SAFETY DATA SHEET

Preparation Date: 5/2/2014  Revision Date: 4/18/2018  Revision Number: G2

1. IDENTIFICATION

Product identifier

Product code: E1015
Product Name: ETHYL ETHER, REAGENT, ACS

Other means of identification

Synonyms:
Diethyl ether
Diethyl oxide
Ethyl oxide
Éther éthylâge (French)
Ethoxyethane
Ethyl ether
Oxyde d'ethyle (French)

CAS #: 60-29-7
RTECS #: KI5775000
Cl#: Not available

Recommended use of the chemical and restrictions on use

Recommended use: Solvent.
Uses advised against: No information available

Supplier: Spectrum Chemical Mfg. Corp
1422 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)
Contact Person: 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)

<table>
<thead>
<tr>
<th>Acute toxicity - Oral</th>
<th>Category 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin corrosion/irritation</td>
<td>Category 2</td>
</tr>
<tr>
<td>Serious eye damage/eye irritation</td>
<td>Category 2</td>
</tr>
<tr>
<td>Specific target organ toxicity (single exposure)</td>
<td>Category 3</td>
</tr>
<tr>
<td>Flammable liquids</td>
<td>Category 1</td>
</tr>
</tbody>
</table>

Label elements
Danger

Hazard statements
Harmful if swallowed
Causes skin irritation
Causes serious eye irritation
May cause respiratory irritation. May cause drowsiness or dizziness
Extremely flammable liquid and vapor

Hazards not otherwise classified (HNOC)
Not Applicable

Other hazards
Toxic to aquatic life with long lasting effects
Toxic to aquatic life

Precautionary Statements - Prevention
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Wear protective gloves/protective clothing/eye protection/face protection
Avoid breathing dust/fume/gas/mist/vapors/spray
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
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 ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
Wash contaminated clothing before reuse
IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.
IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
Rinse mouth

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

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

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>ETHYL ETHER, REAGENT, ACS</td>
<td>2/15</td>
<td></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. If symptoms persist, call a physician.

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. Obtain medical attention.

Most important symptoms and effects, both acute and delayed

Symptoms
- Irritating to eyes, respiratory system and skin
- Central nervous system effects
- Dizziness
- Drowsiness
- Fatigue
- May cause headache
- Ingestion may cause vomiting and nausea
- 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. Water spray mist or foam.

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

Specific hazards arising from the chemical

Hazardous Combustion Products: Carbon Monoxide, Carbon Dioxide.

Specific hazards: Extremely flammable. May be ignited by heat, sparks or flames. Container explosion may occur under fire conditions or when heated. 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). 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 product from entering drains. Do not let this chemical enter the environment. Prevent entry into waterways, sewers, basements or confined areas. In case of large spill, dike if needed. Dike far ahead of liquid spill for later disposal.

**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).

**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:**

**Product code:** E1015  
**Product name:** ETHYL ETHER, REAGENT, ACS

Incompatible Materials:
- Oxidizing agents
- Acids
- Halogens
- Sulfur
- Sulfur compounds

