Not appropriate for regulatory submission. Please visit www.spectrumchemical.com or contact Tech Services for the most up-to-date information contained in this information package.
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Spectrum has been proudly serving the scientific community for over 45 years. It is our mission to manufacture and distribute fine chemicals and laboratory products with Quality and delivery you can count on every time.

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In the following pages, we have designed and prepared documented scientific information to aid you in your initial qualification or your continual use of our products. Please do not hesitate to contact us if further information or the most up-to-date documentation is desired from any of the covered areas.

We appreciate your business and we look forward to hearing from you.

Sincerely,

Michael Dang
Director, Quality Systems & GMP Compliance
mdang@spectrumchemical.com

9.August.2018
ET107, Dehydrated Alcohol, 200 Proof, Undenatured, USP

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- Product Specification
- Safety Data Sheet (SDS)
- Manufacturer
- Manufacturing Process Flowchart
- Certification of Quality Management System (QMS)
- Certification of current Good Manufacturing Practices (cGMP)
- Product BSE/TSE Statement
- Product Allergen Statement
- Product Aflatoxin Statement
- Product Certificate of Analysis Sample(s)
- General Label Information – Sample Label
- General Lot Numbering System Guidance
- Stability – Shelf Life Guidance
- Kosher Certificate
**Specification for Dehydrated Alcohol, 200 Proof, Undenatured, USP (ET107)**

<table>
<thead>
<tr>
<th>Item Number</th>
<th>ET107</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item</td>
<td>Dehydrated Alcohol, 200 Proof, Undenatured, USP</td>
</tr>
<tr>
<td>CAS Number</td>
<td>64-17-5</td>
</tr>
<tr>
<td>Molecular Formula</td>
<td>C₂H₅OH</td>
</tr>
<tr>
<td>Molecular Weight</td>
<td>46.07</td>
</tr>
<tr>
<td>MDL Number</td>
<td></td>
</tr>
<tr>
<td>Synonyms</td>
<td>Absolute Ethyl Alcohol ; Anhydrous Ethanol ; Ethanol ; Grain Alcohol</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Test</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Min</strong></td>
<td><strong>Max</strong></td>
</tr>
<tr>
<td>ASSAY (by VOLUME)</td>
<td>99.5 %</td>
</tr>
<tr>
<td>CLARITY OF SOLUTION</td>
<td>TO PASS TEST</td>
</tr>
<tr>
<td>COLOR OF SOLUTION</td>
<td>TO PASS TEST</td>
</tr>
<tr>
<td>ACIDITY OR ALKALINITY</td>
<td>TO PASS TEST</td>
</tr>
<tr>
<td>SPECIFIC GRAVITY @ 15.56°C</td>
<td>0.7962</td>
</tr>
<tr>
<td>UV ABSORPTION</td>
<td>TO PASS TEST</td>
</tr>
<tr>
<td>ORGANIC IMPURITIES:</td>
<td></td>
</tr>
<tr>
<td>METHANOL</td>
<td>200 ppm</td>
</tr>
<tr>
<td>ACETALDEHYDE AND ACETAL</td>
<td>10 ppm</td>
</tr>
<tr>
<td>BENZENE</td>
<td>2 ppm</td>
</tr>
<tr>
<td>SUM OF ALL OTHER IMPURITIES</td>
<td>300 ppm</td>
</tr>
<tr>
<td>LIMIT OF NONVOLATILE RESIDUE</td>
<td>2.5 mg</td>
</tr>
<tr>
<td>ELEMENTAL IMPURITIES</td>
<td>AS REPORTED</td>
</tr>
<tr>
<td>IDENTIFICATION A</td>
<td>TO PASS TEST</td>
</tr>
<tr>
<td>IDENTIFICATION B</td>
<td>TO PASS TEST</td>
</tr>
<tr>
<td>CERTIFIED KOSHER</td>
<td></td>
</tr>
<tr>
<td>RETEST DATE</td>
<td></td>
</tr>
<tr>
<td>DATE OF MANUFACTURE</td>
<td></td>
</tr>
<tr>
<td>APPEARANCE</td>
<td></td>
</tr>
<tr>
<td>RESIDUAL SOLVENTS</td>
<td>TO PASS TEST</td>
</tr>
</tbody>
</table>
SAFETY DATA SHEET

1. IDENTIFICATION

Product identifier

Product code: ET107  
Product Name: DEHYDRATED ALCOHOL, 200 PROOF, USP

Other means of identification

Synonyms: Absolute ethanol  
Alcohol  
Alcohol dehydrated  
Alcohol, anhydrous  
Alcool ethylque (French)  
Absolute Ethanol 200 proof  
Ethanol  
Ethyl alcohol anhydrous  
Ethyl hydrate  
Ethyl hydroxide  
Fermentation alcohol  
Dehydrated Alcohol  
Ethanol, undenatured 200 proof  
Ethanol 200 proof

CAS #: 64-17-5  
RTECS #: KQ6300000  
CI#: Not available

Recommended use of the chemical and restrictions on use


Uses advised against: No information available

Supplier: Spectrum Chemical Mfg. Corp  
14422 South San Pedro St.  
Gardena, CA 90248  
(310) 516-8000

Order Online At: https://www.spectrumchemical.com

Emergency telephone number: Chemtrec 1-800-424-9300

Contact Person: Martin LaBenz (West Coast)  
Ibad Tirmiz (East Coast)

2. HAZARDS IDENTIFICATION

Classification

This chemical is considered hazardous according to the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Considered a dangerous substance or mixture according to the Globally Harmonized System (GHS)

Serious eye damage/eye irritation Category 2
<table>
<thead>
<tr>
<th>Label elements</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reproductive toxicity</strong></td>
<td>Category 1A</td>
</tr>
<tr>
<td><strong>Specific target organ toxicity (single exposure)</strong></td>
<td>Category 3</td>
</tr>
<tr>
<td><strong>Specific target organ toxicity (repeated exposure)</strong></td>
<td>Category 1</td>
</tr>
<tr>
<td><strong>Flammable liquids</strong></td>
<td>Category 2</td>
</tr>
</tbody>
</table>

**Danger**

**Hazard statements**
Causes serious eye irritation
May damage fertility or the unborn child
May cause respiratory irritation. May cause drowsiness or dizziness
Causes damage to organs through prolonged or repeated exposure
Highly flammable liquid and vapor

**Hazards not otherwise classified (HNOC)**
Not Applicable

**Other hazards**
Can burn with an invisible flame
Causes mild skin irritation

**Precautionary Statements - Prevention**
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Wash face, hands and any exposed skin thoroughly after handling
Do not breathe dust/fume/gas/mist/vapors/spray
Do not eat, drink or smoke when using this product
Wear protective gloves/protective clothing/eye protection/face protection
Use only outdoors or in a well-ventilated area
Keep away from heat/sparks/open flames/hot surfaces. — No smoking
Keep container tightly closed
Ground/bond container and receiving equipment
Use explosion-proof electrical/ventilating/lighting/.../equipment
Use only non-sparking tools
Take precautionary measures against static discharge
Keep cool

**Precautionary Statements - Response**
*IF exposed or concerned: Get medical advice/attention*
In case of fire: Use CO2, dry chemical, or foam to extinguish.
*IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.*
If skin irritation occurs: Get medical advice/attention
*IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.*

**Precautionary Statements - Storage**
Store locked up
Store in a well-ventilated place. Keep container tightly closed

**Precautionary Statements - Disposal**
Dispose of contents/container to an approved waste disposal plant

**Product code:** ET107  **Product name:** DEHYDRATED ALCOHOL, 200 PROOF, USP
3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl Alcohol 200 proof</td>
<td>64-17-5</td>
<td>100</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

First aid measures

General Advice: National Capital Poison Center in the United States can provide assistance if you have a poison emergency and need to talk to a poison specialist. Call 1-800-222-1222.

