CDA

SECTION I IDENTIFICATION

Product Name: Ethanol / CDA® 19.190 Proof

Chemical Name: Denatured Ethanol

Chemical Family: Alcohols

Formula: N/A (mixture)

Molecular Weight: N/A (mixture)

Synonyms: Completely Denatured Alcohol, Government Formula 19

CAS # and Name: N/A (mixture)

SECTION II PHYSICAL DATA

Boiling Point: (760 mm Hg) 79°C (174°F)

Specific Gravity: (H₂O=1) 0.8120  20/20°C

Freezing Point: <-85°C (<-121°F)

Vapor Pressure @ 20°C: 50 mmHg

Vapor Density: (Air=1) 1.5

Evaporation Rate (Butyl Acetate=1): 3.8

Solubility: (In water by wt.) complete @ 20°C

Appearance: Transparent colorless.

Odor: Non-residual

Physical State: Liquid

Percent Volatiles: (By wt.) 100
SECTION III  INGREDIENTS

<table>
<thead>
<tr>
<th>%</th>
<th>Material</th>
<th>CAS #</th>
<th>Exposure Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>90</td>
<td>Ethanol</td>
<td>64-17-5</td>
<td>1000 ppm TWA, OSHA, ACGIH</td>
</tr>
<tr>
<td>4</td>
<td>Methyl Isobutyl</td>
<td>108-10-1</td>
<td>50 ppm TWA, OSHA &amp; ACGIH, 75 ppm STEL, OSHA &amp; ACGIH</td>
</tr>
<tr>
<td>1</td>
<td>Aliphatic Hydro-</td>
<td>Trade Secret</td>
<td>300 ppm TWA, OSHA &amp; ACGIH, 500 ppm STEL, OSHA &amp; ACGIH</td>
</tr>
<tr>
<td></td>
<td>carbon</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Water</td>
<td>7732-18-5</td>
<td>None established.</td>
</tr>
</tbody>
</table>

SECTION IV  FIRE AND EXPLOSION HAZARDS

Flash Point and Method: 54°F (12°C) Tag Closed Cup ASTM D 56
67°F (19°C) Tag Open Cup ASTM D 1310

Flammable Limits in Air (% by volume): Lower: 3.3 (Ethyl Alcohol)
Upper: 19.0 (Ethyl Alcohol)

Extinguishing Media: Apply alcohol-type or all-purpose-type foam by manufacturer's recommended techniques for large fires. Use carbon dioxide or dry chemical media for small fires.

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

Unusual Fire and Explosion Hazards: Vapors form from this product and may travel or be moved by air currents and ignited by pilot lights, other flames, smoking, sparks, heaters, electrical equipment, static discharges or other ignition sources at locations distant from product handling point. Vapors from this material may settle in low or confined areas or travel a long distance to an ignition source and flash back explosively. This material may produce a floating fire hazard in extreme fire conditions. Static ignition hazard can result from handling and use. Electrically bond and ground all containers and equipment before transfer or use of material. Use proper bonding and grounding during product transfer as described in National Fire Protection Association Document NFPA 77.
SECTION V. HEALTH HAZARD INFORMATION

Exposure Limits: See Section III, "Ingredients"

EFFECTS OF ACUTE OVEREXPOSURE:

Ingestion: May cause dizziness, faintness, drowsiness, decreased awareness and responsiveness, euphoria, abdominal discomfort, nausea, vomiting, staggering gait, lack of coordination, and coma. Aspiration into the lungs may occur during ingestion or vomiting, resulting in lung injury.

Skin Absorption: No harmful effects with normal skin. However, potentially harmful amounts of material may be absorbed across markedly damaged skin when contact is sustained, particularly with children.

Inhalation: High vapor concentrations may cause a burning sensation in the nose and throat, and stinging and watering in the eyes. At concentrations which cause irritation, dizziness, faintness, drowsiness, nausea, vomiting, staggering gait, lack of coordination, and coma. Aspiration into the lungs may occur during ingestion or vomiting, resulting in lung injury.

Skin Contact: Brief contact may cause slight irritation with itching and local redness. Prolonged or repeated contact may cause defatting and drying of the skin.

Eye Contact: May cause irritation, experienced as stinging with excess blinking and tear production. Excess redness of the conjunctiva may occur.

EFFECTS OF REPEATED OVEREXPOSURE

Long-term repeated oral exposure to ethanol may result in the development of progressive liver injury with fibrosis.

