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Composite insulators up to 25 kV AC

Sicat 8WL3078 for overhead contact line systems for main-line railways

The silicone composite insulators of type Sicat® 8WL3078 in accordance with EN 50151 insulate the live parts of the overhead contact line from one another and from earth. They must therefore meet both electrical and mechanical requirements.

Features

- Soil- and water-repellent plastic surface of the composite insulators
- Low operating costs as well as resistant to breakage and against vandalism due to modern material compound techniques
- Savings on transport, storage and installation due to significant lower weight compared to ceramic and glass insulators
- Very high resistance to flashover
- Modular design for a varied field of application

Electrical data

| | | |
|--|---------|-----|
| Nominal voltage | [kV AC] | 25 |
| Power-frequency withstand voltage, wet | [kV] | 125 |
| Lightning impulse withstand voltage | [kV] | 250 |

Materials

| | |
|--------------------------|---|
| Insulator body | glass-fiber reinforced plastic, silicone |
| Fittings | |
| – 8WL3078-1AI-2CI-2LI-2M | hot-dip galvanized steel |
| – 8WL3078-2AI-2BI-2D | cast aluminium alloy |
| – 8WL3078-6AI-6DI-7A | hot dip galvanized spheroidal graphite iron |
| Standard parts | stainless steel |

Range of use

Insulation in terminations in catenaries and cross-spans

Insulation in cantilevers

Post insulator for traction power lines

Insulation in suspensions and terminations of traction power lines

Insulation in supports for soffit conductor rail

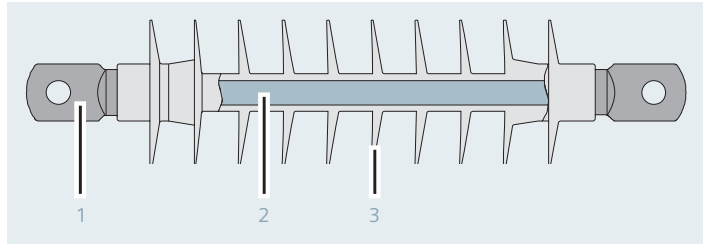
Design

The silicone composite insulators of type Sicat 8WL3078 consist of the following components:

- Insulating rod made of glass-fiber reinforced plastic (GRP, boric free ECR-glass) as core
- Press-fitted fittings made of cast aluminium alloy or hot-dip galvanized steel
- Shield and rod sheathing made of silicone

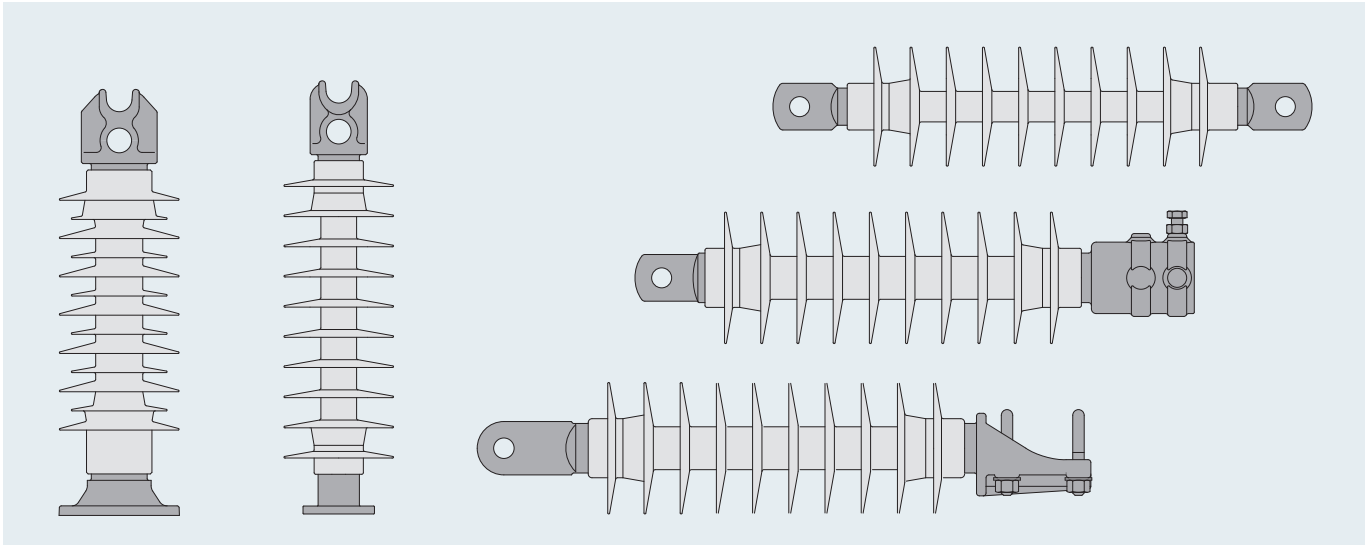
The core acts as the internal insulation and is dimensioned such that the occurring mechanical forces can be absorbed reliably. The sheath sleeve in silicone forms the continuous external insulation and the required creepage distance. Thus the core is protected against harmful ambient influences.