Skin Contact: Wash off immediately with soap and plenty of water removing all contaminated clothing and shoes. Get medical attention. If skin irritation persists, call a physician.

Eye Contact: Flush eyes with water for 15 minutes. Get medical attention.

Inhalation: Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention.

Ingestion: Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Consult a physician if necessary.

Most important symptoms and effects, both acute and delayed

Symptoms
- Causes eye irritation
- May cause skin irritation
- May cause irritation of respiratory tract
- Dyspnea (Difficulty breathing and shortness of breath)
- Central nervous system effects
- Dizziness
- Drowsiness
- Headache
- Ataxia
- Staggering gait
- Nausea
- Vomiting
- May cause cardiovascular effects

Indication of any immediate medical attention and special treatment needed

Notes to Physician: Treat symptomatically.

Protection of first-aiders

First-Aid Providers: Avoid exposure to blood or body fluids. Wear gloves and other necessary protective clothing. Dispose of contaminated clothing and equipment as bio-hazardous waste.

5. FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media: Carbon dioxide (CO2). Dry chemical. Alcohol-resistant foam. Water spray.

Unsuitable Extinguishing Media: Do not use a solid (straight) water stream as it may scatter and spread fire.

Specific hazards arising from the chemical

Product code: ET107  Product name: DEHYDRATED ALCOHOL, 200 PROOF, USP
Hazardous Combustion Products: Carbon Monoxide, Carbon Dioxide.

Specific hazards: Flammable. May be ignited by heat, sparks or flames. Material can burn with invisible flame. Vapor may travel considerable distance to source of ignition and flash back. Vapors may form explosive mixtures with air. Most vapors are heavier than air. They will spread along the ground and collect in low or confined areas (sewers, basements, tanks). Container explosion may occur under fire conditions or when heated. Fire may produce irritating, corrosive and/or toxic gases.

Special Protective Actions for Firefighters

Specific Methods: Water mist may be used to cool closed containers. For larger fires, use water spray or fog. Cool containers with flooding quantities of water until well after fire is out.

Special Protective Equipment for Firefighters: As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions: Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Avoid contact with skin, eyes and clothing. Use personal protective equipment. Remove all sources of ignition. Pay attention to flashback. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Use spark-proof tools and explosion-proof equipment. In case of large spill, water spray or vapor suppressing foam may be used to reduce vapors, but may not prevent ignition in closed spaces.

Environmental precautions: Prevent further leakage or spillage if safe to do so. Prevent entry into waterways, sewers, basements or confined areas.

Methods and material for containment and cleaning up

Methods for containment: Stop leak if you can do it without risk. Absorb spill with inert material (e.g. vermiculite, dry sand or earth). In case of large spill, dike if needed. Dike far ahead of liquid spill for later disposal.

Methods for cleaning up: Use appropriate tools to put the spilled material in a suitable chemical waste disposal container. Use only non-sparking tools. Clean contaminated surface thoroughly.

7. HANDLING AND STORAGE

Precautions for safe handling

Technical Measures/Precautions: Provide sufficient air exchange and/or exhaust in work rooms. Remove all sources of ignition. To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded. Keep away from incompatible materials.

Safe Handling Advice: Wear personal protective equipment. Use only in well-ventilated areas. Avoid contact with skin, eyes and clothing. Keep away from heat and sources of ignition. Do not breathe vapors or spray mist. Do not ingest. When using do
not smoke. Handle in accordance with good industrial hygiene and safety practice.

**Conditions for safe storage, including any incompatibilities**

**Technical Measures/Storage Conditions:**
Keep container tightly closed in a dry and well-ventilated place. Store at room temperature in the original container. Sensitive to light. Store in light-resistant containers. Keep away from heat and sources of ignition. Store in a segregated and approved area. Store away from incompatible materials.

**Incompatible Materials:**
- Oxidizing agents
- Acids
- Alkali Metals
- Halogens
- Caustics
- Isocyanates
- Metals
- Bases
- Acid anhydrides
- Acid chlorides

### 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**Control parameters**

**National occupational exposure limits**

**United States**

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>OSHA</th>
<th>NIOSH</th>
<th>ACGIH</th>
<th>AIHA WEEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl Alcohol 200 proof</td>
<td>64-17-5</td>
<td>1000 ppm TWA</td>
<td>1000 ppm TWA</td>
<td>1000 ppm STEL</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1900 mg/m³ TWA</td>
<td>1900 mg/m³ TWA</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Canada**

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Canada - Alberta</th>
<th>Canada - British Columbia</th>
<th>Canada - Ontario</th>
<th>Canada - Quebec</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl Alcohol 200 proof</td>
<td>64-17-5</td>
<td>1000 ppm TWA</td>
<td>1000 ppm STEL</td>
<td>1000 ppm TWA</td>
<td>1000 ppm TWAEV</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1880 mg/m³ TWA</td>
<td></td>
<td>1880 mg/m³ TWA</td>
<td></td>
</tr>
</tbody>
</table>

**Australia and Mexico**

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Australia</th>
<th>Mexico</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl Alcohol 200 proof</td>
<td>64-17-5</td>
<td>1000 ppm TWA</td>
<td>1000 ppm TWA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1880 mg/m³ TWA</td>
<td>1900 mg/m³ TWA</td>
</tr>
</tbody>
</table>

**Appropriate engineering controls**

**Engineering measures to reduce exposure:**
Ensure adequate ventilation. Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors and mist below their respective threshold limit value.