OTHER HEALTH HAZARDS

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. Methyl Isobutyl Ketone is toxic if aspirated. It is known to enhance the neurotoxicity of linear 6 carbon solvents.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE

Repeated exposure to ethanol may aggravate liver injury produced from other causes. Skin contact may aggravate an existing dermatitis.
SECTION V: HEALTH HAZARD INFORMATION Cont'd

ADDITIONAL TOXICITY INFORMATION

The International Agency for Research on Cancer (IARC) has determined that the consumption of alcoholic beverages is causally related to the occurrence of malignant tumors of the oral cavity, pharynx, larynx, esophagus and liver in humans. The carcinogenic response attributed to drinking alcoholic beverages has not been verified in studies with laboratory animals. Established uses of denatured ethanol and non-beverage uses of pure ethanol are not considered to pose any significant cancer hazard. Ethanol has been shown to have a weak skin sensitizing potential in a very small percentage of the population. In tests with laboratory animals, Methyl Isobutyl Ketone produced evidence of embryofetal toxicity at exposure levels which were toxic to mothers, but no evidence was obtained for teratogenicity, or for embryofetal toxicity at levels which did not affect the mothers.

Results from five mutagenicity assays with different genetic endpoints indicate that Methyl Isobutyl Ketone does not produce activity typical of that of chemical mutagens.

EMERGENCY AND FIRST AID PROCEDURES

**Ingestion:** Do not induce vomiting. Do not give anything to drink. Obtain medical attention immediately.

**Skin:** Wash skin with soap and water.

**Inhalation:** Remove victim to fresh air. Give artificial respiration if not breathing. If breathing is difficult, oxygen may be given by qualified personnel. Obtain medical attention.

**Eyes:** Immediately flush eyes with water and continue washing for at least 15 minutes. Do not remove contact lenses, if worn. Obtain medical attention without delay, preferably from an ophthalmologist.

**Note to Physician:** Symptoms 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. In the presence of hypoglycemia, administer 5% - 10% glucose intravenously, plus thiamine 100 mg intramuscularly. Hemodialysis is indicated if the blood ethanol is above 5 mg/ml. Naloxone may be useful to reverse clinical alcoholic coma and 0.4 - 1.2 mg intravenously may arouse ethanol-intoxicated patients. If only a small amount of the product has been ingested and if there is likely to be a significant delay before emergency medical help is available, then in the
SECTION V

HEALTH HAZARD INFORMATION Cont'd

absence of signs and symptoms of CNS depression or convulsions, and when the gag reflex is intact, ipecac may be used to produce vomiting. If vomiting is induced, the patient's head and upper body must be kept at a lower level than the hips to assist in the prevention of aspiration. Aspirated material may cause serve lung damage and present a significant hazard. If a significant quantity of product is ingested, remove by means of gastric lavage using activated charcoal. A cuffed endotracheal tube should be used to prevent aspiration. When evacuation of the stomach is complete, 30-60 ml of Fleet's Phospho-Soda diluted 1:4 in water may be given. Keep the patient under observation for 24 hours and check for signs of lung injury. It may require 2-4 weeks for resolution of lung infiltrates involving more than 30% of the lung volume.

SECTION VI

REACTIVITY DATA

Stability: Stable

Conditions to Avoid: None known.

Incompatibility (materials to avoid): Concentrated nitric or sulfuric acid. Strong oxidizing agents.

Hazardous Combustion or Decomposition Products: Burning can produce the following products: Carbon monoxide and/or carbon dioxide. Carbon monoxide is highly toxic if inhaled; carbon dioxide in sufficient concentrations can act as an asphyxiant.

Hazardous Polymerization: Will not occur. Conditions to Avoid: None known.

SECTION VII

SPILL OR LEAK PROCEDURES

Steps to be Taken if Material is Released or Spilled: Extinguish and do not turn on any ignition source until the area is determined to be free from fire or explosion hazard. Small spills can be flushed with large amounts of water; larger spills should be collected for disposal.


SECTION VIII

SPECIAL PROTECTION INFORMATION

Respiratory Protection: Use self-contained breathing apparatus in high vapor concentrations.

Ventilation: General (mechanical) room ventilation is expected to be satisfactory where this product is stored and handled in closed equipment. Special, local ventilation is needed at points where vapors can be expected to escape to the workplace air.
SECTION VIII
SPECIAL PROTECTION INFORMATION Cont'd

Protective Gloves: Neoprene

Eye Protection: Safety Glasses.

Other Protective Equipment: Eye Bath, Safety Shower.

SECTION IX
SPECIAL PRECAUTIONS

Precautions to be Taken in Handling and Storage: Warning: Flammable. Harmful if inhaled or swallowed. Causes eye irritation. Aspiration may cause lung damage. May cause dizziness and drowsiness. May cause liver and kidney damage.

Keep away from heat, sparks and flame. Avoid breathing vapor. Do not swallow. Avoid contact with eyes. Keep container closed. Use with adequate ventilation. Vapors form from this product and may travel or be moved by air currents and ignited by pilot lights, other flame, smoking, sparks, heaters, electrical equipment, static discharges or other ignition sources at locations distant from product handling point. Wash thoroughly after handling.

