TERRAVIS® Surfactants for Oilfield Applications
**Introduction**
Sasol Olefins & Surfactants is a leading global producer and supplier of a broad range of organic and inorganic products based on petrochemical, oleochemical, and Fischer-Tropsch feedstocks. The TERRAVIS® surfactants line of products includes dispersants, emulsifiers, and organoclay activators.

**Applications**
The TERRAVIS® surfactants can be used in a variety of application areas including:
- Guar gum slurry suspensions
- Polymer suspensions
- Breaker suspensions
- Crosslinker suspensions
- Drilling fluids
- Glycol ether replacements
- Cementing

**Organoclay Activators**
TERRAVIS® organoclay activators can be customized based on Sasol’s extensive raw material feedstocks to meet performance requirements for specific customer base oil blends. The performance attributes obtained with the TERRAVIS® organoclay activators include:
- Readily biodegradable
- Viscosity profiles equal to or better than commercially available solutions
- Superior low-end rheology allowing for enhanced suspension capacity
- Lower high-end rheology, which allows for lower equivalent circulating densities
- Ability for higher guar and/or polymer loading

**Figures 1 & 2: TERRAVIS® Enhanced Viscosity**
Figures 1&2 above, and Table 1 below show how the TERRAVIS® products will perform at low and high shear rates. In this case, it is important that the viscosity at 511 sec⁻¹ stay below 300 cP in order to allow easy handling and pumping. Table 1 shows that the TERRAVIS® products meet the criteria at 511 sec⁻¹, while still giving high viscosities at the lower shear rates.
Dispersants
TERRAVIS® dispersants are designed to maximize dispersability of materials into aqueous solutions while minimizing the formation of foam. They can be customized for specific applications such as dispersions of rubber materials and metal oxides into aqueous solutions. Some of the characteristics TERRAVIS® dispersants exhibit are:

- High detergency and surface activity
- Favorable emulsifying power
- Good hard water stability
- Chemical stability over a wide pH range
- Synergistic effects with other surfactants
- User-friendly viscosity and storage behavior

Organoclay Activators (cont.)

Table 1: Viscosity of a guar gum slurry suspension at various shear rates

<table>
<thead>
<tr>
<th>Shear Rate (1/sec.)</th>
<th>Blank (cP)</th>
<th>Commercial Activator (cP)</th>
<th>TERRAVIS® K (cP)</th>
<th>TERRAVIS® S (cP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1021.38</td>
<td>201</td>
<td>215</td>
<td>173</td>
<td>157</td>
</tr>
<tr>
<td>510.69*</td>
<td>247</td>
<td>306</td>
<td>206</td>
<td>182</td>
</tr>
<tr>
<td>340.46</td>
<td>238</td>
<td>319</td>
<td>229</td>
<td>196</td>
</tr>
<tr>
<td>170.23</td>
<td>240</td>
<td>341</td>
<td>249</td>
<td>224</td>
</tr>
<tr>
<td>102.14</td>
<td>246</td>
<td>360</td>
<td>264</td>
<td>254</td>
</tr>
<tr>
<td>51.07</td>
<td>266</td>
<td>433</td>
<td>309</td>
<td>307</td>
</tr>
<tr>
<td>10.21</td>
<td>372</td>
<td>754</td>
<td>509</td>
<td>539</td>
</tr>
<tr>
<td>5.11</td>
<td>490</td>
<td>1018</td>
<td>725</td>
<td>842</td>
</tr>
<tr>
<td>0.51</td>
<td>1,175</td>
<td>3,133</td>
<td>2546</td>
<td>3,329</td>
</tr>
<tr>
<td>0.05</td>
<td>3,916</td>
<td>9,790</td>
<td>11,748</td>
<td>7,832</td>
</tr>
</tbody>
</table>

*The maximum viscosity at a shear rate of 511 sec” should be 300 cP.

The picture below shows a visual comparison of the organoclay-based suspension packages with and without organoclay activators. The TERRAVIS® product can be optimized for the specific base oil used including: low-aromatic linear and iso paraffins as well as synthetic base oils.

Samples of Sasol's LPA® 170 with and without organoclay activators

Dispensants
TERRAVIS® dispersants are designed to maximize dispersability of materials into aqueous solutions while minimizing the formation of foam. They can be customized for specific applications such as dispersions of rubber materials and metal oxides into aqueous solutions. Some of the characteristics TERRAVIS® dispersants exhibit are:

- High detergency and surface activity
- Favorable emulsifying power
- Good hard water stability
- Chemical stability over a wide pH range
- Synergistic effects with other surfactants
- User-friendly viscosity and storage behavior
Dispersants (cont.)

TERRAVIS® dispersants demonstrate minimal foam formation and rapid foam dissipation. Figure 3 shows a comparison of foaming behavior between a commercial dispersant and a TERRAVIS® Dispersant.

![Figure 3: Foaming Column Comparison for Aqueous Dispersions](image)

Don’t see what you are looking for?

Sasol North America offers a wide range of products in the TERRAVIS® line not shown above. In addition, Sasol’s portfolio includes a wide range of alcohols, alcohol alkoxylates, and derivatives. Please contact us for more information on these products or about creating your own customized product.

For further information on these or other Sasol products, contact a sales representative at:

**Sasol North America**

2201 Old Spanish Trail
Westlake, LA 70669
P: (337)494-4156
E-Mail: salesinfo@us.sasol.com

For technical inquiries or samples contact:

**Sasol North America**

2201 Old Spanish Trail
Westlake, LA 70669
P: (337)494-4157
E-Mail: techinfo@us.sasol.com

This information is based on our present knowledge and experience. However, it implies no liability or other legal responsibility on our part, including with regard to existing third party patent rights. In particular, no guarantee of properties in the legal sense is implied. We reserve the right to make any changes according to technological progress or further developments. The customer is not released from the obligation to conduct careful inspection and testing of incoming goods. Reference to trade names used by other companies is neither a recommendation, nor is it intended to suggest that similar products could not be used. All our business transactions shall exclusively be governed by our General Sales Conditions. TERRAVIS® is a registered trademark of Sasol.