**Individual protection measures, such as personal protective equipment**

**Personal Protective Equipment**

**Eye protection:**
Goggles Safety glasses with side-shields

**Product code:** ET107
**Product name:** DEHYDRATED ALCOHOL, 200 PROOF, USP
**9. PHYSICAL AND CHEMICAL PROPERTIES**

<table>
<thead>
<tr>
<th>Physical state:</th>
<th>Appearance:</th>
<th>Color:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liquid</td>
<td>No information available</td>
<td>Clear. Colorless.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Odor:</th>
<th>Taste</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Molecular/Formula weight:</th>
<th>Flammability:</th>
<th>Flash point (°C):</th>
</tr>
</thead>
<tbody>
<tr>
<td>46.07</td>
<td>No information available</td>
<td>12</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Flashpoint (°C/F):</th>
<th>Flash Point Tested according to:</th>
<th>Autoignition Temperature (°C/F):</th>
</tr>
</thead>
<tbody>
<tr>
<td>12-14 °C/53.6-57.2 °F</td>
<td>Closed cup</td>
<td>363-426 °C/685.4-798.8 °F</td>
</tr>
<tr>
<td>15.8-18 °C/60.44-64.4 °F</td>
<td>Open cup</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lower Explosion Limit (%):</th>
<th>Upper Explosion Limit (%):</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.3%</td>
<td>19%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Decomposition temperature(°C/F):</th>
<th>Boiling point/range(°C/F):</th>
<th>Bulk density:</th>
</tr>
</thead>
<tbody>
<tr>
<td>No information available</td>
<td>78-79 °C/172.4-174.2 °F</td>
<td>No information available</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Density (g/cm³):</th>
<th>Specific gravity:</th>
<th>pH:</th>
</tr>
</thead>
<tbody>
<tr>
<td>No information available</td>
<td>0.789 @ 20 °C</td>
<td>No information available</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Vapor pressure @ 20°C (kPa):</th>
<th>Evaporation rate:</th>
<th>Vapor density:</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.7</td>
<td>No information available</td>
<td>1.59</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>VOC content (g/L):</th>
<th>Odor threshold (ppm):</th>
<th>Partition coefficient (n-octanol/water):</th>
</tr>
</thead>
<tbody>
<tr>
<td>789</td>
<td>5-10 (recognition) 84 (tolerance)</td>
<td>-0.31</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Viscosity:</th>
<th>Miscibility:</th>
<th>Solubility:</th>
</tr>
</thead>
<tbody>
<tr>
<td>No information available</td>
<td>Miscible with water Miscible with Acetone Miscible with Ether Miscible with Benzene Miscible with glacial Acetic Acid Miscible with many organic solvents</td>
<td>Very soluble in water</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>When Ethanol comes in contact with Sodium, it liberates flammable hydrogen gas. It can react vigorously or explosively with acid hydrides or acid chlorides. It reacts with alkali metals to liberate flammable hydrogen gas. It reacts with acetyl bromide to evolve hydrogen bromide. It reacts with ammonia + silver nitrate to form silver nitride and silver fulminate. Ethyl alcohol can react with freshly cut/etched/scratched aluminum with the evolution of heat and release of hydrogen gas. Ethyl alcohol has to be on the aluminum surface as it is being cut/scratched/etched. Ethyl Alcohol reacts vigorously with acetyl chloride. Ethyl alcohol reacts with silver (I) oxide + ammonia or hydrazine to form silver nitride and silver fulminate.</td>
</tr>
</tbody>
</table>

**Product code:** ET107  **Product name:** DEHYDRATED ALCOHOL, 200 PROOF, USP
Ethanol ignites and then explodes on contact with the following compounds: acetic anhydride + sodium hydrosulfate, disulfuric acid + nitric acid, phosphorus (III) oxide, platinum, potassium tert-butoxide + acids. Ethanol rapidly absorbs moisture from the air. It can react vigorously/explosively with oxidizers. Ethanol can react vigorously/explosively with the following: ammonium hydroxide & silver oxide, chlorine or chlorine oxides, perchlorates (barium perchlorate, chloryl perchlorate, magnesium perchlorate (forms ethyl perchlorate), nitrosyl perchlorate, potassium perchlorate, silver perchlorate, uranyl perchlorate), acetic anhydride, acetyl bromide (evolves hydrogen bromide), acetyl chloride, aluminum sesquibromide ethylate, bromine pentafluoride, calcium hypochlorite, chromic anhydride, chromium trioxide, chromyl chloride, cyanuric acid + water, dichloromethane + sulfuric acid + nitrate (or) nitrite, manganese perchlorate + 2,2-dimethoxy propane, dioxygen difluoride, disulfuryl difluoride, fluorine nitrate, hydrogen peroxide, iodine heptafluoride, manganese heptoxide, iodine + methanol + mercuric oxide, iodine + Phosphorus (forms ethane iodide), mercuric nitrate, nitric acid, perchloric acid, permanganic acid, peroxodisulfuric acid, platinum black, potassium dioxide, potassium permanganate, potassium superoxide, potassium tert-butoxide, ruthenium(VIII) oxide, silver + nitric acid (forms silver fulminate), silver nitrate (forms ethyl nitrate), silver oxide, sodium hydrazide, hydrogen peroxide + sulfuric acid, sulfuric acid + permanganates, uranium hexafluoride, sulfuric acid + sodium dichromate, tetrachlorisilane + water, silver & nitric acid, tetraphosphorus hexaoxide.

### Chemical stability

**Stability:** Stable under recommended storage conditions.

**Possibility of Hazardous Reactions:** Hazardous polymerization does not occur

**Conditions to avoid:** Heat. Ignition sources. Incompatible materials.

**Incompatible Materials:** Oxidizing agents

**Hazardous decomposition products:** Carbon monoxide. Carbon dioxide. When heated to decomposition it emits acrid smoke and irritating fumes.

**Other Information**

**Corrosivity:** No information available

**Special Remarks on Corrosivity:** No information available

### 11. TOXICOLOGICAL INFORMATION

**Information on likely routes of exposure**

**Principal Routes of Exposure:** Ingestion. Skin. Eyes. Inhalation.

**Acute Toxicity**

**Component Information**

<table>
<thead>
<tr>
<th>Ethyl Alcohol 200 proof</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS-No.</td>
</tr>
<tr>
<td>64-17-5</td>
</tr>
<tr>
<td>LD50/oral/rat =</td>
</tr>
<tr>
<td>7060 mg/kg Oral LD50 Rat</td>
</tr>
<tr>
<td>LD50/oral/mouse =</td>
</tr>
<tr>
<td>3450 mg/kg Oral LD50 Mouse</td>
</tr>
</tbody>
</table>

**Product code:** ET107

**Product name:** DEHYDRATED ALCOHOL, 200 PROOF, USP
LD50/dermal/rabbit = No information available
LD50/dermal/rat = No information available
LC50/inhalation/rat = 124.7 mg/L Inhalation LC50 Rat 4 h
LC50/inhalation/mouse = 39000 mg/m³ 4 h
Other LD50 or LC50 Information = >60000 ppm Inhalation LC50 Mouse 1 h
5900 mg/m³ Inhalation LC50 Rat 6 h
20000 ppm Inhalation LC50 Rat 10 h
5560 mg/kg Oral LD50 Guinea Pig
6300 mg/kg Oral LD50 Rabbit

Product Information

LD50/oral/rat = VALUE- Acute Tox Oral = 7060 mg/kg
LD50/oral/mouse = VALUE- Acute Tox Oral = 3450 mg/kg
LD50/dermal/rabbit VALUE- Acute Tox Dermal = No information available
LD50/dermal/rat VALUE - Acute Tox Dermal = No information available

LC50/inhalation/rat
VALUE- Vapor = 124.7 mg/l (4-hr)
VALUE- Gas = No information available
VALUE- Dust/Mist = No information available

LC50/Inhalation/mouse
VALUE- Vapor = 39 mg/l (4-hr)
VALUE - Gas = No information available
VALUE - Dust/Mist = No information available

Symptoms

Skin Contact: Mildly to moderately irritating to the skin.

