PRODUCT NAME: STOVE FUEL DENATURED ETHYL ALCOHOL

MSDS NO: 1903 EFFECTIVE DATE: February 1, 2011

MANUFACTURED BY: **Commercial Alcohols**

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NON-EMERGENCY INFORMATION PHONE NUMBER: (905) 790-7500

TRANSPORTATION

PRIMARY CLASS:	3	**CLASS NAME:**	FLAMMABLE LIQUID	**UN#:**	1986
SUBSIDIARY CLASS:	6.1				
SHIPPING NAME:	Alcohols, Flammable, Toxic, N.O.S. (ETHANOL)				

I. EMERGENCY AND FIRST AID PROCEDURE

INGESTION	• Never give anything by mouth if victim is rapidly losing consciousness or is unconscious or convulsing. • DO NOT INDUCE VOMITING. • Have victim drink about 250ml (8fl. oz.) of water to dilute material in stomach. • If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. • Seek medical assistance immediately.
SKIN	• Flush contaminated area with water for at least 20 minutes. • Remove contaminated clothing under running water. • Completely decontaminate clothing before re-use, or discard. • If irritation occurs seek medical attention.
INHALATION	• Remove victim to fresh air. • Artificial respiration should be given if breathing has stopped and cardiopulmonary resuscitation if heart has stopped. • Oxygen may be given if necessary. • Seek medical attention immediately.
EYES	• Immediately flush eyes with water for at least 20 minutes, holding the eyelids open. • Seek medical attention immediately.
NOTES TO PHYSICIAN	• This product contains 20% v/v of methanol, a toxic substance having produced blindness and other serious effects on vision, as well as death. However, this product also contains the accepted antidote, ethanol (71.0% v/v). • This product also contains 2% v/v of MEK, a chemical which has caused embryotoxicity in high concentrations in one animal study and acetone 2% v/v.

II. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT, °C

- 15 (Tag closed cup, ASTM D-56)

OTHER IMPORTANT DATA

COMPONENT	% V/V	FLAMMABLE LIMITS, % V/V		VAPOUR PRESSURE	VAPOUR DENSITY	AUTOIGNITION
		LOWER	UPPER	KPA AT 20°C	(AIR = 1)	POINT, °C
(1) Ethyl Alcohol	71.0	3.3	19.0	5.87	1.6	422
(2) Methanol	20.0	7.3	36.0	12.80	1.1	385
(3) Methyl ethyl ketone (MEK)	2.0	2.0	12.0	9.49	2.4	515
(4) Acetone	2.0	2.6	12.8	24.0	2.0	465
Water	Balance					

EXTINGUISHING MEDIA

- Apply alcohol-type or all-purpose-type foams by manufacturers' recommended techniques for large fires.
- Use carbon dioxide or dry chemical media for small fires.
- Water is generally unsuitable and may help to spread the fire.

SPECIAL FIREFIGHTING PROCEDURES

- Use water spray to cool fire-exposed containers and structures.
- Use water spray to disperse vapours; re-ignition is possible.
- Use self-contained breathing apparatus and protective clothing.

UNUSUAL FIRE AND EXPLOSION HAZARDS

- Vapours form from this product and may travel or be moved by air currents and ignited by pilot lights, other flames, sparks, heaters, electrical equipment, static discharges or other ignition sources at locations distant from handling point.

III. IDENTIFICATION

CHEMICAL NAME DENATURED ETHYL ALCOHOL

CHEMICAL FAMILY ALCOHOLS/KETONES

FORMULA

(1) $CH_3 - CH_2 - OH$
(2) CH_3OH
(3) $CH_3 - CH_2 - CO - CH_3$
(4) $CH_3 - CO - CH_3$

MOLECULAR WEIGHT

(1) 46.07
(2) 32.04
(3) 72.10
(4) 58.08

NOTE

- Numbers refer to Section II.

SYNONYMS

- None.

USE

- General purpose organic solvent, stove fuel.

IV. PHYSICAL DATA

BOILING POINT, °C at 760mm Hg	77.0
FREEZING POINT, °C	Not Available
DENSITY, kg/L @ 20°C	0.79 to 0.81
COEFFICIENT OF WATER/OIL DISTRIBUTION	Separates from oil
pH	Not Applicable
DISTILLATION RANGE, °C	73.7-78.3
MISCIBILITY IN WATER	Complete
% VOLATILES BY VOLUME	100
EVAPORATION RATE (butyl acetate = 1)	1.8

APPEARANCE AND ODOUR

- Colourless liquid with typical lower ketone odour.
- Odour thresholds are approximately 0.1 to 5100 ppm for ethyl alcohol, 4.3 to 5900 ppm for methanol, 2 to 80 ppm for MEK, and 40-100 ppm for acetone, as reported in Appendix 1 of the Canadian Standards Association guide Z94.4-M1982

V. INGREDIENTS AND TOXICOLOGICAL DATA

INGREDIENT	% V/V	CAS NO.	TLV, ppm	LC50, ppm/4h.	LD50, mg/kg	LD50, mg/kg
				RAT, INHAL.	RAT, ORAL	RABBIT, SKIN
(1) Ethyl Alcohol	71.0	64-17-5	1000	31,623	7,060	20,000
(2) Methanol	20.0	67-56-1	200	64,000	5,628	20,000
(3) Methyl ethyl ketone (MEK)	2.0	78-93-3	200	N/A	2,737	13,000
(4) Acetone	2.0	67-64-1	750	N/A	9,750	20,000
Water	Balance					

REFERENCES: ACGIH (1988-1989), RTECS (1983), CCOHS (1988).