FOR INDUSTRY USE ONLY

OTHER PRECAUTIONS

Process Hazard: Sudden release of hot organic chemical vapors or mists from process equipment operating at elevated temperature and pressure, or sudden ingress of air into vacuum equipment, may result in ignitions without the presence of obvious ignition sources. Published "autoignition" or "ignition" temperature values cannot be treated as safe operating temperatures in chemical processes without analysis of the actual process conditions.

Any use of this product in elevated-temperature processes should be thoroughly evaluated to establish and maintain safe operating conditions. Further information is available in a technical bulletin entitled "Ignition Hazards of Organic Chemical Vapors."

SECTION IX
SPECIAL PRECAUTIONS Cont'd

Transfer Hazard: Vapors of this product may be ignited by static sparks. Use proper bonding and grounding during liquid transfer as described in National Fire Protection Association document NFPA 77.
STATUS ON SUBSTANCE LISTS

The concentrations shown are maximum of ceiling levels (weight %) to be used for calculations for regulations. Trade Secrets are indicated by "TS".

FEDERAL EPA

Comprehensive Environmental Response Compensation, and Liability Act of 1980 (CERCLA) requires notification of the National Response Center of release of quantities of Hazardous Substances equal to or greater than the reportable quantities (RQs) in 40 CFR 302.4.

Components present in this product at a level which could require reporting under the statute are:

<table>
<thead>
<tr>
<th>CHEMICAL</th>
<th>CAS NUMBER</th>
<th>UPPER BOUND CONCENTRATION %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methyl Isobuty Ketone</td>
<td>108-10-1</td>
<td>4</td>
</tr>
<tr>
<td>Benzene</td>
<td>71-43-2</td>
<td>0.0030</td>
</tr>
<tr>
<td>Methanol</td>
<td>67-56-1</td>
<td>0.0015</td>
</tr>
<tr>
<td>Acetaldehyde</td>
<td>75-07-0</td>
<td>0.0010</td>
</tr>
<tr>
<td>Acetone</td>
<td>67-64-1</td>
<td>0.0002</td>
</tr>
</tbody>
</table>

Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III requires emergency planning based on Threshold Planning Quantities (TPQs) and release reporting based on Reportable Quantities (RQs) in 40 CFR 355 (used for SARA 302, 304, 311 and 312).

Components present in this product at a level which could require reporting under the statute are:

****None****

Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III requires submission of annual reports of release of toxic chemicals that appear in 40 CFR 372 (for SARA 313). This information must be included in all MSDSs that are copied and distributed for this material.

Components present in this product at a level which could require reporting under the statute are:

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</table>
Toxic Substances Control Act (TSCA) Status:

The ingredients of this product are on the TSCA inventory.

**STATE RIGHT-TO-KNOW**

**California Proposition 65**

This product contains trace amounts of Acetaldehyde and Benzene, which the state of California has found to cause cancer.

Massachusetts Right-To-Know, Substance List (MSL) Hazardous Substances and Extraordinarily Hazardous Substances on the MSL must be identified when present in products.

Components present in this product at a level which could require reporting under the statue are:

Extraordinarily Hazardous Substances (= > 0.0001%)

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<td>0.0030</td>
</tr>
<tr>
<td>Acetaldehyde</td>
<td>75-07-0</td>
<td>0.0010</td>
</tr>
</tbody>
</table>

Hazardous Substances (= > 1%)

<table>
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California SCAQMD Rule 443.1 VOC's:

VOC 801 g/l; Vapor Pressure 50 mm Hg @ 20°C

Other Regulatory Information:


New York State Bulk Storage Regulations (6 NYCRR Parts 595-599) This product is covered by 6 NYCRR for Bulk Storage and Release Reporting and Response. Technical guidance and recommended practices are as follows:
SECTION X  REGULATORY INFORMATION Cont'd

Materials of Construction:

Suitable materials of construction are: Steel, stainless steel, baked phenoli lined steel, galvanized steel, copper and copper alloys.

Materials not to be used: Aluminum

Plastics are not recommended for "flammable liquids".

Storage System Design: Design should comply with applicable industry, Federal, and local codes for a Class 1B Flammable Liquid with regards to mechanical, electrical, safety and health components. Should also comply with NYS/DEC Chemical Bulk Storage regulations Parts 598.3 to 598.6 (for existing tanks) or Parts 599.2 and 599.7 (for new or substantially modified tanks).

Conditions for Storage: Store at normal ambient temperatures.

Inspection and Maintenance: A testing/inspection program which ensures structural integrity and proper system operation should be established. Inspection and maintenance procedures and testing of equipment should comply with NYS/DEC regulations Parts 598.7 to 598.10.

Transfer and Unloading: These operations should comply with NYS/DEC regulations, Part 598.5.

SECTION XI  DEGREE OF HAZARD

Degree of Hazard

| 4 - Extreme | Flammability  | 4 |
| 3 - High    | Health       | 2 |
| 2 - Moderate| Reactivity   | 1 |
| 1 - Slight  | Special Hazard| 0 |
| 0 - Insignificant | | |