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>
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<tbody>
<tr>
<td>Ethyl Ether</td>
<td>60-29-7</td>
<td>400 ppm TWA 1200 mg/m³ TWA</td>
<td>None</td>
<td>500 ppm STEL 400 ppm TWA</td>
<td>None</td>
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<tr>
<td>Ethyl alcohol</td>
<td>64-17-5</td>
<td>1000 ppm TWA 1900 mg/m³ TWA</td>
<td>1000 ppm TWA 1900 mg/m³ TWA</td>
<td>1000 ppm STEL</td>
<td>None</td>
</tr>
<tr>
<td>Butylated Hydroxytoluene</td>
<td>128-37-0</td>
<td>None</td>
<td>10 mg/m³ TWA</td>
<td>2 mg/m³ TWA inhalable fraction and vapor</td>
<td>None</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>
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<tr>
<td>Ethyl Ether</td>
<td>60-29-7</td>
<td>400 ppm TWA 1210 mg/m³ TWA 500 ppm STEL 1520 mg/m³ STEL</td>
<td>400 ppm TWA 500 ppm STEL</td>
<td>500 ppm STEL</td>
<td>None</td>
</tr>
<tr>
<td>Ethyl alcohol</td>
<td>64-17-5</td>
<td>1000 ppm TWA 1880 mg/m³ TWA</td>
<td>1000 ppm STEL</td>
<td>1000 ppm STEL</td>
<td>None</td>
</tr>
<tr>
<td>Butylated Hydroxytoluene</td>
<td>128-37-0</td>
<td>10 mg/m³ TWA</td>
<td>2 mg/m³ TWA aerosol, inhalable, and vapour</td>
<td>None</td>
<td>None</td>
</tr>
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</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 Ether</td>
<td>60-29-7</td>
<td>500 ppm STEL 1520 mg/m³ STEL 400 ppm TWA 1210 mg/m³ TWA</td>
<td>400 ppm TWA 1200 mg/m³ TWA 500 ppm STEL 1500 mg/m³ STEL</td>
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<tr>
<td>Ethyl alcohol</td>
<td>64-17-5</td>
<td>1000 ppm TWA 1880 mg/m³ TWA</td>
<td>1000 ppm TWA 1900 mg/m³ TWA</td>
</tr>
<tr>
<td>Butylated Hydroxytoluene</td>
<td>128-37-0</td>
<td>10 mg/m³ TWA</td>
<td>10 mg/m³ TWA 20 mg/m³ STEL</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

Product code: E1015
Product name: ETHYL ETHER, REAGENT, ACS
Personal Protective Equipment

Eye protection: Goggles
Skin and body protection: Chemical resistant apron
Long sleeved clothing
Gloves
Respiratory protection: Vapor respirator. Be sure to use an approved/certified respirator or equivalent.
Hygiene measures: Avoid contact with skin, eyes and clothing. When using, do not eat, drink or smoke. Wash hands before breaks and immediately after handling the product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state: Liquid
Appearance: No information available.
Color: Colorless.
Taste: Burning. Sweet.
Formula: C4-H10-O
Molecular/Formula weight: 74.12
Flammability: Extremely flammable
Flash Point Tested according to: Closed cup
Autoignition Temperature (°C/°F): 160-180 °C/320-356 °F
Open cup
Upper Explosion Limit (%): 36-48%
Melting point/range(°C/°F): -116 °C/-177 °F
Flashing (°C/°F): -45 °C/-49 °F
-40 °C/-40 °F
Lower Explosion Limit (%): 1.9%
Decomposition temperature(°C/°F): No information available
Flash Point Tested according to: Closed cup
Open cup
Boiling point/range(°C/°F): 34.6 °C/94.3 °F at 760 mm Hg
17.9 °C/64.2 °F at 400 mm Hg
2.2 °C/36 °F at 200 mm Hg
Bulk density: No information available
Density (g/cm3): No information available
Viscosity: No information available
Miscibility: Miscible with many organic solvents
Miscible with Benzene
Miscible with Chloroform
Miscible with oils
Miscible with Petroleum Ether
Miscible with lower aliphatic alcohols
Solubility: Soluble in Acetone
Very soluble in Ethanol
Soluble in Benzene
Slightly soluble in water

10. STABILITY AND REACTIVITY

Reactivity
Reactive with oxidizing agents
Reactive with acids

Product code: E1015
Product name: ETHYL ETHER, REAGENT, ACS
Chemical stability

Stability: Stable under recommended storage conditions.

Possibility of Hazardous Reactions: Hazardous polymerization does not occur


Incompatible Materials: Oxidizing agents
Acids
Halogens
Sulfur
Sulfur compounds

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. Inhalation. Eyes.