VI. WHMIS CLASSIFICATION AND SYNERGISTIC MATERIALS

WHMIS CLASSIFICATION

- Flammable liquid, very toxic material (methanol), eye irritant.

SYNERGISTIC MATERIALS

- Ethanol with carbon tetrachloride, chloroform, bromotrichloromethane, dimethylnitrosamine, thioacetamide, methanol with carbon tetrachloride and MEK with n-hexane, methyl n-butyl ketone, acetone with chlorinated solvents such as 1.1 - dichloroethylene and 1,1,2 - trichloroethane.

VII. HEALTH HAZARD DATA

INGESTION	• The most hazardous component in the Stove Fuel is methanol, a toxic substance which has produced blindness and death. • The symptoms following ingestion of Stove fuel include dizziness, faintness, drowsiness, decreased awareness and responsiveness, euphoria, abdominal discomfort, nausea, vomiting, staggering gait, lack of coordination, and coma
SKIN ABSORPTION	• Methanol can be absorbed by the skin in lethal and toxic amounts. • MEK can also be absorbed through the skin, but has low toxicity by this route. • Ethanol and acetone pose little risk in this respect.
INHALATION	• Irritation of the nose, throat and eyes will begin at ~200 ppm MIBK. • Inhalation of high concentrations can produce dizziness, faintness, drowsiness, nausea and vomiting. • Symptoms depend on the level and duration of exposure.
SKIN CONTACT	• Mild irritant. • Repeated or prolonged exposure may lead to dermatitis, erythema and scaling.
EYE CONTACT	• Severe eye irritant. • Vapours can irritate eyes. • Eye damage from contact with liquid is reversible and proper treatment will result in healing within a few days. • Damage is usually mild to moderate conjunctivitis, seen mainly as redness of the conjunctiva.
EFFECT OF REPEATED OVEREXPOSURE	• Long term repeated oral exposure to ethanol may result in the development of progressive liver injury with fibrosis. • Long term exposure to methanol has been associated with headaches, giddiness, conjunctivitis, insomnia and impaired vision.
MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE	• Repeated exposure to ethanol may exacerbate liver injury from other causes.
OTHER EFFECTS OF OVEREXPOSURE	• MEK has been reported to be embryotoxic in one animal study, at concentrations significantly above its TLV. The concentration of MEK in Stove Fuel is sufficiently low (2% v/v) to reduce this risk to a very low level.

VIII. REACTIVITY DATA

STABILITY	• Stable
CONDITIONS TO AVOID	• Sources of ignition
INCOMPATIBILITY	• Oxidizing materials.
HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS	• Burning can produce carbon monoxide and/or carbon dioxide.
HAZARDOUS POLYMERIZATION	• Will not occur
CONDITIONS TO AVOID	• None currently known.

IX. SPILL OR LEAK PROCEDURES

SPILL	• Contain spilled material. • Provide adequate ventilation and protective equipment. • Remove sources of heat, sparks or flames.
WASTE DISPOSAL	• Waste material should be disposed of in an approved incinerator or in a designated landfill site, in compliance with all federal, provincial and local government regulations.

X. SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION	• Up to 1000 ppm, an approved organic vapour cartridge respirator can be used. • For concentrations above 1000 ppm, an air-supplying respirator is recommended. • The user should consult a respirator guide, such as the Canadian Standards Association's guide Z94.4-M1982.
VENTILATION	• The ventilation system should be non-sparking, grounded and separate from other exhaust ventilation systems. • Local ventilation is recommended when handling.
PROTECTIVE GLOVES	• Neoprene, butyl or natural rubber.
EYE PROTECTION	• Chemical resistant monogoggles when handling
OTHER PROTECTIVE EQUIPMENT	• Eye bath, safety shower and other protective equipment as required.

XI. SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING	• Keep away from heat, sparks and flames. • Keep container closed when not in use. • Use with adequate ventilation. • Avoid breathing vapours. • Avoid contact with eyes and skin. • Wash exposed skin thoroughly after handling. • Take precautions to prevent static electricity build-up when transferring contents.
OTHER PRECAUTIONS	• Good personal hygiene practices are suggested, such as abstaining from eating, drinking and smoking in the workplace.

XII. MSDS PREPARATION

PREPARED BY	Alcohol Quality Assurance, Technical Services and Regulatory Affairs Department	
PHONE NUMBER	(905) 790-7500	DATE: February 1, 2011

COMMERCIAL ALCOHOLS URGES EACH CUSTOMER OR RECIPIENT OF THIS MSDS TO STUDY IT CAREFULLY TO BECOME AWARE OF AND UNDERSTAND THE HAZARDS ASSOCIATED WITH THE PRODUCT. THE READER SHOULD CONSIDER CONSULTING REFERENCE WORKS OR INDIVIDUALS WHO ARE EXPERTS IN VENTILATION, TOXICOLOGY OR FIRE PREVENTION, AS NECESSARY OR APPROPRIATE TO USE AND UNDERSTAND THE DATA CONTAINED IN THIS MSDS.

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(2) FURNISH THIS SAME INFORMATION TO EACH CUSTOMER FOR THE PRODUCT, AND
(3) REQUEST CUSTOMERS TO NOTIFY THEIR EMPLOYEES, CUSTOMERS,
AND OTHER USERS OF THE PRODUCT OF THIS INFORMATION.