**DESCRIPTION**

Tomamine Amphoteric 12 surfactant is a biodegradable, low foaming, hydrotroping surfactant, designed for use in alkaline or acid cleaning formulations where the solubility of surfactants in high electrolyte content or water hardness is problematic. It is compatible with most anionic, nonionic, and cationic surfactants.

In addition to low foaming and good biodegradability, it can provide exceptional coupling stability, wetting and detergency in a wide range of formulations. The multi-functionality and high-efficiency of Tomamine Amphoteric 12 surfactant makes it an ideal replacement for sodium xylene sulfonate.

![Chemical Structure](image)

**ADVANTAGES**

- Biodegradable
- Exceptional coupling efficiency
- Low foam
- Excellent stability in caustic, acid and concentrated electrolytes
- Improves detergency

**APPLICATIONS**

- Low foam alkaline and acid cleaners
- Food processing cleaners
- Metal and parts cleaners
- Clean-in-place and spray detergents
- Carpet cleaners
- Auto dish cleaners
- Transportation cleaners

**ECOLOGICAL INFORMATION**

- Data indicates eligibility for direct release
- Biodegradability: 67% in 28 days, OECD 301F
- Daphnia magna (48-h EC50) = 33 mg/L

**TABLE 1: TYPICAL PROPERTIES**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific gravity @ 25°C</td>
<td>1.11</td>
</tr>
<tr>
<td>Active %</td>
<td>35</td>
</tr>
<tr>
<td>Gardner color, max</td>
<td>7</td>
</tr>
<tr>
<td>Flash point, °F</td>
<td>&gt;212</td>
</tr>
<tr>
<td>Pour point, °F</td>
<td>26</td>
</tr>
<tr>
<td>Critical micelle concentration, %</td>
<td>0.015</td>
</tr>
<tr>
<td>Surface tension @ 0.1% (dynes/cm) in 2% NaOH</td>
<td>26</td>
</tr>
</tbody>
</table>

**FIGURE 1: COUPLING EFFICIENCY
EFFICIENCY OF HYDROTROPE TO COUPLE AN ALKALINE FORMULATION**

Conditions: 2% Tomadol® 900 surfactant or NP-9EO, 2% Sodium gluconate, 20% Potassium hydroxide (45% active), 20% Sodium silicate 3.22/1

Grams of hydrotrope to clear up 100g of the formula
Biodegradable, Low Foaming, Hydrotroping

**TOMAMINE® AMPHOTERIC 12 Surfactant**

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**FIGURE 2: ROSS-MILES FOAM**

0.1% actives; 150ppm hardness @ 25°C

**FIGURE 3: CAUSTIC SOLUBILITY**

1.0% active; 0ppm hardness @ 25°C

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**TABLE 1: AMPHOTERIC 12 STARTING FORMULATION**

**METAL OR PARTS DEGREASER**

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>75.0</td>
</tr>
<tr>
<td>Potassium hydroxide (45%)</td>
<td>12.0</td>
</tr>
<tr>
<td>Sodium silicate 3.22/1</td>
<td>6.0</td>
</tr>
<tr>
<td>Tomamine Amphoteric 12</td>
<td>5.0</td>
</tr>
<tr>
<td>Tomadol 1-5</td>
<td>2.0</td>
</tr>
</tbody>
</table>

Recommended Dilution is 20:1

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