Acute Toxicity

The following values are calculated based on chapter 3.1 of the GHS document

<table>
<thead>
<tr>
<th>Component Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl Ether</td>
</tr>
<tr>
<td>CAS-No. 60-29-7</td>
</tr>
<tr>
<td>LD50/oral/rat = 1215 mg/kg Oral LD50 Rat</td>
</tr>
<tr>
<td>LD50/oral/mouse = 1760 mg/kg</td>
</tr>
<tr>
<td>LD50/dermal/rabbit = &gt;20 mL/kg Dermal LD50 Rabbit</td>
</tr>
<tr>
<td>LD50/dermal/rat = No information available</td>
</tr>
<tr>
<td>LC50/inhalation/rat = 32000 ppm 4 hr</td>
</tr>
<tr>
<td>LC50/inhalation/mouse = 130000 mg/m³ 3 hr</td>
</tr>
<tr>
<td>31000 ppm 30 M</td>
</tr>
<tr>
<td>Other LD50 or LC50 information = No information available</td>
</tr>
</tbody>
</table>

| Ethyl alcohol                          |
| CAS-No. 64-17-5                        |
| LD50/oral/rat = 7060 mg/kg Oral LD50 Rat |
| LD50/oral/mouse = 3450 mg/kg            |
| 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 = No information available |

Product code: E1015                      Product name: ETHYL ETHER, REAGENT, ACS
Other LD50 or LC50 information = 5900 mg/m³ Inhalation LC50 Rat 6 h
2000 ppm Inhalation LC50 Rat 10 h
5560 mg/kg Oral LD50 Guinea Pig
6300 mg/kg Oral LD50 Rabbit

Butylated Hydroxytoluene

<table>
<thead>
<tr>
<th>CAS-No.</th>
<th>128-37-0</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD50/oral/rat</td>
<td>890 mg/kg Oral LD50 Rat</td>
</tr>
<tr>
<td>LD50/oral/mouse</td>
<td>650-1040 mg/kg</td>
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<tr>
<td>LD50/dermal/rabbit</td>
<td>No information available</td>
</tr>
<tr>
<td>LD50/dermal/rat</td>
<td>&gt; 2000 mg/kg Dermal LD50 Rat</td>
</tr>
<tr>
<td>LC50/inhalation/rat</td>
<td>No information available</td>
</tr>
<tr>
<td>LC50/inhalation/mouse</td>
<td>No information available</td>
</tr>
</tbody>
</table>
| Other LD50 or LC50 information | 10700 mg/kg oral LD50 Guinea pig
| | 2100 mg/kg oral LD50 Rabbit |

Product Information

LD50/oral/rat = VALUE- Acute Tox Oral = No information available
LD50/oral/mouse = Value - Acute Tox Oral = No information available
LD50/dermal/rabbit VALUE-Acute Tox Dermal = No information available
LD50/dermal/rat VALUE -Acute Tox Dermal = No information available

Symptoms

Skin Contact: Causes skin irritation. Moderate skin irritation. It may be absorbed through the skin. If absorbed through skin it may cause systemic effects.

Eye Contact: Causes eye irritation. May cause conjunctivitis.

Inhalation: Irritating to respiratory system. May cause conjunctival irritation. May affect respiration (respiratory depression). Symptoms may include coughing and bronchodilation. May cause salivation. May cause loss of appetite. May affect cardiovascular system (bradycardia, tachycardia, cardiac arrhythmias). Inhalation of high concentrations of vapors may cause dizziness or suffocation. Inhalation of high concentrations of vapor may cause anesthetic effects. May cause central nervous system effects, central nervous system depression. It may affect behavior/central nervous system (convulsions, excitement). It may affect behavior/central nervous system (ataxia, general anesthetic, drowsiness). It may affect behavior/central nervous system (headache, euphoria, fatigue, slurred speech).

Product code: E1015 Product name: ETHYL ETHER, REAGENT, ACS
Ingestion
Harmful if swallowed. May cause digestive (gastrointestinal) tract irritation. It may cause abdominal (stomach) distention. Ingestion may cause nausea, vomiting. May cause central nervous system effects (affect behavior). Aspiration hazard if swallowed. Aspiration into the lungs can cause chemical pneumonitis. May cause loss of appetite.

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 inhalation and/or ingestion may cause central nervous system effects (affect behavior). Prolonged or repeated ingestion may cause weight loss. Prolonged or repeated inhalation may affect metabolism (weight loss). Prolonged or repeated ingestion may affect the liver. Prolonged or repeated inhalation may affect the liver. Prolonged or repeated skin contact may cause dermatitis and defatting, dryness, and cracking of the skin. Prolonged or repeated inhalation may affect the kidneys.

