ECONOMY LIQUID DISH DETERGENT WITH LAS/SLES-3/LAURYL/MYRISTYL AMIDOPROPYL AMINE OXIDE

No. 1187

Description: This economy liquid dish detergent (LDL) contains no Cocamide DEA surfactants. It is composed of two primary surfactants, BIO-SOFT® S-101 (Linear Alkyl Benzene Sulfonic Acid or LAS) and STEOL® CS-460 (Sodium Laureth Sulfate with 3 moles Ethylene Oxide or SLES-3), and one secondary surfactant, AMMONYX® LMDO (Lauryl/Myristyl Amidopropyl Amine Oxide).

Formulation INGREDIENTS:

<table>
<thead>
<tr>
<th>Deionized Water</th>
<th>80.38%</th>
<th>Diluent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium Hydroxide</td>
<td>1.95%</td>
<td>pH Adjuster</td>
</tr>
<tr>
<td>BIO-SOFT® S-101</td>
<td>7.29%</td>
<td>Primary Surfactant</td>
</tr>
<tr>
<td>STEOL® CS-460</td>
<td>5.00%</td>
<td>Primary Surfactant</td>
</tr>
<tr>
<td>STEPANATE® SXS</td>
<td>0.75%</td>
<td>Hydrotrope</td>
</tr>
<tr>
<td>AMMONYX® LMDO</td>
<td>3.33%</td>
<td>Secondary Surfactant</td>
</tr>
<tr>
<td>Sodium Chloride</td>
<td>1.30%</td>
<td>Viscosity Builder</td>
</tr>
<tr>
<td>Preservative</td>
<td>q.s.</td>
<td>Preservative</td>
</tr>
</tbody>
</table>

Total 100.00%

Procedure:
1. Charge Deionized Water.
2. Add Sodium Hydroxide and mix.
3. Slowly add BIO-SOFT® S-101 and mix until homogenous. The solution will give off heat during the neutralization.
4. Add STEOL® CS-460 and STEPANATE® SXS and mix.
5. Add AMMONYX® LMDO, mixing until homogenous.
6. Slowly add Sodium Chloride to thicken. The amount of Sodium Chloride will vary depending upon the target viscosity. Mix until clear.
7. Adjust pH as necessary with Sodium Hydroxide or BIO-SOFT® S-101.
8. Add Preservative and mix until homogenous.

Physical Properties:
- Appearance at 25°C: Clear liquid
- Viscosity at 25°C, cps: 300–400
- Actives, %: 11.1
- Solids, %: 13.2
- pH, as is: 6.5–7.5
- Density at 25°C, lbs/gal: 8.5
- Flash Point, °F (PMCC): >200

Storage/Stability:
- Freeze/Thaw (3 cycles): Pass
- 4 weeks at 4 °C: Stable
- 4 weeks at 25 °C: Stable
- 4 weeks at 50 °C: Stable

Instructions for Use:
Squirt a small amount of detergent into sink. Fill sink with warm/hot water.
Marketing Notes: AMMONYX® LMDO, BIO-SOFT® S-101, and STEPANATE® SXS are approved ingredients on www.cleangredients.org. This formulation does not contain Nonylphenol Ethoxylates (NPEs) or Cocamide DEA. Note: The amount of Sodium Hydroxide will vary depending on % anionic actives and % sulfuric acid of BIO-SOFT® S-101. Alternatively, Ethanol can be used as the hydrotrope to replace STEPANATE® SXS. Use 0.75% 200-proof Ethanol and 1.45% Sodium Chloride for equivalent viscosity.

For applications or product handling assistance, call our Technical Service Department at 1-800-745-7837 (U.S.) or 011-334-76-505-100 (Europe).
For ordering assistance, call our Account Service Department at 1-800-457-7673.

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