Abstract:
Methyl Trimethicone (TMF-1.5) and Dimethicone (DM-Fluid A-6T) blends are simple yet novel alternative solutions to cyclopentasiloxane (D5). Methyl Trimethicone’s high volatility is an excellent choice for formulations that require fast drying time. 6 cs Dimethicone’s narrow molecular weight distribution, in which both the lower molecular weight and higher molecular weight species are removed so that the product does not cause any irritation and offers excellent compatibility with cosmetic formulation ingredients. When compared with existing alternative volatile silicone solutions, blends of Methyl Trimethicone and 6 cs Dimethicone are shown to have better skin feel, spreadability, emolliency without compromising the volatility. The blend ratio can easily be optimized depending upon the application requirements.

Chemical Structure:

Primary Skin Irritation (FDA): **TMF-1.5 and DMF A-6T are non-irritating**

Characteristics: **Comparison with Cyclopentasiloxane**

<table>
<thead>
<tr>
<th>Property</th>
<th>TMF-1.5</th>
<th>DM-Fluid A-6T</th>
<th>KF-955</th>
</tr>
</thead>
<tbody>
<tr>
<td>NCI Name</td>
<td>Methyl Trimethicone</td>
<td>Dimethicone</td>
<td>Cyclopentasiloxane</td>
</tr>
<tr>
<td>Appearance</td>
<td>Clear, water white liquid</td>
<td>Clear water white liquid</td>
<td>Clear water white liquid</td>
</tr>
<tr>
<td>Viscosity, 25°C, mPa.s</td>
<td>1.5</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Refractive Index, 20°C</td>
<td>1.3855</td>
<td>1.387</td>
<td>1.396</td>
</tr>
<tr>
<td>Freezing Point, °C</td>
<td>-83</td>
<td>-</td>
<td>-40</td>
</tr>
<tr>
<td>Pour Point, °C</td>
<td>-</td>
<td>&lt; -60</td>
<td>-</td>
</tr>
<tr>
<td>Flash Point, °C</td>
<td>64</td>
<td>114</td>
<td>77</td>
</tr>
</tbody>
</table>

Neat Material:

Water-in-silicone emulsions:

Sensory Profile:

**What’s unique about the blends approach**
Managed volatility and play time
Silky, light, non-greasy feel
No irritation, no “dry-eye” syndrome
Excellent compatibility
Oil free
Long lasting fragrance
Rheology control
Formulation latitude
Odorless, ultra High purity

Summary:

Neat Material: Volatility of TMF/A6T Blends @ 31°C

Sensory Profile:

Primary Skin Irritation (FDA): TMF-1.5 and DMF A-6T are non-irritating

Characteristics: Comparison with Cyclopentasiloxane