Silcat* RHE

Description
Silcat RHE silane is a crosslinking system (silane, peroxide and catalyst) for the manufacture of crosslinked LDPE & LLDPE polyethylene LV & MV cables using the Monosil\(^{(1)}\) one-step process. It provides excellent performance on equipment designed for Monosil technology.

\(^{(1)}\) Maillefer SA and BICC Ltd.

Key Features and Benefits

- Silcat RHE silane can be used with a wide range of stabilized LLDPE polyethylene grades for optimum cost-effectiveness. This also applies for non-stabilized resin used in association with an antioxidant masterbatch
- A high onset temperature of the silane crosslinking agent improves process stability and minimizes pregrafted/crosslinked particles in the insulation layer

Typical Physical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Clear liquid</td>
</tr>
<tr>
<td>Color</td>
<td>Light straw</td>
</tr>
<tr>
<td>Viscosity, mPa s (cP), @ 23°C(^{(1)})</td>
<td>2.2</td>
</tr>
<tr>
<td>Specific Gravity, g/cm(^3), @ 23°C</td>
<td>0.962</td>
</tr>
<tr>
<td>Flash Point, Tag Closed Cup, ASTM D56-79, °C</td>
<td>23</td>
</tr>
</tbody>
</table>

\(^{(1)}\) Silcat is a trademark of Momentive Performance Materials Inc.
Potential Applications
Low- and medium-voltage power cables

Patent Status
Standard copy to come

Product Safety, Handling and Storage
Standard copy to come

Processing Recommendations

Recommended Resins
Silcat RHE silane can be used whether with non-stabilized polyethylene resins and an antioxidant masterbatch or with stabilized cable grade resins.

Test carried out have shown that the following resins have given outstanding results:

- Exxon Escorene LLN 1004YB together with an antioxidant masterbatch
- BP 3000 series

Other recommended types are:

**LDPE resin:**

<table>
<thead>
<tr>
<th>Property</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Melt index (190°C/2.16 kg)</td>
<td>0.2 to 0.5 g/10 min.</td>
</tr>
<tr>
<td>Density</td>
<td>0.915 to 0.935 g/cm³</td>
</tr>
</tbody>
</table>

**LLDPE resin:**

<table>
<thead>
<tr>
<th>Property</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Melt index (190°C/2.16 kg)</td>
<td>0.5 to 6 g/10 min.</td>
</tr>
<tr>
<td>Density</td>
<td>0.900 to 0.935 g/cm³</td>
</tr>
</tbody>
</table>

*Silcat is a trademark of Momentive Performance Materials Inc.
Processing
Moisture content of the PE resin must be less than 200 ppm. In hot and humid
countries pre-drying of the resin at 70°C by means of an air desiccator is highly
recommended.

Grafting: Optimum addition levels for a given application must be determined
experimentally. Data collected on Nextrom extruders indicates that the dose levels of
Silcat RHE silane should be between 0.8 and 1.3 wt %.

Temperature profile setting of the extruder:

<table>
<thead>
<tr>
<th>Section</th>
<th>Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barrel</td>
<td>150-220°C</td>
</tr>
<tr>
<td>Head and die</td>
<td>230°C</td>
</tr>
<tr>
<td>Screw</td>
<td>70 to 90°C</td>
</tr>
</tbody>
</table>

Crosslinking: Rate of cure is dependent upon time, temperature and thickness of the
layer and available moisture. Sufficient crosslinking can be achieved by any of the
following methods:
- Immersion in water at 80-90°C, or
- Exposure to low pressure steam at 105°C, or
- Exposure to steam at atmospheric pressure (i.e. a sauna at 100°C)

Limitations
Standard copy to come

Contact Information
For product prices, availability, or order placement, contact our customer service at
Momentive.com/CustomerService/

For literature and technical assistance, visit our website at: www.momentive.com

*Silcat is a trademark of Momentive Performance Materials Inc.
DISCLAIMER:

THE MATERIALS, PRODUCTS AND SERVICES OF MOMENTIVE PERFORMANCE MATERIALS INC. AND ITS SUBSIDIARIES AND AFFILIATES (COLLECTIVELY “SUPPLIER”), ARE SOLD SUBJECT TO SUPPLIER’S STANDARD CONDITIONS OF SALE, WHICH ARE INCLUDED IN THE APPLICABLE DISTRIBUTOR OR OTHER SALES AGREEMENT, PRINTED ON THE BACK OF ORDER ACKNOWLEDGMENTS AND INVOICES, AND AVAILABLE UPON REQUEST. ALTHOUGH ANY INFORMATION, RECOMMENDATIONS, OR ADVICE CONTAINED HEREIN IS GIVEN IN GOOD FAITH, SUPPLIER MAKES NO WARRANTY OR GUARANTEE, EXPRESS OR IMPLIED, (i) THAT THE RESULTS DESCRIBED HEREIN WILL BE OBTAINED UNDER END-USE CONDITIONS, OR (ii) AS TO THE EFFECTIVENESS OR SAFETY OF ANY DESIGN INCORPORATING ITS PRODUCTS, MATERIALS, SERVICES, RECOMMENDATIONS OR ADVICE. EXCEPT AS PROVIDED IN SUPPLIER’S STANDARD CONDITIONS OF SALE, SUPPLIER AND ITS REPRESENTATIVES SHALL IN NO EVENT BE RESPONSIBLE FOR ANY LOSS RESULTING FROM ANY USE OF ITS MATERIALS, PRODUCTS OR SERVICES DESCRIBED HEREIN. Each user bears full responsibility for making its own determination as to the suitability of Supplier’s materials, services, recommendations, or advice for its own particular use. Each user must identify and perform all tests and analyses necessary to assure that its finished parts incorporating Supplier’s products, materials, or services will be safe and suitable for use under end-use conditions. Nothing in this or any other document, nor any oral recommendation or advice, shall be deemed to alter, vary, supersede, or waive any provision of Supplier’s standard Conditions of Sale or this Disclaimer, unless any such modification is specifically agreed to in a writing signed by Supplier. No statement contained herein concerning a possible or suggested use of any material, product, service or design is intended, or should be construed, to grant any license under any patent or other intellectual property right of Supplier covering such use or design, or as a recommendation for the use of such material, product, service or design in the infringement of any patent or other intellectual property right.

*Silcat is a trademark of Momentive Performance Materials Inc.

Momentive and the Momentive logo are trademarks of Momentive Performance
Materials Inc.