

## 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

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## 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> |

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## 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

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### Contact Information

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