Eye Contact: Causes serious eye irritation. Causes moderate to severe eye irritation.

Inhalation
May cause irritation of respiratory tract. Symptoms may include coughing and shortness of breath. May cause nausea and headache. It may affect behavior/central nervous system (ataxia, general anesthetic, drowsiness). May affect respiration (respiratory depression). Inhalation of high concentrations of vapor may cause anesthetic effects. Inhalation of high concentrations of vapors may cause dizziness or suffocation. May affect the brain.

Ingestion
Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. May cause gastritis. May cause loss of appetite. May cause flushed skin. May affect the cardiovascular system (change in heart rate). May affect the cardiovascular system (hypotension or hypertension, tachycardia, dysrhythmias). It may affect behavior/central nervous system (excitation, mild euphoria, excessive talking, fatigue, headache, dizziness, drowsiness, staggering gait, ataxia, hallucinations, slurred speech, amnesia, confusion, release of inhibitions, aggressive behavior, convulsions, coma). May affect respiration (dyspnea, respiratory depression). It may affect the brain. May affect liver. May affect the blood. May affect the endocrine system. It may affect the spleen. May affect urinary system (kidneys).

Product code: ET107
Product name: DEHYDRATED ALCOHOL, 200 PROOF, USP
Aspiration hazard
No information available.

**Delayed and immediate effects as well as chronic effects from short and long-term exposure**

**Chronic Toxicity**
Prolonged or repeated skin contact may cause dermatitis, and dryness and cracking of the skin. Prolonged or repeated ingestion may affect behavior/central nervous system. Prolonged or repeated ingestion may affect metabolism (cause anorexia, weight loss). Prolonged or repeated ingestion may affect the liver (fatty liver degeneration, cirrhosis of the liver. Prolonged or repeated ingestion may affect the cardiovascular system. Prolonged or repeated inhalation may affect the liver.

**Sensitization:**
No information available.

**Mutagenic Effects:**
May affect genetic material
Experiments with bacteria and/or yeast have shown mutagenic effects

**Carcinogenic effects:**
Equivocal tumorigenic agent by Registry of Toxic Effects of Chemical Substances (RTECS) criteria. Confirmed Animal Carcinogen with Unknown Relevance to Humans.

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>IARC</th>
<th>ACGIH - Carcinogens</th>
<th>NTP</th>
<th>OSHA HCS - Carcinogens</th>
<th>Australia - Notifiable Carcinogenic Substances</th>
<th>Australia - Prohibited Carcinogenic Substances</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl Alcohol 200 proof</td>
<td>64-17-5</td>
<td>Group 1 - Carcinogenic to humans - Monograph 100E [2012] in alcoholic beverages Monograph 96 [2010] in alcoholic beverages</td>
<td>A3 Confirmed Animal Carcinogen with Unknown Relevance to Humans</td>
<td>Not listed</td>
<td>Present</td>
<td>Not listed</td>
<td>Not listed</td>
</tr>
</tbody>
</table>

ACGIH (American Conference of Governmental Industrial Hygienists)
A3 - Animal Carcinogen
IARC (International Agency for Research on Cancer)
Group 1 - Carcinogenic to Humans
(In alcoholic beverages)
NTP (National Toxicology Program)
OSHA (Occupational Safety and Health Administration of the US Department of Labor)

**Reproductive toxicity**
May damage fertility or the unborn child

**Reproductive Effects:**
Causes adverse reproductive effects
**Developmental Effects:**
May cause harm to the unborn child
May cause adverse developmental effects

**Teratogenic Effects:**
Causes birth defects (teratogenic effects)

**Specific Target Organ Toxicity**

**STOT - single exposure**
Respiratory system. central nervous system.
**STOT - repeated exposure**
Liver. central nervous system. Skin. Reproductive System.
**Target Organs:**

12. ECOLOGICAL INFORMATION

**Product code:** ET107
**Product name:** DEHYDRATED ALCOHOL, 200 PROOF, USP
**Ecotoxicity**

Ecotoxicity effects: Aquatic environment.

*Ethyl Alcohol 200 proof - 64-17-5*

**Freshwater Fish Species Data:**
- 12.0 - 16.0 mL/L LC50 Oncorhynchus mykiss 96 h static 1 100 mg/L LC50 Pimephales promelas 96 h static 1 13400 - 15100 mg/L LC50
- Pimephales promelas 96 h flow-through 1

**Water Flea Data:**
- 9268 - 14221 mg/L LC50 Daphnia magna 48 h 2 mg/L EC50
- Daphnia magna 48 h 10800 mg/L EC50
- Daphnia magna 24 h

Persistence and degradability: No information available

Bioaccumulative potential: No information available.

Mobility: No information available.

---

### 13. DISPOSAL CONSIDERATIONS

**Disposal Methods**

**Waste from residues / unused products:**
Waste must be disposed of in accordance with Federal, State and Local regulation.

**Contaminated packaging:**
Empty containers should be taken for local recycling, recovery or waste disposal

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl Alcohol 200 proof</td>
<td>64-17-5</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

### 14. TRANSPORT INFORMATION

**DOT**

- **UN-No:** UN1170
- **Proper Shipping Name:** Ethanol solution
- **Hazard Class:** 3
- **Subsidiary Risk:** No information available
- **Packing group:** II
- **Emergency Response Guide Number:** No information available
- **Marine Pollutant:** No data available
- **DOT RQ (lbs):** No information available
- **Special Provisions:** No Information available
- **Symbol(s):** No information available
- **Description:** UN1170, Ethanol solution, 3, PG II

**TDG (Canada)**

- **UN-No:** UN1170
- **Proper Shipping Name:** Ethanol solution
- **Hazard Class:** 3
- **Subsidiary Risk:** No information available
- **Packing Group:** II
- **Marine Pollutant:** No Information available
- **Description:** ETHANOL SOLUTION, 3, UN1170, PG II

**ADR**

- **Product code:** ET107
- **Product name:** DEHYDRATED ALCOHOL, 200 PROOF, USP
UN-No: UN1170
Proper Shipping Name: Ethanol (Ethyl alcohol)
Hazard Class: 3
Packing Group: II
Subsidiary Risk: No information available
Description: UN1170 Ethanol solution, 3, II

IMO / IMDG
UN-No: UN1170
Proper Shipping Name: Ethanol (Ethyl alcohol)
Hazard Class: 3
Subsidiary Risk: No information available
Packing Group: II
Marine Pollutant: No information available
EMS: F-E

RID
UN-No: UN1170
Proper Shipping Name: Ethanol (Ethyl alcohol)
Hazard Class: 3
Subsidiary Risk: 3
Packing Group: II
Description: UN1170 Ethanol solution, 3, II, RID

