SPUR+ 1012 Prepolymer

A moisture curable, ultra-low modulus hybrid prepolymer designed primarily for blending with standard SPUR prepolymer grades to produce construction sealants with low modulus and high elongation while maintaining good elastic recovery.

Product Description

SPUR+ 1012 prepolymer is a silylated prepolymer that does not rely on an isocyanate curing reactions. Additionally, it is formulated without the use of phthalate-based plasticizers, and in sealant formulations, using it as the base resin or in combination with SPUR+ 1015 prepolymer, extremely low modulus values can be attained. This moisture curable resin is an excellent candidate to consider in formulating construction sealants requiring rapid cure, good water resistance, high flexibility and adhesion to most construction substrate materials such as concrete, marble and glass.

SPUR+ 1012 prepolymer can help enable the formulation of non-staining, paintable sealants.

Key Features and Typical Benefits

- Elimination of curing defects that can accompany isocyanate cure systems
- End product ease of use, particularly with one component systems
- Good elasticity and durability
- Minimal surface tack after cure when properly formulated
- Paintable
- Non-staining of porous substrates
- Excellent adhesion to many construction material surfaces
- Excellent weatherability, water and UV resistance upon formulation
- High elastic recovery
- Co-Binder for 25LM class sealants (ISO 11600)

Typical Physical Properties

<table>
<thead>
<tr>
<th>Physical Form</th>
<th>Clear, viscous liquid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Viscosity, 25 °C, cPs</td>
<td>No viscosity data in SDS</td>
</tr>
</tbody>
</table>

Typical Resin Mechanical Properties After Cure

<table>
<thead>
<tr>
<th>100% Modulus, MPa</th>
<th>0.22</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elongation, %</td>
<td>283</td>
</tr>
<tr>
<td>Hardness, Shore A</td>
<td>12</td>
</tr>
</tbody>
</table>

Typical properties are average data and are not to be used as or to develop specifications.
Example of SPUR+ 1015 Prepolymer Based Very Low Modulus Sealant Formulation Modified with SPUR+ 1012 Prepolymer

<table>
<thead>
<tr>
<th>Component</th>
<th>Wt</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPUR+ 1015 prepolymer</td>
<td>11.5</td>
</tr>
<tr>
<td>SPUR+ 1012 prepolymer</td>
<td>11.5</td>
</tr>
<tr>
<td>Silquest A-171*</td>
<td>0.34</td>
</tr>
<tr>
<td>Ground calcium carbonate</td>
<td>55</td>
</tr>
<tr>
<td>Plasticizer</td>
<td>18.35</td>
</tr>
<tr>
<td>Fumed silica</td>
<td>1.15</td>
</tr>
<tr>
<td>TiO2</td>
<td>1.08</td>
</tr>
<tr>
<td>Hindered amine light stabilizer</td>
<td>0.23</td>
</tr>
<tr>
<td>UV absorber</td>
<td>0.23</td>
</tr>
<tr>
<td>Silquest* A-1110 silane</td>
<td>0.57</td>
</tr>
<tr>
<td>Niax* catalyst LC-5604</td>
<td>0.06</td>
</tr>
<tr>
<td>TOTAL</td>
<td>100.0</td>
</tr>
<tr>
<td>Skin formation [min.]</td>
<td>60</td>
</tr>
</tbody>
</table>

Product formulations are included as illustrative examples only. Momentive makes no representation or warranty of any kind with respect to any such formulations, including, without limitations, concerning the efficacy or safety of any product manufactured using such formulations.

**Mechanical Properties after 2 weeks 23 °C / 50% RH**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tensile Strength at Break (MPa)</td>
<td>1.25 (181 psi)</td>
</tr>
<tr>
<td>Elongation at Break (%)</td>
<td>578</td>
</tr>
<tr>
<td>Modulus at 100% MPa</td>
<td>0.4 (58 psi)</td>
</tr>
<tr>
<td>Hardness Shore A</td>
<td>17</td>
</tr>
<tr>
<td>Elastic Recovery Dog Bone [%]</td>
<td>93%</td>
</tr>
</tbody>
</table>

Note: Test results. Actual results may vary.

The mechanical properties were measured according to ISO 37 for tensile strength and elongation, ISO 8339 for modulus, ISO 868 for hardness and ASTM D 624 B for tear strength.
Example of an Ultra-Low Modulus Sealant Formulated with SPUR+ 1012 Prepolymer

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</tr>
</thead>
<tbody>
<tr>
<td>SPUR+ 1012 Prepolymer</td>
<td>19</td>
</tr>
<tr>
<td>Silquest A-171* Silane</td>
<td>0.3</td>
</tr>
<tr>
<td>Ground and Precipitated Calcium Carbonates</td>
<td>53.1</td>
</tr>
<tr>
<td>Plasticizer</td>
<td>24.3</td>
</tr>
<tr>
<td>Fumed Silica</td>
<td>1.2</td>
</tr>
<tr>
<td>TiO2</td>
<td>1.2</td>
</tr>
<tr>
<td>Silquest* A-Link* 600 Silane</td>
<td>0.57</td>
</tr>
<tr>
<td>Niax* catalyst LC-5604</td>
<td>0.06</td>
</tr>
</tbody>
</table>

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**Mechanical Properties**

<table>
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<tr>
<th>Mecha nic Properties</th>
<th>7 day cure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tensile Stress (MPa)</td>
<td>0.32</td>
</tr>
<tr>
<td>Elongation (%)</td>
<td>391</td>
</tr>
<tr>
<td>Modulus at 100% (MPa)</td>
<td>0.16</td>
</tr>
<tr>
<td>Hardness Shore A</td>
<td>10</td>
</tr>
<tr>
<td>Elastic Recovery (%)</td>
<td>88%</td>
</tr>
</tbody>
</table>

Note: Test results. Actual results may vary.

The mechanical properties were measured after curing the sealant for 1 week at 23 °C/50% relative humidity and then tested according to ISO 37 for tensile strength and elongation, ISO 8339 for modulus, ISO 868 for hardness and ASTM D 624 B for tear strength.

**Patent Status**

Nothing contained herein shall be construed to imply the nonexistence of any relevant patents or to constitute the permission, inducement or recommendation to practice any invention covered by any patent, without authority from the owner of the patent.

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Customers must evaluate Momentive Performance Materials products and make their own determination as to fitness of use in their particular applications.
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