INTRODUCING SILFOAM® SP 150
OUTLINE

• Product features
• Benefits
• Silicone-based powder antifoam agent
• Intended for incorporation into powder detergents
• Ready to use
• Recommended dosage: from 0.5% to 2.5%, depending on detergent formulation
FEATURES II

• Appearance: white powder
• Active content: 15%
• Available in following packaging options:
  0.35 kg sample packaging
  25 kg bag
Larger-volume packaging possible on request
<table>
<thead>
<tr>
<th>Particle size</th>
<th>Distribution in %</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 100 µm</td>
<td>0,0</td>
</tr>
<tr>
<td>100 to 200 µm</td>
<td>6,3</td>
</tr>
<tr>
<td>200 to 315 µm</td>
<td>35,3</td>
</tr>
<tr>
<td>315 to 500 µm</td>
<td>32,7</td>
</tr>
<tr>
<td>500 to 1000 µm</td>
<td>18,8</td>
</tr>
<tr>
<td>1000 – 2000 µm</td>
<td>7,0</td>
</tr>
<tr>
<td>&gt; 2000 µm</td>
<td>0,1</td>
</tr>
</tbody>
</table>
BULK DENSITY AND ANGLE OF REPOSE

<table>
<thead>
<tr>
<th></th>
<th>Bulk density (kg/m³)</th>
<th>Angle of repose (°)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SILFOAM® SP 150</td>
<td>approx. 900</td>
<td>approx. 36</td>
</tr>
</tbody>
</table>
BENEFITS

- Effective foam control
- Improved powder flowability → better processing possible
- Effective storage stability
- Readily available
- Fast, local technical service
SHEAR STRESS MEASUREMENTS

- Flow function: $f_{fc}$

$$f_{fc} = \frac{\sigma_1}{\sigma_c}$$

where $\sigma_1$: consolidation stress  
$\sigma_c$: unconfined yield strength

- Measured with a ring shear cell tester from Schulze Schuettgutmesstechnik, Germany

$N$: vertical load  
$\omega$: cell rotation

$F_1$ and $F_2$: measured shear forces
YIELD FUNCTION MEASUREMENTS

• Flow function test results:

\[
\begin{align*}
\text{ff}_c < 1 & \quad \text{Non-flowing powder} \\
1 < \text{ff}_c < 2 & \quad \text{Very cohesive powder} \\
2 < \text{ff}_c < 4 & \quad \text{Cohesive powder} \\
4 < \text{ff}_c < 10 & \quad \text{Easily flowable powder} \\
10 < \text{ff}_c & \quad \text{Free-flowing powder}
\end{align*}
\]
YIELD FUNCTION: FLOWABILITY OF SILFOAM® SP 150

- SILFOAM® SP 150 is easily flowable in the lower pressure range
- SILFOAM® SP 150 is easily flowable in the upper pressure range

Source: Wacker Chemie AG
Miele Novotronic W 918 washing machine

Overfoaming

- Foam level “6”
- Foam level “5”
- Foam level “4”
- Foam level “3”
- Foam level “2”
- Foam level “1”
- Foam level “0”
WASHING AND STORAGE CONDITIONS

- Heavy-duty wash cycle
  - 130 g standard powder detergent
  - 3.5 kg wash load
  - 40°C washing temperature
  - 3 dGH water hardness

- Storage of SILFOAM® SP 150 in 130 g powder detergent
  - at 40°C
  - with 70% humidity
  - for 4, 8 and 12 weeks
EFFICIENCY IN STANDARD POWDER DETERGENT AFTER STORAGE

1.3% antifoam dosage

Source: Wacker Chemie AG
EFFICIENCY IN STANDARD POWDER DETERGENT AFTER STORAGE

1,7% antifoam dosage

Source: Wacker Chemie AG
SUMMARY OF SILFOAM® SP 150

- Effective foam control
- Good storage stability
- High flowability
THANK YOU FOR YOUR ATTENTION