

PRODUCT NAME:	CALSOL 100 PROPRIETARY DENATURED ETHYL ALCOHOL FORMULATION	Page 1 of 6
MSDS NO:	1890	EFFECTIVE DATE: February 1, 2008

MANUFACTURED BY: **Commercial Alcohols**

Bruce Energy Centre	275 Bloomfield Road	2 Chelsea Lane
4th Concession	Chatham,	Brampton, Ontario
Tiverton, Ontario	Ontario	L6T 3Y4
N0G 2T0	N7M 5J5	

EMERGENCY PHONE NUMBER: CANUTEC (613) 996-6666
NON-EMERGENCY INFORMATION PHONE NUMBER: (905) 790-7500

TRANSPORTATION

PRIMARY CLASS:	3	CLASS NAME: FLAMMABLE LIQUID	UN#: 1987
SUBSIDIARY CLASS:	NONE		
SHIPPING NAME:	ALCOHOLS, N.O.S.(ETHANOL)		

I. EMERGENCY AND FIRST AID PROCEDURE

<u>INGESTION</u>	<ul style="list-style-type: none"> • 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.
<u>SKIN</u>	<ul style="list-style-type: none"> • 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.
<u>INHALATION</u>	<ul style="list-style-type: none"> • 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.
<u>EYES</u>	<ul style="list-style-type: none"> • Immediately flush eyes with water for at least 20 minutes, holding the eyelids open. • Seek medical attention immediately.
<u>NOTES TO PHYSICIAN</u>	<ul style="list-style-type: none"> • Symptoms of ethanol intoxication vary with the alcohol level of the blood. Mild alcohol intoxication occurs at blood levels between 0.05% - 0.15% and approximately 25% of individuals will show signs of intoxication at these levels. Above 0.15% the person is definitely under the influence of ethanol and 50-95% of individuals at this level are clinically intoxicated. Severe poisoning occurs when the blood ethanol level is 0.3-0.5%. Above 0.5% the individual will be comatose and death can occur. • The unabsorbed ethanol should be removed by gastric lavage after intubating the patient to prevent aspiration. • Avoid the use of depressant drugs or the excessive administration of fluids.

THE INFORMATION AND RECOMMENDATIONS CONTAINED HEREIN ARE BASED UPON DATA BELIEVED TO BE CORRECT. HOWEVER, NO GUARANTEE OR WARRANTY OF ANY KIND, EXPRESSED OR IMPLIED, IS MADE WITH RESPECT TO INFORMATION AND RECOMMENDATIONS CONTAINED HEREIN.

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II. FIRE AND EXPLOSION HAZARD DATA