ICAO
UN-No: UN1170
Proper Shipping Name: Ethanol solution
Hazard Class: 3
Subsidiary Risk: No information available
Packing Group: II
Description: Ethanol solution, 3, UN1170, PG II

IATA
UN-No: UN1170
Proper Shipping Name: Ethanol solution
Hazard Class: 3
Subsidiary Risk: No information available
Packing Group: II
ERG Code: 3L
Special Provisions: No information available
Description: UN1170, Ethanol solution, 3, PG II

15. REGULATORY INFORMATION

International Inventories

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>U.S. TSCA</th>
<th>KOREA KECL</th>
<th>Philippines (PICCS)</th>
<th>Japan ENCS</th>
<th>CHINA</th>
<th>Australia (AICS)</th>
<th>EINECS-No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl Alcohol 200 proof</td>
<td>64-17-5</td>
<td>Present</td>
<td>KE-13217</td>
<td>Present</td>
<td>(2)-202</td>
<td>Present</td>
<td>Present</td>
<td>Present</td>
</tr>
</tbody>
</table>

U.S. Regulations

Ethyl Alcohol 200 proof
Massachusetts RTK: Present
New Jersey RTK Hazardous Substance List: 0844
Pennsylvania RTK: Present
Minnesota - Hazardous Substance List: Present

Product code: ET107
Product name: DEHYDRATED ALCOHOL, 200 PROOF, USP
Louisiana Reportable Quantity List for Pollutants: Present (listed as Volatile Organic Compounds)
California Directors List of Hazardous Substances: Present
FDA - Food Additives Generally Recognized as Safe (GRAS): 21 CFR 184.1293
FDA - 21 CFR - Total Food Additives 169.175, 169.176, 169.177, 169.181, 172.340, 172.560, 172.580, 175.105, 176.180, 176.200, 177.1200, 177.1650, 178.1010, 184.1293, 73.30, 73.345, 73.615


**Chemicals Known to the State of California to Cause Cancer:**
⚠️WARNING: This product can expose you to chemicals including (see table below) which is (are) known to the State of California to cause cancer. For more information go to www.p65warnings.ca.gov.

**Chemicals Known to the State of California to Cause Reproductive Toxicity:**
⚠️WARNING: This product can expose you to chemicals including (see table below) which is (are) known to the State of California to cause birth defects or other reproductive harm. For more information go to www.p65warnings.ca.gov.

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Carcinogen</th>
<th>Developmental Toxicity</th>
<th>Male Reproductive Toxicity</th>
<th>Female Reproductive Toxicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl Alcohol 200 proof</td>
<td>64-17-5</td>
<td>carcinogen</td>
<td>developmental toxicity</td>
<td>Not Listed</td>
<td>Not Listed</td>
</tr>
</tbody>
</table>

**CERCLA/SARA**

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>CERCLA - Hazardous Substances and their Reportable Quantities</th>
<th>Section 302 Extremely Hazardous Substances and TPQs</th>
<th>Section 302 Extremely Hazardous Substances and RQs</th>
<th>Section 313 - Chemical Category</th>
<th>Section 313 - Reporting de minimis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl Alcohol 200 proof</td>
<td>64-17-5</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

**U.S. TSCA**

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>TSCA Section 5(a)2 - Chemicals With Significant New Use Rules (SNURS)</th>
<th>TSCA 8(d) - Health and Safety Reporting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl Alcohol 200 proof</td>
<td>64-17-5</td>
<td>Not Applicable</td>
<td>Not Applicable</td>
</tr>
</tbody>
</table>

**Canada**

**WHIMIS 2015 - GHS Classifications**

WHIMIS 2015 Hazard Classification Information:

<table>
<thead>
<tr>
<th>Component</th>
<th>WHIMIS 2015 Hazard Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl Alcohol 200 proof</td>
<td>Flammable liquids - Category 2: H225 Highly flammable liquid and vapour.; Serious Eye Damage/Eye Irritation - Category 2B: H320 Causes eye irritation.</td>
</tr>
</tbody>
</table>

**Canada Hazardous Products Regulation**

This product has been classified according to the hazard criteria of the HPR (Hazardous Products Regulation) and the SDS contains all of the information required by the HPR.

**WHIMIS 1988 Hazard Class**

B2 Flammable liquid
D2B Toxic materials

**Components**

<table>
<thead>
<tr>
<th>Components</th>
<th>WHIMIS 1988</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl Alcohol 200 proof</td>
<td>B2,D2B</td>
</tr>
</tbody>
</table>

**Canada Controlled Products Regulation:**

Product code: ET107  Product name: DEHYDRATED ALCOHOL, 200 PROOF, USP
This product has been classified according to the hazard criteria of the CPR (Controlled Products Regulation) and the MSDS contains all of the information required by the CPR.

### Components

<table>
<thead>
<tr>
<th>WHMIS Ingredient Disclosure List -</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl Alcohol 200 proof 0.1 %</td>
</tr>
</tbody>
</table>

### Inventory

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Canada (DSL)</th>
<th>Canada (NDSL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl Alcohol 200 proof 64-17-5</td>
<td>Present</td>
<td>Not Listed</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>CEPA Schedule I - Toxic Substances</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl Alcohol 200 proof 64-17-5</td>
<td>Not listed</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>CEPA - 2010 Greenhouse Gases Subject to Mandatory Reporting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl Alcohol 200 proof 64-17-5</td>
<td>Not listed</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>EU GHS - SV - CLP (1272/2008)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl Alcohol 200 proof 64-17-5</td>
<td>Flammable liquids - Flam. Liq. 2; H225 Highly flammable liquid and vapour.603-002-00-5</td>
<td></td>
</tr>
</tbody>
</table>

### EU Classification

**EU GHS - SV - CLP 1272/2008**

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>EU GHS - SV - CLP (1272/2008)</th>
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<td>Ethyl Alcohol 200 proof 64-17-5</td>
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<td></td>
</tr>
</tbody>
</table>

**R-phrase(s)**

R11 - Highly flammable.

**S-phrase(s)**

S7 - Keep container tightly closed.
S16 - Keep away from sources of ignition - No smoking.

### Safety Phrases

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Classification</th>
<th>Concentration Limits:</th>
<th>Safety Phrases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl Alcohol 200 proof 64-17-5</td>
<td>F; R11</td>
<td>No information</td>
<td>S: 7 16</td>
<td></td>
</tr>
</tbody>
</table>

The product is classified in accordance with Annex VI to Directive 67/548/EEC

### Indication of danger:

F - Highly flammable.

![Flame Icon](image)

### 16. OTHER INFORMATION

<table>
<thead>
<tr>
<th>Preparation Date:</th>
<th>9/27/2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revision Date:</td>
<td>12/15/2017</td>
</tr>
<tr>
<td>Prepared by:</td>
<td>Sonia Owen</td>
</tr>
</tbody>
</table>

**Disclaimer:**

All chemicals may pose unknown hazards and should be used with caution. This Safety Data Sheet (SDS) applies only to the material as packaged. If this product

**Product code:** ET107 **Product name:** DEHYDRATED ALCOHOL, 200 PROOF, USP
is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this SDS. The physical properties reported in this SDS are obtained from the literature and do not constitute product specifications. Information contained herein does not constitute a warranty, whether expressed or implied, as to the safety, merchantability or fitness of the goods for a particular purpose. Spectrum Chemicals & Laboratory Products, Inc. assumes no responsibility for results obtained or for incidental or consequential damages, including lost profits, arising from the use of these data. No warranty against infringement of any patent, copyright or trademark is made or implied. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this SDS is based on technical data judged to be reliable, Spectrum assumes no responsibility for the completeness or accuracy of the information contained herein.

