1170	3.2	11/111	—	3.06	305

FIRE AND EXPLOSION HAZARD DATA

FLASH POINT [test method(s)]	13°C: (Abel closed cup)	Class: III 3.1 UN No. 1170
FLAMMABLE LIMITS IN AIR, % by volume 20°C	Lower; 3.5%	Upper; 19.0%
EXTINGUISHING MEDIA	Use water, dry chemical, carbon dioxide (CO ₂), BCF, or alcohol stable foam	
SPECIAL FIRE FIGHTING PROCEDURES	Use water to cool exposed containers Spills and leaks may be washed with copious volumes of water, fog or spray Completely miscible	
UNUSUAL FIRE AND EXPLOSION HAZARDS	• burns with a colourless flame • the vapour is heavier than air and may travel along the ground; distant ignition possible • the use of compressed air for filling, discharging, mixing or handling is not recommended due to the vapour hazard • all vessels must be earthed to avoid generation of static charges when agitating or transferring solvents • containers previously holding ethanol products must be degassed before entry or subjected to sources of ignition, refer AS 1940 — Pgs 32, 33	

REACTIVITY DATA

STABILITY Stable	CONDITIONS TO AVOID Exposure to heat and flame
INCOMPATIBILITY (Materials to avoid)	Oxidising agents Aluminium containers should be avoided as aluminium alcoholates may be formed under certain conditions
HAZARDOUS DECOMPOSITION PRODUCTS	Burning can produce carbon dioxide and/or carbon monoxide
HAZARDOUS POLYMERIZATION Will not occur	CONDITIONS TO AVOID —

HEALTH HAZARD DATA

GENERAL	Ethanol is generally regarded as one of the safest industrial solvents. Although it possesses narcotic properties, vapour concentrations sufficient to produce this effect are rarely, if ever, reached in industry. The systemic effect of ethanol differs from that of methanol in that ethanol (in low dosages) is rapidly oxidised in the body to carbon dioxide and water and in contrast to methanol, it does not cause immediate and permanent (ie cumulative) damage to the central (optic) nervous systems The use of ethanol is controlled by the Bureau of Customs and for almost all industrial applications, it is required to be denatured (or methylated) by the addition of approved substances. Such methylation renders the alcohol unfit for potable purposes and details of the denaturants will be provided on request. For material safety purposes, the data given here for ethanol applies equally to methylated spirit
THRESHOLD VALUE	TLV — 1000 ppm (1,900 mg/m ³) (NH and MRC 1980)
EFFECTS OF ABSORPTION	• absorbed into the body by inhalation and ingestion • irritant of sensitive tissues, eg eyes and mucous membranes • excessive acute absorption may cause central nervous system depression • excessive chronic absorption may result in liver injury • excessive ingestions can lead to alcoholism.
EYE (CONTACT)	May injure tissue; moderately irritating causing redness
SKIN (CONTACT)	Moderately irritating to skin; may cause redness. Repeated or prolonged contact may lead to dermatitis.
INHALATION (BREATHING)	Moderately irritating to respiratory tract and mucous membranes. Chronic exposure to the vapour may result in headache and symptoms of central nervous system depression. Nasal and eye irritation usually occur at concentrations in air well below the TLV.
INGESTION (SWALLOWING)	Headache, dizziness, dullness, gastric disorders and symptoms of central nervous system depression

TABLE A
Flash Points and Specific Gravity of Ethanol/Water Mixtures

Composition (Vol % @ 20° C)		Concentration Ethanol WT %	Specific Gravity @ 20° C	Flash Point (° C)	
Ethanol *	Water *			Tag Open Cup	Tag Closed Cup
10	91	8.0	0.9865	66	49
20	82	16.2	0.9753	43	38
30	73	24.6	0.9640	36	32
40	63	33.3	0.9498	31	28
50	54	42.4	0.9318	28	26
60	44	52.1	0.9107	26	23
70	33	62.4	0.8870	24	21
80	23	73.5	0.8607	22	18
90	12	85.7	0.8306	20	17
95	6	92.4	0.8127	19	15
100	0	100.0	0.7904	16	13

* Composition by volume % of ethanol and water add to more than 100
due to contraction of alcohol / water system on dilution.

NOTES

Further information may be obtained from regional sales offices:

**FOR: NSW, QUEENSLAND,
NORTHERN TERRITORY,
PACIFIC ISLANDS
AND EXPORT**

SYDNEY: CSR Limited, Pyrmont Distillery
1 Jones Street
PYRMONT NSW 2009
Telex: AA127016
Fax: (02) 552 1510
Phone: (02) 692 7631
(02) 692 7634

**FOR: VICTORIA, SOUTH AUSTRALIA,
WESTERN AUSTRALIA,
TASMANIA AND
RIVERINA**

Melbourne: (03) 689 5244

or write: CSR Limited
Distilleries Group
PO Box 183
YARRAVILLE, Vic. 3013
Telex: AA139644

All information given by CSR Limited, Distilleries Group is offered in good faith and is to be the best of our knowledge true and accurate. However, since conditions of use are beyond our control, all information relevant to usage is offered without warranty or guarantee, and should not be construed as a recommendation to use any of our products in violation of any patent rights or in breach of any provisions of any Act or Regulation, Federal or State.