<u>FLASH POINT,</u> <u>°C</u>	<ul style="list-style-type: none"> 16 (Tag closed cup, ASTM D-56) 																																																			
<u>OTHER IMPORTANT DATA</u>	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th rowspan="2">COMPONENT</th> <th rowspan="2">% V/V</th> <th colspan="2">FLAMMABLE LIMITS, % V/V</th> <th rowspan="2">VAPOUR PRESSURE KPA AT 20°C</th> <th rowspan="2">VAPOUR DENSITY (AIR = 1)</th> <th rowspan="2">AUTOIGNITION POINT, °C</th> </tr> <tr> <th>LOWER</th> <th>UPPER</th> </tr> </thead> <tbody> <tr> <td>(1) Ethyl Alcohol</td> <td>93.7-94.7</td> <td>3.3</td> <td>19.0</td> <td>5.87</td> <td>1.6</td> <td>422</td> </tr> <tr> <td>(2) Denatorium Benzoate</td> <td>(700mg/100L)</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> </tr> <tr> <td>(3) Pine Oil</td> <td>0.25</td> <td>N/A</td> <td>N/A</td> <td>0.3</td> <td>5.2</td> <td>N/A</td> </tr> <tr> <td>(4) FD&C Blue Dye or Methylene Blue</td> <td>(0.5g/100 L)</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> </tr> <tr> <td>(5) Alkyl Dimethylbenzyl Ammonium Chloride</td> <td>0.0054</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> </tr> <tr> <td>(6) Water</td> <td>Balance</td> <td>---</td> <td>---</td> <td>---</td> <td>---</td> <td>---</td> </tr> </tbody> </table>	COMPONENT	% V/V	FLAMMABLE LIMITS, % V/V		VAPOUR PRESSURE KPA AT 20°C	VAPOUR DENSITY (AIR = 1)	AUTOIGNITION POINT, °C	LOWER	UPPER	(1) Ethyl Alcohol	93.7-94.7	3.3	19.0	5.87	1.6	422	(2) Denatorium Benzoate	(700mg/100L)	N/A	N/A	N/A	N/A	N/A	(3) Pine Oil	0.25	N/A	N/A	0.3	5.2	N/A	(4) FD&C Blue Dye or Methylene Blue	(0.5g/100 L)	N/A	N/A	N/A	N/A	N/A	(5) Alkyl Dimethylbenzyl Ammonium Chloride	0.0054	N/A	N/A	N/A	N/A	N/A	(6) Water	Balance	---	---	---	---	---
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<u>EXTINGUISHING MEDIA</u>	<ul style="list-style-type: none"> 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. 																																																			
<u>SPECIAL FIREFIGHTING PROCEDURES</u>	<ul style="list-style-type: none"> Use water spray to cool fire-exposed containers and structures. Use water spray to disperse vapours; reignition is possible. Use self-contained breathing apparatus and protective clothing. 																																																			
<u>UNUSUAL FIRE AND EXPLOSION HAZARDS</u>	<ul style="list-style-type: none"> 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

<u>CHEMICAL NAME</u>	DENATURED ETHYL ALCOHOL CALSOL 100	<u>CHEMICAL FAMILY</u>	ALCOHOLS/ESTERS/ ALKALOIDS
<u>FORMULA</u>	(1) C ₂ H ₂ OH (3) METH-EN_OLS (2) C ₂₈ H ₃₄ N ₂ O ₃ (4) C ₃₇ H ₃₆ N ₂ O ₉ S ₃ Na ₂ (5) CH ₃ (CH ₂) _n N(CH ₃) ₂ CHC ₆ H ₅ Cl (6) H ₂ O	<u>MOLECULAR WEIGHT</u>	(1) 46.07 (3) N/A (2) 446.57 (4) 794 (5) 359.6 (6) 18
<u>SYNONYMS</u>	<ul style="list-style-type: none"> None 		
<u>USE</u>	<ul style="list-style-type: none"> Transfer fluid for ground source heat systems. 		

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IV. PHYSICAL DATA

BOILING POINT, °C at 760mm Hg	78.5
FREEZING POINT, °C	Not Available
DENSITY, kg/L @ 20°C	0.810 - 0.816
COEFFICIENT OF WATER/OIL DISTRIBUTION	Separates from oil
pH	Not Applicable
DISTILLATION RANGE, °C	78.0 - 79.0
MISCIBILITY IN WATER	Complete
% VOLATILES BY VOLUME	100
EVAPORATION RATE (butyl acetate = 1)	1.7

APPEARANCE AND ODOUR

- Blue to purple colored liquid with typical lower alcohol odour.
- Odour threshold is in the range of 0.1 to 5100 ppm, according to the Canadian Standards Association publication Z94.4-M1982 (appendix 1).

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	93.7-94.7	64-17-5	1000	31,623	7,000	20,000
(2) Denatorium Benzoate	(700mg/100L)	3734-33-6	N/A	512	1,404	N/A
(3) Pine Oil	0.25	8002-09-3	N/A	N/A	4,300-5,300	3,000
(4) FD&C Blue Dye or Methylene Blue	(0.5g/100L)	3844-45-9	N/A	N/A	N/A	N/A
(5) Alkyl Dimethylbenzyl Ammonium Chloride	0.0054	8001-54-5	N/A	N/A	330	1,182
(6) Water	Balance	---	---	---	---	---

VI. WHMIS CLASSIFICATION AND SYNERGISTIC MATERIALS

WHMIS CLASSIFICATION

- Flammable liquid, eye irritant.