End of Safety Data Sheet
Manufacturer

Product Covered: ET107, Dehydrated Alcohol, 200 Proof, Undenatured, USP

Spectrum takes ownership as the manufacturer for the Spectrum product listed above and provides full quality assurance, customer service, and technical product support.

While information concerning the raw material manufacturer of our starting materials is considered proprietary, such information can be made available upon request contingent on demonstration of business volume justification and successful execution of confidential disclosure agreement (CDA).

Requests for disclosure of proprietary raw material manufacturer information may be submitted to the assigned account representative for consideration.

Sincerely,

Michael Dang
Director, Quality Systems & GMP Compliance
mdang@spectrumchemical.com

9.August.2018
Manufacturing Process Flowchart

Dehydrated Alcohol, 200 Proof, Undenatured, USP - ET107

Ethanol railcar or tanker truck → Dedicated delivery system

Dedicated delivery system → Dedicated ethanol storage tank

Dedicated delivery system

Pure pack down

Totes, drums, pails, cases → Post pack sample taken and approved

Pure ethanol

Dedicated tanker truck

Post pack sample taken and approved

Blending

Batching tank

Denatured pack down

Approved tanker truck

Totes, drums, pails, cases

Post pack sample taken and approved

Customers

Approved tanker truck → Post pack sample taken and approved
This is to certify that the quality management system of:

**Spectrum Chemicals and Laboratory Products, Inc.**

Main Site: 14422 South San Pedro Street, Gardena, California, 90248, USA,
Additional sites: 13915 South Main Street, Los Angeles, California, 90061, USA
769 Jersey Avenue, New Brunswick, New Jersey, 08901, USA
755 Jersey Avenue, New Brunswick, New Jersey, 08901, USA
777 Jersey Avenue, New Brunswick, New Jersey, 08901, USA
400 N. Oracle, Suite 221, Tucson, Arizona, 85704, USA, USA

has been assessed and registered by Intertek as conforming to the requirements of:

**ISO 9001:2015**

The quality management system is applicable to:

Main Site: The manufacture and distribution of specialty fine chemicals, solutions, equipment, supplies and products for the laboratory, pharmaceutical, food, healthcare, cosmetic, fragrance, biotechnology, environmental and process industries.

**Certificate Number:**
94-316m-03

**Initial Certification Date:**
27 December 1994

**Certificate Issue Date:**
31 July 2017

**Certificate Expiry Date:**
28 January 2019

Authorized Signature
Calin Moldovean
President Business Assurance

Intertek Testing Services NA, Inc. dba Intertek
900 Chelmsford Street, Lowell, MA, USA

In the issuance of this certificate, Intertek assumes no liability to any party other than to the Client, and then only in accordance with the agreed upon Certification Agreement. This certificate’s validity is subject to the organization maintaining their system in accordance with Intertek’s requirements for systems certification. Validity may be confirmed via email at certificate.validation@intertek.com or by scanning the code to the right with a smartphone. The certificate remains the property of Intertek, to whom it must be returned upon request.
This appendix identifies the locations by the management system of

Spectrum Chemicals and Laboratory Products, Inc.

755 and 769 Jersey Avenue: The manufacture and distribution of specialty fine chemicals, solutions, equipment, supplies and products for the laboratory, pharmaceutical, food, healthcare, cosmetic, fragrance, biotechnology, environmental and process industries.

777 Jersey Avenue: The manufacture and distribution of specialty fine chemicals, solutions, equipment, supplies and products for Compounding Pharmacies.

7400 N. Oracle: The manufacture and distribution of specialty fine chemicals, solutions, equipment, supplies and products for the laboratory, pharmaceutical, food, healthcare, cosmetic, fragrance, biotechnology, environmental and process industries.

In the issuance of this certificate, Intertek assumes no liability to any party other than to the Client, and then only in accordance with the agreed upon Certification Agreement. This certificate’s validity is subject to the organization maintaining their system in accordance with Intertek’s requirements for systems certification. Validity may be confirmed via email at certificate.validation@intertek.com or by scanning the code to the right with a smartphone.

The certificate remains the property of Intertek, to whom it must be returned upon request.
兹证明，以下组织：

斯百全化学（上海）有限公司

上海市松江区申港路3802弄A20

的管理体系，符合以下标准要求并予以注册：

ISO 9001:2015

此管理体系适用于：
药用辅料销售，化学品销售

统一社会信用代码：91310000777627048K
证书编号：111310001
首次认证日期：2015年11月17日
认证决定日期：2017年12月26日
签发日期：2017年12月26日
有效期至：2018年11月10日

Calin Moldovean
President, Business Assurance
Intertek Certification Limited, 10A Victory Park, Victory Road, Derby DE24 8ZF, United Kingdom

Intertek Certification Limited
是UKAS认可的认证机构，注册号为014

对于此证书的签署，Intertek仅对获证组织承担认证协议所规定的义务，而不对其他组织承担任何义务。此证书的有效性基于获证组织能够依照Intertek的体系认证要求使其体系得到保持。可通过电子邮件certificate.validation@intertek.com或用智能手机扫描该代码对证书有效性进行确认。此证书的所有权属Intertek，在必要时证书持有者应按要求归还证书。

获证组织必须定期接受监督审核并经审核合格方可保持证书年度有效。证书信息可在国家认监委官网http://www.cnca.gov.cn查询。
This is to certify that the management system of:

Spectrum China Ltd.
Building A20, No. 3802, Shengang Road, Songjiang District, Shanghai, China

has been registered by Intertek as conforming to the requirements of:

ISO 9001:2015

The management system is applicable to:

Sales for Pharmaceutical Excipients, Sales for Chemicals

Unified Social Credit Identifier: 91310000777627048K
Certificate Number: 111310001
Initial Certification Date: 17 November 2015
Date of Certification Decision: 26 December 2017
Issuing Date: 26 December 2017
Valid Until: 10 November 2018

Calin Moldovean
President, Business Assurance
Intertek Certification Limited, 10A Victory Park, Victory Road, Derby DE24 8ZF, United Kingdom

Intertek Certification Limited is a UKAS accredited body under schedule of accreditation no. 014.

In the issuance of this certificate, Intertek assumes no liability to any party other than to the Client, and then only in accordance with the agreed upon Certification Agreement. This certificate’s validity is subject to the organisation maintaining their system in accordance with Intertek’s requirements for systems certification. Validity may be confirmed via email at certificate.validation@intertek.com or by scanning the code to the right with a smartphone. The certificate remains the property of Intertek, to whom it must be returned upon request.

