1. Identification

Product identifier: L.F.D. (Low Foaming Degreaser)

Other means of identification:
- SDS number: 504N-71C
- Product code: HIL00481

Recommended use: Degreaser

Recommended restrictions: None known.

Manufacturer/Importers/Supplier/Distributor information

Manufacturer
- Company name: HILLYARD INDUSTRIES
- Address: 302 North Fourth St.
  St. Joseph, MO 64501

Contact person: Regulatory Affairs

Telephone number: (816) 233-1321 (Ext. 8285)

Fax: (816) 383-8485

E-mail: regulatoryaffairs@hillyard.com

Emergency telephone # (800) 424-9300

(Only in the event of chemical emergency involving a spill, leak, fire, exposure, or accident involving chemicals.)

2. Hazard(s) identification

Physical hazards: Not classified.

Health hazards:
- Acute toxicity, inhalation: Category 4
- Skin corrosion/irritation: Category 2
- Serious eye damage/eye irritation: Category 2

Environmental hazards: Not classified.

OSHA defined hazards: Not classified.

Label elements

Signal word: Warning

Hazard statement: Causes skin irritation. Causes serious eye irritation. Harmful if inhaled.

Precautionary statement:
- Prevention: Use With Adequate Ventilation. Avoid breathing vapors or spray mist. Open windows and doors, use exhaust fans or other means to insure fresh air entry during application and drying. Wear protective gloves. Avoid contact with eyes. Wash thoroughly after handling.
- Response: If on skin: Wash with plenty of water. If inhaled: Remove person to fresh air and keep comfortable for breathing. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a poison center/doctor if you feel unwell. If skin irritation occurs: Get medical advice/attention. If eye irritation persists: Get medical advice/attention. Take off contaminated clothing and wash before reuse.
- Storage: Store away from incompatible materials.
- Disposal: Dispose of waste and residues in accordance with local authority requirements.

Hazard(s) not otherwise classified (HNOC): None known.

Supplemental information: None.
3. Composition/information on ingredients

Mixtures

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Common name and synonyms</th>
<th>CAS number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethylene glycol monobutyl ether</td>
<td></td>
<td>111-76-2</td>
<td>5 - &lt; 10</td>
</tr>
<tr>
<td>Sodium Carbonate, Anhydrous</td>
<td></td>
<td>497-19-8</td>
<td>3 - &lt; 5</td>
</tr>
<tr>
<td>Alcohols, C9-11, ethoxylated</td>
<td></td>
<td>68439-46-3</td>
<td>1 - &lt; 3</td>
</tr>
<tr>
<td>Tetrasodium ethylenediamine tetraacetate</td>
<td></td>
<td>64-02-8</td>
<td>1 - &lt; 3</td>
</tr>
</tbody>
</table>

Other components below reportable levels 80 - < 90

*Designates that a specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. First-aid measures

Inhalation
Remove victim to fresh air and keep at rest in a position comfortable for breathing. Oxygen or artificial respiration if needed. Call a POISON CENTER or doctor/physician if you feel unwell.

Skin contact
Remove contaminated clothing. Wash with plenty of soap and water. If skin irritation occurs: Get medical advice/attention. Wash contaminated clothing before reuse.

Eye contact
Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists.

Ingestion
Rinse mouth. Get medical attention if symptoms occur.

Most important symptoms/effects, acute and delayed
Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Skin irritation. May cause redness and pain.

Indication of immediate medical attention and special treatment needed
Provide general supportive measures and treat symptomatically. Keep victim warm. Keep victim under observation. Symptoms may be delayed.

General information
Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media
Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).

Unsuitable extinguishing media
Do not use water jet as an extinguisher, as this will spread the fire.

Specific hazards arising from the chemical
During fire, gases hazardous to health may be formed.

Special protective equipment and precautions for firefighters
Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Fire fighting equipment/instructions
Move containers from fire area if you can do so without risk.

Specific methods
Use standard firefighting procedures and consider the hazards of other involved materials.

General fire hazards
No unusual fire or explosion hazards noted.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures
Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Avoid inhalation of vapors and spray mists. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

Methods and materials for containment and cleaning up
This product is miscible in water.

Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Environmental precautions
Avoid discharging into drains, water courses or onto the ground.
7. Handling and storage

Precautions for safe handling
Do not get in eyes, on skin, or on clothing. Avoid inhalation of vapors and spray mists. Avoid prolonged exposure. Use only outdoors or in a well-ventilated area. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities
Store in original tightly closed container. Store in a well-ventilated place. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits

<table>
<thead>
<tr>
<th>US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)</th>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethylene glycol monobutyl ether (CAS 111-76-2)</td>
<td>PEL</td>
<td></td>
<td>240 mg/m3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>50 ppm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>US. ACGIH Threshold Limit Values</th>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethylene glycol monobutyl ether (CAS 111-76-2)</td>
<td>TWA</td>
<td>20 ppm</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>US. NIOSH: Pocket Guide to Chemical Hazards</th>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethylene glycol monobutyl ether (CAS 111-76-2)</td>
<td>TWA</td>
<td>24 mg/m3</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Biological limit values</th>
<th>ACGIH Biological Exposure Indices</th>
<th>Components</th>
<th>Value</th>
<th>Determinant</th>
<th>Specimen</th>
<th>Sampling Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethylene glycol monobutyl ether (CAS 111-76-2)</td>
<td>200 mg/g</td>
<td>Buty oxyacetic acid (BAA), with hydrolysis</td>
<td>Creatinine in urine</td>
<td>*</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* - For sampling details, please see the source document.

Exposure guidelines

US - California OELs: Skin designation
Ethylene glycol monobutyl ether (CAS 111-76-2) Can be absorbed through the skin.

US - Minnesota Haz Subs: Skin designation applies
Ethylene glycol monobutyl ether (CAS 111-76-2) Skin designation applies.

US - Tennessee OELs: Skin designation
Ethylene glycol monobutyl ether (CAS 111-76-2) Can be absorbed through the skin.

US NIOSH Pocket Guide to Chemical Hazards: Skin designation
Ethylene glycol monobutyl ether (CAS 111-76-2) Can be absorbed through the skin.

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)
Ethylene glycol monobutyl ether (CAS 111-76-2) Can be absorbed through the skin.

Appropriate engineering controls
Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eye wash facilities and emergency shower must be available when handling this product.

Individual protection measures, such as personal protective equipment

Eye/face protection
Do not get in eyes. Chemical goggles are recommended.

Skin protection
Hand protection
Wear appropriate chemical resistant gloves.

Other
Impervious boots and aprons where splashing of concentrate is a problem; otherwise, use uniforms or coveralls.

Respiratory protection
If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. Chemical respirator with organic vapor cartridge.
Thermal hazards
Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations
Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance
Clear, colorless liquid

Physical state
Liquid.

Form
Liquid.

Color
Colorless

Odor
Wintergreen odor

Odor threshold
Not available

pH
11 - 12

Melting point/freezing point
Not applicable / Not available

Initial boiling point and boiling range
335.12 °F (168.4 °C) estimated

Flash point
> 200.0 °F (> 93.3 °C) Tag Closed Cup

Evaporation rate
< 1 (ethyl ether = 1)

Flammability (solid, gas)
Not available.

Upper/lower flammability or explosive limits
Explosive limit - lower (%)
Not available.

Explosive limit - upper (%)
Not available.

Vapor pressure
17.4 mm Hg

Vapor density
0.8 AIR=1

Relative density
1.048 at 77°F

Solubility(ies)
Solubility (water)
100 % Complete

Partition coefficient (n-octanol/water)
Not available

Auto-ignition temperature
Not available

Decomposition temperature
Not available

Viscosity
Not available

Other information
Density
8.73

Percent volatile
90 - 91 %

VOC (Weight %)
5 %

10. Stability and reactivity

Reactivity
The product is stable and non-reactive under normal conditions of use, storage and transport.

Chemical stability
Material is stable under normal conditions.

Possibility of hazardous reactions
No dangerous reaction known under conditions of normal use.

Conditions to avoid
Avoid temperatures exceeding the flash point. Contact with incompatible materials.

Incompatible materials
Strong oxidizing agents.

Hazardous decomposition products
No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure
Inhalation
Harmful if inhaled.
Skin contact
Causes skin irritation.