SYNERGISTIC MATERIALS

- Ethanol with carbon tetrachloride, chloroform, bromotrichloromethane, dimethylnitrosamine, thioacetamide.

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VII. HEALTH HAZARD DATA

<u>INGESTION</u>	<ul style="list-style-type: none"> • May cause dizziness, faintness, drowsiness, decreased awareness and responsiveness, euphoria, abdominal discomfort, nausea, vomiting, staggering gait, lack of coordination and coma.
<u>SKIN ABSORPTION</u>	<ul style="list-style-type: none"> • No adverse effects with normal skin. However, potentially harmful amounts of material may be absorbed across markedly abraded skin when contact is sustained, particularly in children.
<u>INHALATION</u>	<ul style="list-style-type: none"> • High vapour concentrations may cause a burning sensation in the throat and nose, stinging and watering in the eyes. • At concentrations which cause irritation, dizziness, faintness, drowsiness, nausea and vomiting may also occur.
<u>SKIN CONTACT</u>	<ul style="list-style-type: none"> • No evidence of adverse effects from available information.
<u>EYE CONTACT</u>	<ul style="list-style-type: none"> • 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.
<u>EFFECT OF REPEATED OVEREXPOSURE</u>	<ul style="list-style-type: none"> • Long term repeated oral exposure to ethanol may result in the development of progressive liver injury with fibrosis.
<u>MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE</u>	<ul style="list-style-type: none"> • Repeated exposure to ethanol may exacerbate liver injury produced from other causes.
<u>OTHER EFFECTS OF OVEREXPOSURE</u>	<ul style="list-style-type: none"> • Repeated ingestion of ethanol by pregnant mothers has been shown to adversely affect the central nervous system of the fetus, producing a collection of effects which together constitute the fetal alcohol syndrome. These include mental and physical retardation, disturbances of learning, motor and language deficiencies, behavioral disorders, and small size head.

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VIII. REACTIVITY DATA

<u>STABILITY</u>	<ul style="list-style-type: none"> • Stable
<u>CONDITIONS TO AVOID</u>	<ul style="list-style-type: none"> • Sources of ignition
<u>INCOMPATIBILITY</u>	<ul style="list-style-type: none"> • Oxidizing materials
<u>HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS</u>	<ul style="list-style-type: none"> • Burning can produce carbon monoxide and/or carbon dioxide and/or formaldehyde.
<u>HAZARDOUS POLYMERIZATION</u>	<ul style="list-style-type: none"> • Will not occur
<u>CONDITIONS TO AVOID</u>	<ul style="list-style-type: none"> • None currently known

IX. SPILL OR LEAK PROCEDURES

<u>SPILL</u>	<ul style="list-style-type: none"> • Contain spilled material. • Provide adequate ventilation and protective equipment. • Remove sources of heat, sparks or flames. • Spill should be collected in suitable containers or absorbed on a suitable absorbent material for subsequent disposal.
<u>WASTE DISPOSAL</u>	<ul style="list-style-type: none"> • 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

<u>RESPIRATORY PROTECTION</u>	<ul style="list-style-type: none"> • 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.
<u>VENTILATION</u>	<ul style="list-style-type: none"> • The ventilation system should be non-sparking, grounded and separate from other exhaust ventilation systems. • Local ventilation is recommended when handling.
<u>PROTECTIVE GLOVES</u>	<ul style="list-style-type: none"> • Neoprene, butyl or natural rubber.
<u>EYE PROTECTION</u>	<ul style="list-style-type: none"> • Chemical resistant monogoggles when handling
<u>OTHER PROTECTIVE EQUIPMENT</u>	<ul style="list-style-type: none"> • Eye bath, safety shower and other protective equipment as required.

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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, 2008

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.

TO PROMOTE SAFE USE AND HANDLING OF THIS PRODUCT, EACH CUSTOMER OR RECIPIENT SHOULD

- (1) NOTIFY EMPLOYEES, AGENTS, CONTRACTORS AND OTHERS WHO MAY USE THIS MATERIAL, OF THE INFORMATION IN THIS MSDS AND ANY OTHER INFORMATION REGARDING HAZARDS OR SAFETY,
- (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.