The annual validity of the certificate can also be checked through the website http://www.cnca.gov.cn of CNCA in China.
July 13, 2017

Certification of Compliance with current Good Manufacturing Practices

Dear Valued Customer:

Spectrum Chemical Mfg Corp certifies that our USP, NF, FCC, EP, BP, JP and food grade products are produced, processed, packaged and held in compliance with current Good Manufacturing Practices (cGMP) in accordance with the applicable parts of 21 CFR, parts 210 and 211 of the Code of Federal Regulations.

Spectrum is an FDA registered and inspected Drug Establishment. Our United States Food and Drug Administration (USFDA) Registration numbers are as follows:

Spectrum-Gardena, CA: 2020632
Spectrum-New Brunswick, NJ: 2246824
Spectrum-Shanghai, China: 3006174778

Thank you for your interest in Spectrum products. If we may be of further assistance, please feel free to contact the Quality Assurance department at 310-516-8000 or via email at qualityassurance@spectrumchemical.com

Sincerely,

Oralia Chavez
Quality Assurance Specialist
August 9, 2018

Certification of Compliance with current Good Manufacturing Practices

Dear Valued Customer:

Spectrum Chemical Mfg Corp certifies that the following product(s) is produced, processed, packaged and held in compliance with current Good Manufacturing Practices (cGMP) in accordance with the applicable parts of 21 CFR, parts 210 and 211 of the Code of Federal Regulations.

<table>
<thead>
<tr>
<th>Catalog Number</th>
<th>Product Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>ET107</td>
<td>Dehydrated Alcohol, 200 Proof, Undenatured, USP</td>
</tr>
</tbody>
</table>

Spectrum is an FDA registered and inspected Drug Establishment. Our United States Food and Drug Administration (USFDA) Registration numbers are as follows:

- Spectrum-Gardena, CA: 2020632
- Spectrum-New Brunswick, NJ: 2246824
- Spectrum-Shanghai, China: 03006174778

Thank you for your interest in Spectrum products. If we may be of further assistance, please feel free to contact the Quality Assurance department at 310-516-8000 or via email at qualityassurance@spectrumchemical.com

Sincerely,

Oralia Chavez
Quality Assurance Specialist
March 28, 2016

Re: Dehydrated Alcohol, 200 Proof, Undenatured, USP- ET107

To Whom It May Concern:

Thank you for your interest in Spectrum high quality chemicals.

We at Spectrum Chemical Mfr. Corp. understand the concern regarding Bovine Spongiform Encephalopathy (BSE). Please be assured that the chemical Dehydrated Alcohol, 200 Proof, Undenatured, USP- ET107 is BSE/TSE free.

If you have any further questions, please contact Tech Services at (310) 516-8000 Extension 5471, or by email at techservices@spectrumchemical.com.

Sincerely,

Darlene Dagdag- Lyudmirskiy
Technical Services
Spectrum Chemical Mfr. Corp.

This document has been produced electronically and is valid without a signature
March 28, 2016

Re: Dehydrated Alcohol, 200 Proof, Undenatured, USP – ET107

To Whom It May Concern:

Thank you for your interest in Spectrum high quality chemicals.

We at Spectrum Chemical Mfr. Corp. understand the concern regarding the presence of allergens in raw materials. Please be assured that the following chemical does not contain (Apples, Aspartame (Phenylalanine), Bananas, Bee Pollen, Beef, Buckwheat, Chicken, FD&C Yellow #5 (Tartrazine), Gelatin, Guarana, Kiwi, Lupins, Maltitol, Mannitol, Matsutake Mushrooms, Mollusks, Monosodium Glutamate (MSG), Mustard, Oranges, Peaches, Pork & pork products, Propolis, Quinine, Royal Jelly, Seed & Seeds products, Sulfites & Sulfur Dioxide, Tomatoes, Yams, Milk and milk products, Egg and egg products, Fish, Crustacean Shellfish, Tree Nuts, Wheat and wheat products, Peanut and peanut products, Soybean and soybean products, Cereals containing Gluten, Celery, and Sesame Seed).

Dehydrated Alcohol, 200 Proof, Undenatured, USP – ET107

If you have any further questions, please contact Tech Services at (310) 516-8000 Extension 5471, or by email at techservices@spectrumchemical.com.

Sincerely,

Darlene Dagdag- Lyudmirskiy
Technical Services
Spectrum Chemical Mfr. Corp.

This document has been produced electronically and is valid without a signature
March 28, 2016

Re: Dehydrated Alcohol, 200 Proof, Undenatured, USP- ET107

To Whom It May Concern:

Thank you for your interest in Spectrum high quality chemicals.

We at Spectrum Chemical Mfg. Corp. understand the concern regarding the presence of aflatoxins in raw materials.

The item: Dehydrated Alcohol, 200 Proof, Undenatured, USP- ET107 is produced from corn. The manufacturing facilities do not accept corn loads found to contain any level of aflatoxins, or more than 2 parts per million mycotoxins.

The ethyl alcohol is purified by distilling in a series of distillation columns. Any high boiling materials such as aflatoxins and mycotoxins, would, if present in the process, be removed from the final ethyl alcohol product during the distillation purification steps.

In addition co-products of manufacturing process are tested for aflatoxins weekly. Aflatoxin content is found consistently below detectable limits of 5 ppb.

If you have any further questions, please contact Tech Services at (310) 516-8000 Extension 5471, or by email at techservices@spectrumchemical.com.

Sincerely,

Darlene Dagdag- Lyudmirskiy
Technical Services
Spectrum Chemical Mfr. Corp.

This document has been produced electronically and is valid without a signature.
## Certificate Of Analysis

<table>
<thead>
<tr>
<th>Item Number</th>
<th>ET107</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lot Number</td>
<td>1HF0287</td>
</tr>
</tbody>
</table>

**Item**: Dehydrated Alcohol, 200 Proof, Undenatured, USP  
**CAS Number**: 64-17-5  
**Molecular Formula**: C₂H₅OH  
**Molecular Weight**: 46.07

<table>
<thead>
<tr>
<th>Test</th>
<th>Specification</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ASSAY (by VOLUME)</strong></td>
<td>99.5 %</td>
<td>99.99 %</td>
</tr>
<tr>
<td><strong>CLARITY OF SOLUTION</strong></td>
<td>TO PASS TEST</td>
<td>PASSES TEST</td>
</tr>
<tr>
<td><strong>COLOR OF SOLUTION</strong></td>
<td>TO PASS TEST</td>
<td>PASSES TEST</td>
</tr>
<tr>
<td><strong>ACIDITY OR ALKALINITY</strong></td>
<td>TO PASS TEST</td>
<td>PASSES TEST</td>
</tr>
<tr>
<td><strong>SPECIFIC GRAVITY @ 15.56°C</strong></td>
<td>0.7962</td>
<td>0.7928</td>
</tr>
<tr>
<td><strong>UV ABSORPTION</strong></td>
<td>TO PASS TEST</td>
<td>PASSES TEST</td>
</tr>
</tbody>
</table>

