

## Silcat™ RHE

### 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<sup>(1)</sup> 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

Appearance	Clear liquid
Color	Light straw
Viscosity, mPa s (cP), @ 23°C <sup>(1)</sup>	2.2
Specific Gravity, g/cm <sup>3</sup> , @ 23°C	0.962
Flash Point, Tag Closed Cup, ASTM D56-79, °C	23

(1) Brookfield LV/60rpm

### Potential Applications

Low- and medium-voltage power cables

### Patent Status

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### Product Safety, Handling and Storage

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### 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:

- 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)	0.5 to 6 g/10 min.
- Density	0.900 to 0.935 g/cm <sup>3</sup>

## 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:

- Barrel	150-220°C
- Head and die	230°C
- Screw	70 to 90°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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