Due to the modular construction, any customer specific fittings can be realized on request (examples see opposite figure).



- 1 Fittings (example)
- 2 Insulating rod
- 3 Shield and rod sheathing

Design of silicone composite insulator



Examples for fittings

Tests and standards

The silicone composite insulators in accordance with EN 50151 have been subjected to the following type tests:

- Mechanical load-time test
- Tensile load test
- Cantilever failing load test
- Mechanical test of connection fitting – tube
- Dry lightning impulse withstand voltage test 1.2/50
- Wet power-frequency withstand voltage test

according to the standards:

- IEC 61109: 1995
- IEC 61952: 2002
- DIN VDE 0216: 1986

Variants

Composite insulator tongue / tongue for catenaries and terminations

| Type | 8WL3078-1A | |
|----------------------------------|------------|-------|
| Weight | [kg] | 2.9 |
| Length | [mm] | 510 |
| For pin diameter | [mm] | 21 |
| Specified mechanical load (SML) | [kN] | 135 |
| Permissible operating load (OML) | [kN] | 30 |
| Minimum creepage distance | [mm] | 1,230 |

Composite insulator tongue / tube for cantilevers

| Type | | 8WL3078-2A | 8WL3078-2B | 8WL3078-2C | 8WL3078-2D | 8WL3078-2L |
|---------------------------------------|------|------------|------------|------------|------------|------------|
| Weight | [kg] | 3.2 | 3.6 | 6.6 | 3.2 | 8.1 |
| Length | [mm] | 559 | 573 | 616 | 559 | 616 |
| Hole diameter | [mm] | 21 | 21 | 21.5 | 22 | 21.5 |
| For tube diameter | [mm] | 55 | 70 | 34-51 | 60.3 | 55-70 |
| Specified cantilever load (SCL) | [kN] | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Maximum design cantilever load (MDCL) | [kN] | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 |
| Specified tensile load (STL) | [kN] | 60 | 60 | 60 | 40 | 60 |
| Permissible operating load/tension | [kN] | 12 | 12 | 12 | 12 | 12 |
| Minimum creepage distance | [mm] | 1,215 | 1,215 | 1,215 | 1,215 | 1,215 |

Composite insulator tube / tube for cantilevers

| Type | 8WL3078-2M | |
|---------------------------------------|------------|-------|
| Weight | [kg] | 9.0 |
| Length | [mm] | 660 |
| For tube diameter | [mm] | 50-70 |
| Specified cantilever load (SCL) | [kN] | 6.0 |
| Maximum design cantilever load (MDCL) | [kN] | 1.9 |
| Specified tensile load (STL) | [kN] | 60 |
| Permissible operating load/tension | [kN] | 12 |
| Minimum creepage distance | [mm] | 1,215 |

Variants (continuation)

Composite insulator with flat connections for soffit conductor rail

| Type | 8WL3078-6D | |
|---------------------------------------|------------|-------|
| Weight | [kg] | 7.2 |
| Length | [mm] | 460 |
| Specified cantilever load (SCL) | [kN] | 19.2 |
| Maximum design cantilever load (MDCL) | [kN] | 6.0 |
| Specified tensile load (STL) | [kN] | 60 |
| Permissible operating load/tension | [kN] | 12 |
| Minimum creepage distance | [mm] | 1,255 |

Composite post insulators for supply and feeder lines

| Type | | 8WL3078-6A | 8WL3078-7A |
|---------------------------------------|------|------------|------------|
| Weight | [kg] | 9.6 | 6.4 |
| Length | [mm] | 506 | 517.5 |
| Specified cantilever load (SCL) | [kN] | 19.2 | 8.0 |
| Maximum design cantilever load (MDCL) | [kN] | 6.0 | 2.5 |
| Specified tensile load (STL) | [kN] | 60 | 60 |
| Permissible operating load/tension | [kN] | 12 | 12 |
| Minimum creepage distance | [mm] | 1,230 | 1,215 |

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The information in this document contains general descriptions of the technical options available, which do not always have to be present in individual cases. If not stated otherwise, we reserve the right to include modifications, especially regarding the stated values and dimensions.