Sensitization:
No information available.

Mutagenic Effects:
For Ethyl Ether:
May affect genetic material
Animal experiments showed mutagenic effects
Experiments with bacteria have shown mutagenic effects

Carcinogenic effects:
Not considered carcinogenic.

<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 Ether</td>
<td>60-29-7</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
</tr>
<tr>
<td>Ethyl alcohol</td>
<td>64-17-5</td>
<td>Group 1 - 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)
IARC (International Agency for Research on Cancer)
NTP (National Toxicology Program)
OSHA (Occupational Safety and Health Administration of the US Department of Labor)

Reproductive toxicity
No data is available

Reproductive Effects:
No information available
Developmental Effects:
No information available
Teratogenic Effects:
No information available

Product code: E1015
Product name: ETHYL ETHER, REAGENT, ACS
Specific Target Organ Toxicity

STOT - single exposure  Respiratory system, central nervous system.
STOT - repeated exposure No information available.
Target Organs: Central nervous system.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Ecotoxicity effects: Aquatic environment.

Ethyl Ether - 60-29-7

| Freshwater Fish Species Data: | 2560 mg/L LC50 Pimephales promelas 96 h flow-through 1 10000 mg/L LC50 Lepomis macrochirus 96 h static 1 |
| Water Flea Data: | 165 mg/L EC50 Daphnia magna 24 h |

Ethyl alcohol - 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 |

Butylated Hydroxytoluene - 128-37-0

| Freshwater Algae Data: | 6 mg/L EC50 Pseudokirchneriella subcapitata 72 h 0.42 mg/L EC50 Desmodesmus subspicatus 72 h |
| Freshwater Fish Species Data: | 5 mg/L LC50 Oryzias latipes 48 h 1 |

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>
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<tbody>
<tr>
<td>Ethyl Ether</td>
<td>60-29-7</td>
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<td>None</td>
<td>None</td>
<td>U117 ignitable waste</td>
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<tr>
<td>Ethyl alcohol</td>
<td>64-17-5</td>
<td>None</td>
<td>None</td>
<td>None</td>
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<tr>
<td>Butylated Hydroxytoluene</td>
<td>128-37-0</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

14. TRANSPORT INFORMATION

DOT

UN-No: UN1155
Proper Shipping Name: Diethyl ether
Hazard Class: 3
Subsidiary Class: No information available

Product code: E1015  Product name: ETHYL ETHER, REAGENT, ACS
Packing group: I
Emergency Response Guide Number: No information available
Marine Pollutant: No data available
DOT RQ (lbs): 100 lbs/45.4 kg
Special Provisions: No Information available
Symbol(s): No information available
Description: No information available

TDG (Canada)
UN-No: UN1155
Proper Shipping Name: Diethyl ether
Hazard Class: 3
Subsidiary Risk: No information available
Packing Group: I
Marine Pollutant: No Information available
Description: No information available

ADR
UN-No: UN1155
Proper Shipping Name: Diethyl ether (Ethyl ether)
Hazard Class: 3
Packing Group: I
Subsidiary Risk: No information available

IMO / IMDG
UN-No: UN1155
Proper Shipping Name: Diethyl ether (Ethyl ether)
Hazard Class: 3
Subsidiary Risk: No information available
Packing Group: I
Marine Pollutant: No information available
EMS: F-E

RID
UN-No: UN1155
Proper Shipping Name: Diethyl ether (Ethyl ether)
Hazard Class: 3
Subsidiary Risk: 3
Packing Group: I

ICAO
UN-No: UN1155
Proper Shipping Name: Diethyl ether
Hazard Class: 3
Subsidiary Risk: No information available
Packing Group: I

IATA
UN-No: UN1155
Proper Shipping Name: Diethyl ether
Hazard Class: 3
Subsidiary Risk: No information available
Packing Group: I
ERG Code: 3AH
Special Provisions: No information available

