

## Silcat™ VS-963

### Silcat\* VS-963

#### Description

Silcat VS-963 silane is a fully stabilized crosslinking system (silane, peroxide, catalyst, antioxidants and metal deactivator) for the manufacture of crosslinked polyethylene LV & MV cables using the Monosil<sup>(1)</sup> one-step process. It provides excellent performance on equipment designed Monosil technology.

(1) Maillefer SA and BICC Ltd.

#### Key Features and Benefits

- Silcat VS-963 silane can be used with a wide range of non-stabilized polyethylene grades for optimum cost-effectiveness.
- With an appropriate resin, insulated copper cables crosslinked with Silcat VS-963 silane can meet the IEC aging test of 7 days at 135°C.
- A high onset temperature for grafting improves process stability and minimizes pregrafted/crosslinked particles in the insulation layer.

#### Typical Physical Properties

Appearance	Clear liquid
Color	Light yellow
Viscosity, mPa s (cP), @ 23°C <sup>(2)</sup>	3.6
Specific Gravity, g/cm <sup>3</sup> , @ 23°C	0.976
Flash Point, Tag Closed Cup, ASTM D56-79, °C (°F)	25

(2) Brookfield LV/60rpm

### 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

#### Performance

Moisture-cured cables produced with Silcat VS-735/1 silane by the Monosil<sup>(1)</sup> process can meet the IEC 502 cable specification.

#### Recommended Resins

Silcat VS-963 silane can only be used with non-stabilized polyethylene resins.

Recommended types are:

LDPE resin:

- Melt index(190°C/2.16 kg)	0.2 to 0.5 g/10 min.
- Density	0.915 to 0.935 g/cm <sup>3</sup>

LLDPE resin:

- Melt index(190°C/2.16 kg)	2 to 6 g/10 min.
- Density	0.915 to 0.935 g/cm <sup>3</sup>

(1) Maillefer SA and BICC Ltd.

### 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 dessicator is highly recommended.

Grafting: Optimum addition levels for a given application must be determined experimentally. Data collected on Nextrom extruders indicate that the dose levels of Silcat VS-963 silane should be between 1.3 and 2.0 wt %.

Temperature profile setting of the extruder:

- Barrel	150/150/150/170/190/200/210°C
- Head and die	210°C
- Screw	80 to 100°C

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**

Email

[commercial.services@momentive.com](mailto:commercial.services@momentive.com)

**Telephone**

<b>Americas</b>	<b>Latin America</b>	<b>EMEAI- Europe, Middle East, Africa &amp; India</b>	<b>ASIA PACIFIC</b>
+1 800 295 2392	<b>Brazil</b>	<b>Europe</b>	<b>China</b>
Toll free*	+55 11 4534 9650	+390510924300	800 820 0202
+704 805 6946	Direct Number	Direct number	Toll free
Direct Number			+86 21 3860 4892
			Direct number
*All American countries	<b>Mexico</b>	<b>India, Middle East &amp; Africa</b>	<b>Japan</b>
	+52 55 2169 7670	+ 91 44 71212207	+81 3 5544 3111
	Direct Number	Direct number*	Direct number
		<b>*All Middle Eastern countries, Africa, India,</b>	<b>Korea</b>
			+82 2 6201 4600

For literature and technical assistance, visit our website at: [www.momentive.com](http://www.momentive.com)

**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™是 Momentive Performance Materials Inc. 的商标

The use of the “™” symbol designates registered or unregistered trademarks of Momentive Performance Materials Inc. or its affiliated companies. Momentive and the Momentive logo are trademarks of Momentive Performance Materials Inc.