High Performance Rheology Modifier in a Broad pH Range

Formulate With Confidence™
Keep young skin flawless. Help aging skin remain youthful. Formulate systems featuring challenging anti-aging and blemish-fighting actives with Carbopol® Ultrez 30 polymer. This rheology modifier offers good electrolyte tolerance, high thickening performance in a broad pH range, and a rich, distinct sensory. It’s all possible with Carbopol Ultrez 30 polymer.

Balancing the rheology characteristics, aesthetic properties and stabilization of skin care systems featuring anti-aging and blemish-fighting actives is easier with Lubrizol’s next generation carbomer.

Carbopol Ultrez 30 polymer is capable of delivering desired rheological and aesthetic properties in the presence of electrolytes or in the acid-active-containing conditions required to deliver efficacy of the product to the consumer.

**Typical Properties**

<table>
<thead>
<tr>
<th>INCI Designation</th>
<th>Carbomer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>White Powder</td>
</tr>
<tr>
<td>0.2% Mucilage¹ Viscosity² (pH 5.5) (mPa-s)</td>
<td>12,000 - 24,000</td>
</tr>
<tr>
<td>0.5% Mucilage¹ Viscosity² (pH 5.5) (mPa-s)</td>
<td>35,000 - 50,000</td>
</tr>
<tr>
<td>1% Mucilage¹ Viscosity² with 1% NaCl (pH 7.5) (mPa-s)</td>
<td>9,500 - 12,000</td>
</tr>
<tr>
<td>Dispersing Time³ (0.5% polymer in water)</td>
<td>&lt;15 minutes</td>
</tr>
</tbody>
</table>

¹ A mucilage is defined as an active polymer dispersion in water neutralized with a base to a specified pH.
² Per test procedure 430-I made at different pH; Brookfield RVT at 20 rpm, 25°C
³ Per test procedure TP-BRK-030 (Determination of Dispersing Time of Carbopol® Ultrez 30 Polymer)

**KEY BENEFITS**

- Excellent rheology and suspension performance
- Efficient thickening:
  - At low use levels (0.1 - 0.2 wt%) when formulated in electrolyte-free systems
  - At increased use levels in systems containing high levels of electrolytes
- Able to thicken over a broad pH range, including in low pH systems (pH 4.0 - 5.5)
- Electrolyte tolerance
- Rich sensory
- High clarity in gels
- Easy to use

**HIGH THICKENING EFFICIENCY**

Carbopol Ultrez 30 polymer provides excellent viscosity at low concentrations in systems containing low to medium levels of electrolytes.

**ENHANCED ELECTROLYTE TOLERANCE**

Carbopol Ultrez 30 polymer offers good viscosity and yield value in the presence of electrolytes, demonstrating good tolerance at higher sodium chloride levels (0.5 wt%).

**TABLE 1: Emulsion at pH 5.5**

<table>
<thead>
<tr>
<th>INGREDIENTS</th>
<th>WT%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deionized water</td>
<td>qs to 100</td>
</tr>
<tr>
<td>Carbopol® Ultrez Polymer</td>
<td>0.35</td>
</tr>
<tr>
<td>Neopentyl glycol diethylhexanoate</td>
<td>15.00</td>
</tr>
<tr>
<td>PEG-20 methyl glucose sesquisteareate</td>
<td>0.50</td>
</tr>
<tr>
<td>Methyl glucose sesquisteareate</td>
<td>0.25</td>
</tr>
<tr>
<td>Sodium chloride (NaCl)</td>
<td>Different levels</td>
</tr>
<tr>
<td>Sodium hydroxide (NaOH (18%))</td>
<td>qs to pH 5.5</td>
</tr>
</tbody>
</table>

**FIGURE 1: Viscosity vs. pH at Different Polymer Levels**

**FIGURE 2: Electrolyte Resistance in Emulsion at pH 5.5**
PERFORMANCE IN LOW pH SYSTEMS

The broad pH compatibility of Carbopol Ultrez 30 polymer enables the formulation of low pH systems containing acidic actives such as Alpha Hydroxy Acids (AHAs) or Beta Hydroxy Acids (BHAs) as well as other low pH (<4.5) ingredients. Use in combination with nonionic thickeners is recommended for specific challenging systems at pH 4.0 and below.

FIGURE 3: Performance of 1.0 wt% Polymer in Gel with 1.0% Glycolic Acid at pH 4.5 With and Without Xanthan Gum

FIGURE 4: Performance of 0.5 wt% Polymer in Gel with Different Levels of Sodium Benzoate and Potassium Sorbate (Ratio 2:1) at pH 5.2 - 5.5

EXCELLENT AESTHETIC AND SENSORIA PROPERTIES

Pleasant Texture

Carbopol Ultrez 30 polymer offers a smooth and pleasant flow in creams and lotions with good pick-up and a creamy, long playtime, enabling the formulation of emulsions with excellent skinfeel.

FIGURE 5: Results of a Rating Sensory Evaluation in Simple Emulsion Containing Carbopol® Ultrez Polymer

 Superior Clarity

Carbopol Ultrez 30 polymer provides high clarity in gel formulations, even at low pH, so the beauty of suspended actives and optical modifiers can sparkle through.

FIGURE 6: 0.4% Mucilage gels at pH 4.0

PROCESSING BENEFITS

Carbopol Ultrez 30 polymer features excellent ease of handling. It is low dusting, and disperses quickly under gentle agitation. It also can be pre- or post-neutralized to enable even further flexibility in manufacturing.

For skin care systems with and without electrolytes, where excellent viscosity, thickening and suspension performance across a broad pH range is required, choose Carbopol Ultrez 30 polymer. Formulate with confidence™.

For full formulation details, further information and starting formulations visit www.lubrizol.com/personalcare