**DISPERSANTS FOR SPECIALTY PAPER APPLICATIONS**

Lubrizol dispersant technologies enhance engineered papers by improving the sheet formation and drainage rates of difficult-to-disperse fibers or high solids furnishes. **Solsperse™, Solplus™ and Carbosperse™ technologies** can reduce mineral filled coating viscosity while maintaining high solids. Better quality, lower energy consumption, faster speed — these are benefits of using the right dispersant for engineered paper applications.

Dispersant selection is dependent on the functionality of the pigment or fiber and the pH of the application. Dispersion stability is optimized when the functional anchor group of the dispersant is matched to the surface of the pigment or fiber. In water-borne applications, pH is another important consideration. Pre-neutralization of acidic or basic dispersants (or neutralization in-situ) will improve overall compatibility with emulsion and solution polymers.

**PIGMENT/FIBER TYPE**

**Neutral to Basic Surface**
- Alumina treated TiO₂
- Alumina and ATH
- Calcium Carbonate
- Talc & other basic silicates
- Diatomaceous Silica
- Iron oxides
- Laked organic pigments
- Alkaline carbon blacks

**Acidic to Neutral Surface**
- Silica treated TiO₂
- Silica & silica matting agents
- Hydrous Kaolin
- Ceramic Fibers
- Organic pigments
- Oxidized carbon blacks
- Neutral carbon blacks

**DISPERSANT**

**Acidic Anchor**
- Solsperse™ 41090, Solsperse™ 45000,
- Carbosperse™ K-XP228, Solplus™ D541
- Solsperse™ 40000, Carbosperse™ K-7058N,
- Solsperse™ 43000, Solplus™ D570

**System pH**
- \(< 7\)
- \(\geq 7\)

**Basic or Neutral Anchor**
- Solsperse™ 27000,
- Carbosperse™ K-XP228
- Solsperse™ 20000, Solsperse™ 27000,
- Solsperse™ 43000, Solplus™ D570

*Ingredients not intentionally contained in the composition or used in manufacture.*

[www.lubrizol.com/coatings](http://www.lubrizol.com/coatings)
## DISPERSANTS FOR SPECIALTY PAPER APPLICATIONS

### PROPERTIES

<table>
<thead>
<tr>
<th>PRODUCT</th>
<th>SOLIDS (%)</th>
<th>pH</th>
<th>CHARGE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbosperse™ K-7058N</td>
<td>45</td>
<td>7</td>
<td>A</td>
<td>Partially neutralized sodium polyacrylate</td>
</tr>
<tr>
<td>Carbosperse™ K-XP228</td>
<td>55</td>
<td>4.5</td>
<td>N</td>
<td>Multifunctional, particularly effective with silicates</td>
</tr>
<tr>
<td>Solsperse™ 20000</td>
<td>100</td>
<td>9</td>
<td>C</td>
<td>Amine functional, for high solids dispersion of acidic pigments</td>
</tr>
<tr>
<td>Solsperse™ 27000</td>
<td>100</td>
<td>7</td>
<td>N</td>
<td>Nonionic, good compatibility with emulsion polymers and synthetic thickeners</td>
</tr>
<tr>
<td>Solsperse™ 40000</td>
<td>84</td>
<td>7</td>
<td>A</td>
<td>Partially neutralized acid functional, for pH ≥ 7</td>
</tr>
<tr>
<td>Solsperse™ 41090</td>
<td>90</td>
<td>3</td>
<td>A</td>
<td>Un-neutralized Solsperse™ 40000, for pH &lt; 7</td>
</tr>
<tr>
<td>Solsperse™ 43000</td>
<td>50</td>
<td>7</td>
<td>A</td>
<td>Partially neutralized acid functional universal dispersant, for pH ≥ 7</td>
</tr>
<tr>
<td>Solsperse™ 45000</td>
<td>100</td>
<td>2</td>
<td>A</td>
<td>Acid functional for high solids dispersion of basic pigments</td>
</tr>
<tr>
<td>Solplus™ D541</td>
<td>100</td>
<td>2</td>
<td>A</td>
<td>Lower acid value than Solsperse™ 45000, for dispersion of basic pigments</td>
</tr>
<tr>
<td>Solplus™ D570</td>
<td>100</td>
<td>7</td>
<td>A</td>
<td>Partially neutralized carboxy functional, universal, good emulsion compatibility</td>
</tr>
</tbody>
</table>

A = Anionic, C = Cationic, N = Nonionic

Typical properties, not specification

Lubrizol Advanced Materials, Inc.
9911 Brecksville Road, Cleveland, OH 44141
800.380.5397

The information contained herein is believed to be reliable, but no representations, guarantees or warranties of any kind are made as to its accuracy, suitability for particular applications or the results to be obtained. The information is based on laboratory work with small-scale equipment and does not necessarily indicate end product performance. Because of the variations in methods, conditions and equipment used commercially in processing these materials, no warranties or guarantees are made as to the suitability of the products for the applications disclosed. Full-scale testing and end product performance are the responsibility of the user. Lubrizol Advanced Materials, Inc. shall not be liable for and the customer assumes all risk and liability of any use or handling of any material beyond Lubrizol Advanced Materials, Inc.’s direct control. The SELLER MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Nothing contained herein is to be considered as permission, recommendation, nor as an inducement to practice any patented invention without permission of the patent owner.

Trademarks owned by The Lubrizol Corporation or its affiliates. © The Lubrizol Corporation 2015, All Rights Reserved.