KEY FEATURES

SOLAMER® GR8 is a unique, proprietary polymer developed to provide broad spectrum UV-protection in leave-on and rinse-off hair care applications.

APPLICATIONS AND BENEFITS

SOLAMER® GR8 is a multifunctional UV-absorbing polymer, for use in both leave-on and rinse-off hair care products, including shampoos, conditioners and hair styling products.

- Engineered to provide substantive, broad-spectrum UV-A and UV-B protection to hair. Studies have shown that UV-A exposure is primarily responsible for fading of artificial hair color and UV-B exposure can cause degradation and bleaching of natural hair color.
- Protects the hair fiber structure, inside and out, against damage caused by sun exposure
- Maintains the tensile strength of hair after UV exposure
- Works in leave-on and rinse-off formulations over a broad pH range, from 3.3 to 12
- Excellent toxicity profile
- Liquid product form
- Fully water soluble
- 2% solids Solamer UV-absorbing polymer is compatible in formulations containing up to 80% alcohol
- Compatible with a range of surfactants
- Suggested starting concentration 1% as solids, 1.4% as product

*SOLAMER GR8 is a UV-absorbing polymer, not a category I sunscreen. No SPF claims should be made regarding its usage.

TYPICAL PROPERTIES AND CHARACTERISTICS

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Amber to brown, hazy, viscous liquid</td>
</tr>
<tr>
<td>Odor</td>
<td>Distinctive</td>
</tr>
<tr>
<td>Color, Gardner</td>
<td>≤12</td>
</tr>
<tr>
<td>Total Solids, %</td>
<td>69 – 74</td>
</tr>
<tr>
<td>pH</td>
<td>9 – 11</td>
</tr>
<tr>
<td>Viscosity, cps @ 25°C</td>
<td>3,500 – 13,000 (#3 @6 rpm) (Brookfield, LVF spindle)</td>
</tr>
<tr>
<td>Molecular Weight</td>
<td>4 x 10³</td>
</tr>
<tr>
<td>UV absorbance</td>
<td></td>
</tr>
</tbody>
</table>

Test Condition: The concentration of test solution is 100 ppm. The solution was scanned using an UV-visible spectrophotometer (Cary 3 bio).

Toxicological Summary – For a summary of toxicological information, refer to the SOLAMER GR8 Material Safety Data Sheet

(Continued on Reverse Side)
DESCRIPTION

SOLAMER GR8 is a unique, solution polyamide polymer with a structure that contains an internal chromophore and is end-capped with components found in nature. SOLAMER GR8 does not require a preservative.

FORMULATION TIPS

• Start with the end in mind. It is best to design the formulation containing SOLAMER GR8 from the beginning — give particular focus to final formulation pH and charge density.

• Before adding SOLAMER GR8 to a formulation, begin with neutralization in a portion of the formula water to a pH of 8.0.

• When formulating an emulsion add SOLAMER GR8 after the water and oil phases have been mixed and the formulation temperature has been cooled to below 40°C.

• When using fatty acid quats, heat and mix the quats until they are uniformly dispersed in the water and then add the SOLAMER GR8 premix and adjust the pH at ~40°C before the waxes have completely formed their structure.

• In shampoo systems, add the SOLAMER GR8 as close to ambient temperature as possible.

• Viscosity may be impacted in shampoo systems due to a high electrolyte content in SOLAMER GR8. Therefore, keep the total salt required in mind when formulating with SOLAMER GR8.

• Thicken the system with non-ionic thickeners like hydroxyethylcellulose, Glucamate DOE-120 or Glucamate LT. The latter two are particularly good for surfactant systems. Compatibility with common thickening agents is pH dependent.

• Nonionic emulsifiers (cetearly alcohol, ceteareth-20, PEG-100 Stearate) work well with SOLAMER GR8.

• Addition of a solubilizer, such as Emulgin HPS (1% as product, Cognis, INCI: Cocoeth-7 (and) PPG-1-PEG-9 Lauryl Glycol Ether (and) PEG-40 Hydrogenated Castor Oil) may help lessen the odor of the Solamer product and prevent haziness in the product.

PACKAGING AND STORAGE

SOLAMER GR8 is available in the following packages: Polyethylene pails – 22 kg (48.5 lbs) net weight; Polyethylene drums – 237 kg (522.5 lbs) net weight. SOLAMER GR8 should be stored in the original manufacturers containers at ambient temperature away from direct sunlight.

REMARKS

If you need sample formulations, assistance or other information, please contact your Nalco sales representative or our Naperville, IL USA office by phone at 1-630-305-1000 or by email at personalcare@nalco.com or visit our website at www.nalco.com/cosmetics.