2-Butoxy ethanol may be absorbed through the skin in toxic amounts if contact is repeated and prolonged. These effects have not been observed in humans.

Eye contact
Causes serious eye irritation.

Ingestion
Expected to be a low ingestion hazard.

Symptoms related to the physical, chemical and toxicological characteristics
Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Skin irritation. May cause redness and pain.

Information on toxicological effects

Acute toxicity
Harmful if inhaled.

<table>
<thead>
<tr>
<th>Product</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>L.F.D. (Low Foaming Degreaser)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Acute</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Dermal</strong></td>
<td>Rabbit</td>
<td>8000 mg/kg estimated</td>
</tr>
<tr>
<td><strong>Inhalation</strong></td>
<td>Guinea pig</td>
<td>26.6667 mg/l, 2 Hours estimated</td>
</tr>
<tr>
<td>LC50</td>
<td>Mouse</td>
<td>14000 ppm, 7 Hours estimated</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8625 mg/l, 4 Hours estimated</td>
</tr>
<tr>
<td></td>
<td></td>
<td>40 mg/l, 2 Hours estimated</td>
</tr>
<tr>
<td></td>
<td>Rat</td>
<td>17083.334 mg/l, 0.5 Hours estimated</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10000 mg/l, 4 Hours estimated</td>
</tr>
<tr>
<td></td>
<td></td>
<td>9000 ppm, 4 Hours estimated</td>
</tr>
<tr>
<td></td>
<td></td>
<td>76.6667 mg/l, 2 Hours estimated</td>
</tr>
<tr>
<td><strong>Oral</strong></td>
<td>Guinea pig</td>
<td>24 g/kg estimated</td>
</tr>
<tr>
<td>LD50</td>
<td>Mouse</td>
<td>24 g/kg estimated</td>
</tr>
<tr>
<td></td>
<td>Rabbit</td>
<td>6.4 g/kg estimated</td>
</tr>
<tr>
<td></td>
<td>Rat</td>
<td>10234.0537 mg/kg estimated</td>
</tr>
<tr>
<td>Components</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethylene glycol monobutyl ether (CAS 111-76-2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Acute</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Dermal</strong></td>
<td>Rabbit</td>
<td>400 mg/kg</td>
</tr>
<tr>
<td><strong>Inhalation</strong></td>
<td>Mouse</td>
<td>700 ppm, 7 Hours</td>
</tr>
<tr>
<td>LC50</td>
<td>Rat</td>
<td>450 ppm, 4 Hours</td>
</tr>
<tr>
<td><strong>Oral</strong></td>
<td>Guinea pig</td>
<td>1.2 g/kg</td>
</tr>
<tr>
<td>LD50</td>
<td>Mouse</td>
<td>1.2 g/kg</td>
</tr>
<tr>
<td></td>
<td>Rabbit</td>
<td>0.32 g/kg</td>
</tr>
<tr>
<td></td>
<td>Rat</td>
<td>560 mg/kg</td>
</tr>
<tr>
<td>Sodium Carbonate, Anhydrous (CAS 497-19-8)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Acute</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Inhalation</strong></td>
<td>Guinea pig</td>
<td>0.8 mg/l, 2 Hours</td>
</tr>
<tr>
<td>LC50</td>
<td>Mouse</td>
<td>1.2 mg/l, 2 Hours</td>
</tr>
<tr>
<td></td>
<td>Rat</td>
<td>2.3 mg/l, 2 Hours</td>
</tr>
</tbody>
</table>
Tetrasodium ethylenediamine tetraacetate (CAS 64-02-8)

**Acute**
- **Oral LD50**
  - Rat: 4090 mg/kg
- **Oral Acute**
  - Rat: > 2000 mg/kg

* Estimates for product may be based on additional component data not shown.

**Skin corrosion/irritation**
- Causes skin irritation.

**Serious eye damage/eye irritation**
- Causes serious eye irritation.

**Respiratory or skin sensitization**
- Respiratory sensitization: Not a respiratory sensitizer.
- Skin sensitization: This product is not expected to cause skin sensitization.

**Germ cell mutagenicity**
- No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

**Carcinogenicity**
- This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

**IARC Monographs. Overall Evaluation of Carcinogenicity**
- Ethylene glycol monobutyl ether (CAS 111-76-2): 3 Not classifiable as to carcinogenicity to humans.