In particular, the information contained herein should not be construed as a representation that the product is suitable for any particular purpose or application.

FIRST AID

EYE (CONTACT)	Irrigate with water for ten (10) minutes. Seek medical attention promptly
SKIN (CONTACT)	Wash with water. Remove affected clothing
INHALATION (BREATHING)	Remove to fresh air, rest patient and seek medical advice if necessary. Give artificial respiration if breathing stops
INGESTION (SWALLOWING)	Give plenty of water to drink; induce emesis (vomiting) in conscious person by giving syrup of Ipecac. Seek medical advice if necessary

SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	• eliminate all sources of ignition • contain spill for salvage or absorb in inert absorbent material • wash with copious volumes of water; completely miscible • ventilate area well
WASTE DISPOSAL METHOD	Incineration under controlled conditions if permitted by local authorities

SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)	• None should be needed under normal circumstances • Air supplied hood in high vapour concentration, such as empty vessels or confined spaces		
VENTILATION (flameproof)	Local exhaust	Yes	Special Flame and explosion proof electrical fittings
	Mechanical (general)	Yes	
PROTECTIVE GLOVES PVC or neoprene gloves		EYE PROTECTION Chemical safety goggles	
OTHER PROTECTIVE EQUIPMENT	Approved barrier creams may prove useful in preventing dermatitis		

SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING	Store with all the precautions required for handling a flammable liquid. Observe State Regulations concerning the storage and handling of Dangerous Goods. Also Standards Association of Australia; AS 1940-1976, Flammable and combustible liquids code should be observed. Avoid prolonged or repeated skin contact. Avoid eye contact. Avoid breathing vapour.
ELECTRICAL EQUIPMENT/ LIGHTING	All electrical equipment/lighting used in proximity to ethanol storage/or electrical process equipment used in any process using ethanol should be selected and installed in accordance with local wiring rules and the following Australian Standards. AS 3000 "SAA Wiring Rules" AS 2380 "Electrical Equipment for Explosive Gas Atmospheres — Explosion Protection Techniques" AS 1076 Parts 1-13. "Selection Installation and Maintenance of Electrical Apparatus and Associated Equipment for use in Explosive Atmospheres" AS 1020 SAA Static Electricity Code

CODE
95 SGF2
95 SGF3
95 SGF4
95 SGF5
95 SGF6

Ethanol

Product Specification Sheet

February 1986

SPECIAL METHYLATED SPIRITS— 95 STANDARD GRADE

CODE
95 SGF2
95 SGF3
95 SGF4
95 SGF5
95 SGF6

Special Methylated Spirits is ethanol which has been denatured in accordance with Regulations under the Spirits Act. Denaturant systems prescribed under the Regulations and generally available to "approved" end users for specified purposes are as follows:

Formula Number	Denaturant System			Specific Gravity (Max @ 20°C)	Approved Uses
	Denaturant	Concentration (by weight)			
		Nominal	Range		
F3	Methanol	2.0%	± 0.2%	0.810	General purposes Cosmetics, toiletries & aerosols
F2	Diethyl phthalate	0.5%	± 0.05%	0.812	
F4	Tertiary butanol	0.25%	± 0.025%	0.810	
F5	Brucine (sulphate or alkaloid)	90gm/kl	± 9gm/kl	0.810	
F6	Denatonium benzoate *	16gm/KL	± 1.6gm/KL	0.810	

* Denatonium benzoate is the accepted (US National Formulary) name for the synthetic quaternary ammonium salt benzyldiethyl (2:6—xylyl carbamoyl methyl) ammonium benzoate. The registered name "Bitrex" refers to the same substance.

Manufacturers requiring Special Methylated Spirits, should first obtain a permit from the Australian Customs Service in their State who must be satisfied that the fully denatured form, Industrial Methylated Spirits, would be

detrimental to the product or process concerned. Whenever placing orders for Special Methylated Spirits a valid current Customs Permit number must be quoted.

The following specification applies to the ethanol before the addition of denaturants.

Description:	A clear colourless liquid, free from matter in suspension and apart from water consisting essentially of ethanol
Strength:	95.8% ± 0.1% ethanol by volume at 20°C
Specific Gravity:	0.810 (max) at 20°C/20°C
Acidity or Alkalinity:	Alkalinity to phenolphthalein—Nil
Clarity of Solution:	Acidity—0.003% by weight (max) as acetic acid
Aldehydes—Ketones:	Sample diluted with distilled water in the ratio 1:19, remains clear when examined against a black background
Reducing Substances:	100ppm by weight (max) as acetaldehyde
(KMnO₄ Time Test)	10 minutes (min)
Other Alcohols:	Passes test as required by British Pharmacopoeia 1973 (BP 1973)
Non-Volatile Matter:	0.003% by weight (max)
Test Methods:	In accordance with tests specified in BP 1973. See "CSR Ethanol—Methods of Analysis"