Durable softness
Slickness
Low yellowing
Wrinkle recovery
Lubricity

1. Description

Shin-Etsu Chemical silicone textile softener bases, KF-877, KF-8704, KF-880 and KF-888, are silicone fluids having reactive amino group in its structure. KF-877 is especially improved on yellowish-problem for the textile treatment and also on the softness. KF-8704 is designed for economy type softener base. KF-888 is designed for hydrophilic textile softener base. The treated cloth shows excellent water absorption. KF-877, KF-8704, KF-880 and KF-888 can be easily emulsified by mixer or homomixer with water and appropriate emulsifier.
2. Typical properties of softener bases

<table>
<thead>
<tr>
<th></th>
<th>KF-877</th>
<th>KF-880</th>
<th>KF-888</th>
<th>KF-8704</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>cloudiness</td>
<td>transparent</td>
<td>transparent</td>
<td>transparent</td>
</tr>
<tr>
<td>Viscosity at 25°C (cSt)</td>
<td>5,000</td>
<td>650</td>
<td>300</td>
<td>600</td>
</tr>
<tr>
<td>Amine-equivalent (g/mol)</td>
<td>5,000</td>
<td>1,900</td>
<td>3,000</td>
<td>4,000</td>
</tr>
<tr>
<td>Volatility at 105°C/3h(%)</td>
<td>12</td>
<td>12</td>
<td>2</td>
<td>12</td>
</tr>
</tbody>
</table>

(These values are not intended to prepare specification)

3. How to emulsify

Shin-Etsu Chemical textile softener bases are easily emulsified by mixer or homomixer with appropriate emulsifier.

(1) Selection guide for emulsifier

\[ RO(C_2H_4O)_nH \ (\text{average HLB : 10-14}) \]

<table>
<thead>
<tr>
<th>Trade name</th>
<th>R</th>
<th>n</th>
<th>HLB</th>
<th>Manufacturer</th>
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</thead>
<tbody>
<tr>
<td>Emulgen 106</td>
<td>C_{12}</td>
<td>6</td>
<td>10.5</td>
<td>Kao Corporation</td>
</tr>
<tr>
<td>Emulgen 108</td>
<td>C_{12}</td>
<td>8</td>
<td>12.1</td>
<td>Kao Corporation</td>
</tr>
<tr>
<td>Nikkol BL-4.2</td>
<td>C_{12}</td>
<td>4.2</td>
<td>11.5</td>
<td>Nikko Chemicals</td>
</tr>
<tr>
<td>Nikkol BC5.5</td>
<td>C_{16}</td>
<td>5.5</td>
<td>10.5</td>
<td>Nikko Chemicals</td>
</tr>
<tr>
<td>Nikkol BC-7</td>
<td>C_{16}</td>
<td>7</td>
<td>11.5</td>
<td>Nikko Chemicals</td>
</tr>
<tr>
<td>Newcol 1105</td>
<td>C_{12}</td>
<td>5</td>
<td>10.8</td>
<td>Nippon Nyukazai</td>
</tr>
<tr>
<td>Newcol 1305</td>
<td>C_{13}</td>
<td>5</td>
<td>10.5</td>
<td>Nippon Nyukazai</td>
</tr>
<tr>
<td>Newcol 1310</td>
<td>C_{13}</td>
<td>10</td>
<td>13.7</td>
<td>Nippon Nyukazai</td>
</tr>
<tr>
<td>Nonion T-208.5</td>
<td>C_{13}</td>
<td>8.5</td>
<td>12.0</td>
<td>Nippon Oil &amp; Fats</td>
</tr>
<tr>
<td>Nonion NS-206</td>
<td>nonylphenyl</td>
<td>6</td>
<td>10.9</td>
<td>Nippon Oil &amp; Fats</td>
</tr>
</tbody>
</table>

(2) Typical formulation

Shin-Etsu softener base 15.0
Emulsifier(1) 1.0
Emulsifier(2) 2.0
Pre-water 10.0
Water 71.75
Acetic acid 0.25

( Emulsifier(1) : Emulgen 106, Emulsifier(2) : Emulgen 108 )

(3) Procedure

1. Add Shin-Etsu softener base and emulsifier into a tank and agitate at high speed for 10 minutes.
2. Add pre-water and agitate at high speed for 10 minutes.
3. Add slowly 71.75 parts of dilution water and agitate at low speed for 20 minutes.
4. Add acetic acid and agitate at low speed till get homogeneous emulsion.
5. Filtrate and pack.
4. Properties of treated cloth

<table>
<thead>
<tr>
<th></th>
<th>KF-877</th>
<th>KF-880</th>
<th>KF-888</th>
<th>KF-8704</th>
<th>control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Softness</td>
<td>++</td>
<td>+++</td>
<td>+</td>
<td>++</td>
<td>-</td>
</tr>
<tr>
<td>Water absorption</td>
<td>50</td>
<td>150</td>
<td>0</td>
<td>150</td>
<td>0</td>
</tr>
<tr>
<td>Yellowing 150°C/2min.</td>
<td>-7.5</td>
<td>-7.5</td>
<td>-7.7</td>
<td>-7.5</td>
<td>-7.5</td>
</tr>
<tr>
<td>Yellowing 150°C/2min.</td>
<td>-6.7</td>
<td>-6.0</td>
<td>-6.8</td>
<td>-6.2</td>
<td>-6.5</td>
</tr>
</tbody>
</table>

Condition of treatment
0.3%, 1 dip — 1 nip — 100°C/2 min. — 150°C/2 min.

Substance: cotton cloth
Yellowing: based on blue (-) to yellow (+)

5. General properties of amino-modified silicone softener
6. Packing : 18kg(can), 200kg(drum)

7. Cautions

(1) Dyeing of finished products (cloths), etc. may dissolve into the emulsion treatment bath and thereby affect stability of the finishing agents. Take extra care on this point.

(2) The textile finishing agents may deteriorate when in contact with heat, light, acid, alkaline etc.. Prevent contamination to the agents, seal and store them in a dark place.

(3) Avoid contact with eyes and skin. In case of eye contact, wash immediately with large amounts of water for at least 15 minutes. In case of skin contact, remove the textile finishing agents from skin with a dry cloth or towel and then wash exposed area with soap.

(4) The product containing any solvents should be handled in well ventilated area. Avoid inhalation of solvent vapor.

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