15. REGULATORY INFORMATION

Product code: E1015
Product name: ETHYL ETHER, REAGENT, ACS
International Inventories

<table>
<thead>
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<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>
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<td>Present</td>
<td>Present (2)-365,(2)-361</td>
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<td>Present</td>
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<td>Ethyl alcohol</td>
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<td>Present</td>
<td>Present KE-13217</td>
<td>Present</td>
<td>Present (2)-202</td>
<td>Present</td>
<td>Present</td>
<td>Present 200-578-6</td>
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<td>Present KE-03079</td>
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<td>Present 204-881-4</td>
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</table>

U.S. Regulations

**Ethyl Ether**

- **Massachusetts RTK:** Present
- **New Jersey RTK Hazardous Substance List:** 0701
- **New Jersey (EHS) List:** 0701 500 lb TPQ
- **New Jersey - Discharge Prevention - List of Hazardous Substances:** Present
- **New Jersey TCPA - EHS:** 10000lbTQ
- **Pennsylvania RTK:** Environmental hazard
- **Pennsylvania RTK - Environmental Hazard List** Present
- **Minnesota - Hazardous Substance List:** Present
- **New York Release Reporting - List of Hazardous Substances:**
  - 100 lb RQ
  - Louisiana Reportable Quantity List for Pollutants: 100lbfinal RQ
  - 45.4kgfinal RQ
- **California Directors List of Hazardous Substances:** Present

**Ethyl alcohol**

- **Massachusetts RTK:** Present
- **New Jersey RTK Hazardous Substance List:** 0844
- **Pennsylvania RTK:** Present
- **Minnesota - Hazardous Substance List:** Present
- **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

**Butylated Hydroxytoluene**

- **Massachusetts RTK:** Present
- **New Jersey RTK Hazardous Substance List:** 0814
- **Pennsylvania RTK:** Present
- **Minnesota - Hazardous Substance List:** Present
- **California Directors List of Hazardous Substances:** Present
- **FDA - Food Additives Generally Recognized as Safe (GRAS):** 21 CFR 182.3173

**FDA - Direct Food Additives**


**FDA - 21 CFR - Total Food Additives**


**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](http://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](http://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 Ether</td>
<td>60-29-7</td>
<td>Not Listed</td>
<td>Not Listed</td>
<td>Not Listed</td>
<td>Not Listed</td>
</tr>
<tr>
<td>Ethyl alcohol</td>
<td>64-17-5</td>
<td>carcinogen</td>
<td>developmental toxicity</td>
<td>Not Listed</td>
<td>Not Listed</td>
</tr>
</tbody>
</table>

**Product code:** E1015  **Product name:** ETHYL ETHER, REAGENT, ACS
### 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 Ether</td>
<td>60-29-7</td>
<td>100 lb final RQ</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Ethyl alcohol</td>
<td>64-17-5</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Butylated Hydroxytoluene</td>
<td>128-37-0</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 Ether</td>
<td>60-29-7</td>
<td>Not Applicable</td>
<td>01/26/1994/06/30/1998</td>
</tr>
<tr>
<td>Ethyl alcohol</td>
<td>64-17-5</td>
<td>Not Applicable</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Butylated Hydroxytoluene</td>
<td>128-37-0</td>
<td>Not Applicable</td>
<td>Not Applicable</td>
</tr>
</tbody>
</table>

### Canada

**WHIMIS 2015 - GHS Classifications**

**WHIMIS 2015 Hazard Classification Information:**

- **Component:** Ethyl Ether
  - CAS-No.: 60-29-7 (97.5-98.5)

- **component:** Ethyl alcohol
  - CAS-No.: 64-17-5 (1.5-2.5)

- **Component:** Butylated Hydroxytoluene
  - CAS-No.: 128-37-0 (0.0001)

**WHIMIS 2015 Hazard Classification**

- **Flammable liquids - Category 1:** H224 Extremely flammable liquid and vapour.; **Acute toxicity - Oral - Category 4:** H302 Harmful if swallowed.; **Specific target organ toxicity - Single exposure - Category 3:** H336 May cause drowsiness or dizziness.