**ORGANIC IMPURITIES:**

- **METHANOL**: 200 ppm, <200 ppm  
- **ACETALDEHYDE AND ACETAL**: 10 ppm, <10 ppm  
- **BENZENE**: 2 ppm, <2 ppm  
- **SUM OF ALL OTHER IMPURITIES**: 300 ppm, <300 ppm  
- **LIMIT OF NONVOLATILE RESIDUE**: 2.5 mg, 0.0 mg  

**ELEMENTAL IMPURITIES**: AS REPORTED  
NO ELEMENTAL IMPURITIES PRESENT

**IDENTIFICATION A**: TO PASS TEST  
**IDENTIFICATION B**: TO PASS TEST  
**CERTIFIED KOSHER**: PASSES TEST  
**RETEST DATE**: 11-MAY-2021  
**DATE OF MANUFACTURE**: 11-MAY-2018  
**APPEARANCE**: CLEAR COLORLESS LIQUID  
**RESIDUAL SOLVENTS**: TO PASS TEST  
**CLASS 2 (SOLVENT) / METHANOL**: <3000 ppm  
**CLASS 3 (solvent) / 1-PROpanol**: <5000 ppm  
**CLASS 3 (solvent) / 2-PROpanol**: <5000 ppm  

---

All pharmaceutical ingredients are tested using current edition of applicable pharmacopeia.
repacking or research purposes by experienced personnel only. It is the customer’s responsibility to provide adequate hazardous material training and ensure that appropriate Personal Protective Equipment (PPE) is used before handling any chemical.
Dehydrated Alcohol
(Ethanol)
200 Proof
Undenatured
U.S.P.
CAS 64-17-5

CAUTION: For manufacturing, processing or repacking. Not intended for beverage use. Read and understand the label and Safety Data Sheet (SDS) prior to use.

FIRST AID:
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
IF SWALLOWED: Do not induce vomiting.

WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm. LIGHT SENSITIVE: Keep tightly closed in light-resistant containers.

DOT: UN1170, Ethanol, 3, PG II

C2H5OH F.W. 46.07
Assay (by Volume) ........................................ Min. 99.5%
Clarity of Solution ........................................ To pass test
Color of Solution ........................................ To pass test
Acidity or Alkalinity ....................................... To pass test

MAXIMUM LIMITS
Specific Gravity @ 15.56°C .......................... 0.7962
UV Absorption ............................................ To pass test
Organic Impurities ....................................... To pass test
Nonvolatile Residue ...................................... To pass test
Residual Solvents ........................................ To pass test

**WARNING:** This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

**LIGHT SENSITIVE:** Keep tightly closed in light-resistant containers.

This color-coded band indicates the hazard most likely to be posed by that material under storage conditions. The criteria used to assign band colors have been established by the Storage Code working group of the Society for Chemical Hazard Communication (SCHC). It is recommended that like colors be stored together, unless otherwise stated, based on the color codes indicated to the right. However, it is the responsibility of the customer to check with their local fire department for possible conflicts with our recommendations when storing hazardous chemicals.

**Spectrum Chemical Mfg Corp**

Corporate Headquarters:
769 Jersey Ave.
New Brunswick, NJ 08901
732.214.1300

West Coast Facility:
14422 S. San Pedro St.
Gardena, CA 90248
310.516.8000

**GHS Hazard Pictograms**
- YELLOW: Oxidizer
- RED: Flammable
- GREEN: General Storage
- BLUE: Health Hazard
- WHITE: Corrosive

**Bar Code**
**GHS Hazard Pictograms**
**Warning, Safety Data and Precautionary Information**
**Product Catalog Number**
**Item Name, Form, Grade**
**Storage Color Band**
**Size/Quantity**
**Chemical Abstracts Service (CAS) Registry Number**
**Caution Information**
**DOT Shipping Information**
**Toll-Free 24-Hour Chemical Emergency Telephone Number**
**Empirical Formula, Formula Weight and Technical Specifications Panel**
**Expiration Information**
**Lot Number**
**Kosher Certified by Kosher Supervision of America (KSA).**
June 15, 2018

RE: Lot Numbering System

Dear Valued Customer:

This letter is to inform you of Spectrum Chemicals and Laboratory Products’ Lot Numbering System. The system is based on an alpha-numerical sequence which provides the month, year and location of production.

The lot numbering system utilized until 2010 is a sequence of six characters, two letters followed by four numbers. The first letter represents the year, for example, Y denotes 2009 and Z denotes 2010. The second letter represents the month and site, for example, A-L denotes January through December at Spectrum’s Gardena, CA facility, while M-X denotes January through December at the New Brunswick, NJ facility. The following four numbers are sequentially assigned.

Example: ZI0928 = The 928th material produced in California in September 2010

The lot numbering system utilized for 2011 and forward, is a sequence of seven characters. The first character, a number, represents the production facility:

1 = Gardena, CA Facility
2 = New Brunswick, NJ Facility
3 = China Facility

The second character, a letter, represents the year. For example, A denotes 2011 and B denotes 2012. The third character, a letter, represents the month, with A denoting January and L denoting December. The following four numbers are sequentially assigned.

Example: 2AA0706 = The 706th material produced in New Jersey in January 2011

Thank you for your interest with Spectrum products. Please feel free to contact us at 310-516-8000 or via email at qualityassurance@spectrumchemical.com if we may be of further assistance.

Sincerely,

Michael Dang
Director, Quality Systems & GMP Compliance
mdang@spectrumchemical.com
Stability – Shelf Life Guidance

Product Covered: ET107, Dehydrated Alcohol, 200 Proof, Undenatured, USP

Spectrum Chemical’s manufacturing partner has assigned the following shelf life guidance for the product listed above.

The product, ET107, Dehydrated Alcohol, 200 Proof, Undenatured, USP, is assigned a 36 months shelf life from date of manufacturing. The quality and integrity of the chemical depends on the handling and storage conditions. Please refer to the Safety Data Sheet for proper storage and handling procedures.

Adan R. Hernandez
Quality Control Manager

Corporate Headquarters
769 Jersey Avenue
New Brunswick, NJ 08901-3605

9. August. 2018
The following product(s) prepared by the named company are certified kosher with the stated requirements:

**Spectrum Laboratory Products, Inc.**

S-0032

14422 S. San Pedro Street
Gardena CA  90248
USA

<table>
<thead>
<tr>
<th>Product Name</th>
<th>ET107, Ethyl Alcohol, 190 Proof, USP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brand</td>
<td>Spectrum</td>
</tr>
<tr>
<td>UKD-ID</td>
<td>KSAV3-I5V5F9</td>
</tr>
<tr>
<td>D/P/M</td>
<td>P</td>
</tr>
<tr>
<td>Symbol Required</td>
<td>KSA</td>
</tr>
</tbody>
</table>

**Special Conditions**

This certificate expires on

Feb 01, 2019

Rabbi Binyomin Lisbon
Kashrus Administrator

Placing the KSA logo on products not listed above constitutes an un-authorized use of the KSA symbol, which is a federally registered trademark.