- Not listed.

**Reproductive toxicity**
- This product is not expected to cause reproductive or developmental effects.

**Specific target organ toxicity - single exposure**
- Not classified.

**Specific target organ toxicity - repeated exposure**
- Not classified.

**Aspiration hazard**
- Not an aspiration hazard.

**Chronic effects**
- May be harmful if absorbed through skin. Prolonged inhalation may be harmful.
- 2-Butoxy ethanol may be absorbed through the skin in toxic amounts if contact is repeated and prolonged. These effects have not been observed in humans.

**12. Ecological information**

**Ecotoxicity**
- The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

<table>
<thead>
<tr>
<th>Product</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>L.F.D. (Low Foaming Degreaser)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Aquatic</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crustacea</td>
<td>EC50</td>
<td>Daphnia 261.1103 mg/l, 48 hours estimated</td>
</tr>
<tr>
<td>Fish</td>
<td>LC50</td>
<td>Fish 351.6996 mg/l, 96 hours estimated</td>
</tr>
</tbody>
</table>

* Estimates for product may be based on additional component data not shown.

**Persistence and degradability**
- No data is available on the degradability of this product.

**Bioaccumulative potential**
- No data available.

**Mobility in soil**
- No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

**13. Disposal considerations**

**Disposal instructions**
- Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations.

**Local disposal regulations**
- Dispose in accordance with all applicable regulations.

**Hazardous waste code**
- The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Waste from residues / unused products
Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging
Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport information
DOT
Not regulated as dangerous goods.

15. Regulatory information
US federal regulations
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
All components are on the U.S. EPA TSCA Inventory List.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)
Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)
Not listed.

SARA 304 Emergency release notification
Not regulated.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)
Not listed.

Superfund Amendments and Reauthorization Act of 1986 (SARA)
Hazard categories
Immediate Hazard - Yes
Delayed Hazard - No
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

SARA 302 Extremely hazardous substance
Not listed.

SARA 311/312 Hazardous chemical
No

SARA 313 (TRI reporting)
Not regulated.

Other federal regulations
Safe Drinking Water Act (SDWA)
Not regulated.

US state regulations
US. California Controlled Substances. CA Department of Justice (California Health and Safety Code Section 11100)
Not listed.

US. Massachusetts RTK - Substance List
Ethylene glycol monobutyl ether (CAS 111-76-2)

US. New Jersey Worker and Community Right-to-Know Act
Ethylene glycol monobutyl ether (CAS 111-76-2)

US. Pennsylvania Worker and Community Right-to-Know Law
Ethylene glycol monobutyl ether (CAS 111-76-2)

US. Rhode Island RTK
Not regulated.

US. California Proposition 65
California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

International Inventories
<table>
<thead>
<tr>
<th>Country(s) or region</th>
<th>Inventory name</th>
<th>On inventory (yes/no)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States &amp; Puerto Rico</td>
<td>Toxic Substances Control Act (TSCA) Inventory</td>
<td>Yes</td>
</tr>
</tbody>
</table>

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).
16. Other information, including date of preparation or last revision

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Issue date</td>
<td>04-08-2015</td>
</tr>
<tr>
<td>Version #</td>
<td>01</td>
</tr>
<tr>
<td>HMIS® ratings</td>
<td>Health: 2</td>
</tr>
<tr>
<td></td>
<td>Flammability: 0</td>
</tr>
<tr>
<td></td>
<td>Physical hazard: 0</td>
</tr>
</tbody>
</table>

**Disclaimer**

No representations or warranties, either express or implied, of merchantability, fitness for a particular purpose, or of any nature are made with respect to the product(s) or information contained in this material safety data sheet. The information and recommendations contained in this Material Safety Data Sheet are supplied pursuant to 29 CFR 1910.1200 of the Occupational Safety and Health Standards Hazard Communication Rule. All information contained herein is presented in good faith and is believed to be appropriate and accurate. The buyer or user assumes all risks associated with the use, misuse or disposal of this product. The buyer or user is responsible to comply with all federal, state or local regulations concerning the use, misuse or disposal of these products.