SilFORT FHC620 Formable Clear Coat with SilFORT SHP470FT2050 Primer

Description
SilFORT FHC620 formable clear coat is a thermally cured siloxane clear coating for use on various types and grades of polycarbonate (PC). When applied over SilFORT SHP470FT2050 primer (sold separately), it helps provide good abrasion and chemical resistance, as well as protection from natural weathering, to PC. SilFORT FHC620 formable clear coat can be applied and pre-cured on 2D PC sheeting and then final cured during the thermoforming of the sheeting into 3D PC parts, which enables more flexibility and efficiency in the production of such 3D parts while still providing the desired protection.

Key Features and Typical Benefits

- Excellent 3D formability
- Excellent clarity
- Excellent abrasion and mar resistance
- Excellent solvent/chemical resistance
- Excellent adhesion to many grades of PC
- Easy to clean surface

Typical Physical Properties SilFORT SHP470FT2050 primer

<table>
<thead>
<tr>
<th>Property</th>
<th>Unit</th>
<th>Typical Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solids Content</td>
<td>%</td>
<td>9</td>
</tr>
</tbody>
</table>
Viscosity (at 25 °C) | cSt | 85
Density (at 25 °C) | g/cm³ | 0.95
Shelf Life(1) | Months | 48

(1) From date of manufacturing, in original unopened container at < 43 °C.

<table>
<thead>
<tr>
<th>Property</th>
<th>Unit</th>
<th>Typical Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solids Content</td>
<td>%</td>
<td>22</td>
</tr>
<tr>
<td>pH</td>
<td>-</td>
<td>5.8</td>
</tr>
<tr>
<td>Viscosity (at 25 °C)</td>
<td>cSt</td>
<td>5.5</td>
</tr>
<tr>
<td>Density (at 25 °C)</td>
<td>g/cm³</td>
<td>0.985</td>
</tr>
<tr>
<td>Shelf Life(2)</td>
<td>Months</td>
<td>6</td>
</tr>
</tbody>
</table>

(2) From date of manufacturing, in original unopened container at < 10 °C.

Typical properties are average data and are not to be used as or to develop specifications.

Potential Applications

The combination of its formability and protective benefits makes SilFORT FHC620 formable clear coat an excellent candidate to consider for the coating of 3D thermoformed PC parts such as those produced for the automotive industry.

General Considerations for Use

To promote adhesion of the clear coat to PC, the PC should first be primed with SilFORT SHP470FT2050 primer. The coating process consists of a pre-cure phase for the formable clear coat on 2D PC sheets, followed by a final-cure step during the forming operation of the PC-sheet into the desired 3D objects.

Typical Coating Application (Pre-Cure Phase, sheet unformed)
**SilFORT SHP470FT2050 primer** | **SilFORT FHC620 formable clear coat**  
--- | ---  
**Application Methods** | Flow, spray, dip, roller coating  
| Flow, spray, dip, roller coating  
**Reducing Solvents** | 1-Methoxy-2-propanol (CAS# 107-98-2)  
| Diacetonalcohol (CAS# 123-42-2)  
| 2-Propanol (CAS# 67-63-0)  
**Relative Humidity (application and ambient flash off)** | Max. 50%  
| 35 -55%  
**Room Temperature Flash Off** | 20 – 50 °C for 10 – 20 minutes\(^3\)  
| 23 – 27 °C for 10 – 20 minutes\(^2\)  
**Thermal Pre-Cure** | No (only tack-free)  
| 60 °C for 60 min \(^3\)  
**Thermoforming Temperatures** | Typically between 150 and 180 °C during forming, depending upon customer specific requirements.  
**Recommended Coating Thickness\(^4\)** | 0.3 – 1.5 μm  
| 3 – 8 μm

\(^1\) Other compatible solvents may be considered.  
\(^2\) Tack-free time is depending on application method, sheet length and thickness.  
\(^3\) Total oven time in preheated convection oven. Typical sheet thickness of 6 mm.  
\(^4\) Refractive Index SilFORT SHP470FT2050 n = 1.53; SilFORT FHC620 n = 1.43.

**Thermoforming of 3D PC Parts Resulting in Final Thermal Cure of Coating**

Typical thermoforming temperatures are between 150 and 180 °C during forming, depending upon 3D object specific requirements. The necessary temperatures, time and other conditions of thermoforming are dependent upon a series of factors including part dimensions, wall thickness, convection oven or IR-heater setup. One example of typical thermoforming conditions is 30 minutes at 175 °C for a PC sheet with thickness of 3 – 6 mm.

**Packaging**

Currently available:  
25 kg Steel Pail with PE Liner.

**Patent Status**

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