- **Flammable liquids - Category 2:** H225 Highly flammable liquid and vapour.; **Serious Eye Damage/Eye Irritation - Category 2B:** H320 Causes eye irritation.

- **Combustible Dust - Category 1:** May form combustible dust concentrations in air (factors such as combustibility and explosiveness of dusts including composition and shape and size of particles could cause substance to belong to “Combustible dust” hazard class)

**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**

**Components**

- Ethyl Ether
- Ethyl alcohol

**Canada Controlled Products Regulation:**

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.

<table>
<thead>
<tr>
<th>Components</th>
<th>WHIMIS 1988</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl Ether</td>
<td>B2</td>
</tr>
<tr>
<td>Ethyl alcohol</td>
<td>B2,D2B</td>
</tr>
</tbody>
</table>

**Components**

<table>
<thead>
<tr>
<th>Components</th>
<th>WHIMIS Ingredient Disclosure List -</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl Ether</td>
<td>1 %</td>
</tr>
<tr>
<td>Ethyl alcohol</td>
<td>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 Ether</td>
<td>60-29-7</td>
<td>Present</td>
<td>Not Listed</td>
</tr>
<tr>
<td>Ethyl alcohol</td>
<td>64-17-5</td>
<td>Present</td>
<td>Not Listed</td>
</tr>
<tr>
<td>Butylated Hydroxytoluene</td>
<td>128-37-0</td>
<td>Present</td>
<td>Not Listed</td>
</tr>
</tbody>
</table>

### EU Classification

**EU GHS - SV - CLP 2012/2008**

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>EU GHS - SV - CLP (1272/2008)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl Ether</td>
<td>60-29-7</td>
<td>Flammable liquids - Flam. Liq. 1: H224 Highly flammable liquid and vapour.; Acute toxicity - Oral - Acute Tox. 4: H302 Harmful if swallowed. (Minimum classification); Specific target organ toxicity - Single exposure - STOT SE 3: H336 May cause drowsiness or dizziness.; Supplemental Hazards: EUH019 May form explosive peroxides.; Supplemental Hazards: EUH066 Repeated exposure may cause skin dryness or cracking.603-022-00-4</td>
</tr>
<tr>
<td>Ethyl alcohol</td>
<td>64-17-5</td>
<td>Flammable liquids - Flam. Liq. 2: H225 Highly flammable liquid and vapour.603-002-00-5</td>
</tr>
<tr>
<td>Butylated Hydroxytoluene</td>
<td>128-37-0</td>
<td>No information</td>
</tr>
</tbody>
</table>

### EU - CLP (2012/2008)

**R-phrase(s)**
- R12 - Extremely flammable.
- R19 - May form explosive peroxides.
- R22 - Harmful if swallowed.
- R66 - Repeated exposure may cause skin dryness or cracking.
- R67 - Vapors may cause drowsiness and dizziness.

**S-phrase(s)**
- S9 - Keep container in a well-ventilated place.
- S16 - Keep away from sources of ignition - No smoking.
- S29 - Do not empty into drains.
- S33 - Take precautionary measures against static discharges.

<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 Ether</td>
<td>60-29-7</td>
<td>F+; R12 R19 Xn; R22</td>
<td>No information</td>
<td>(S2) S9 S16 S29 S33</td>
</tr>
</tbody>
</table>
The product is classified in accordance with Annex VI to Directive 67/548/EEC

**Indication of danger:**
F+ - Extremely flammable.
Xn - Harmful.

<table>
<thead>
<tr>
<th>Product</th>
<th>R66</th>
<th>R67</th>
<th>Classification</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl alcohol</td>
<td>64-17-5</td>
<td>F; R11</td>
<td>No information</td>
<td>S: 7 16</td>
</tr>
<tr>
<td>Butylated Hydroxytoluene</td>
<td>128-37-0</td>
<td></td>
<td>No information</td>
<td></td>
</tr>
</tbody>
</table>

16. OTHER INFORMATION

**Preparation Date:** 5/2/2014  
**Revision Date:** 4/18/2018  
**Prepared by:** Sonia Owen

**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 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