



# Outdoor Porcelain Terminations



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Accessories for high voltage  
polymeric cables

## About us

Prysmian Cables & Systems is a world-class multinational company. Founded in 1872 as "Ditta Pirelli & C.", it has achieved a leading position for more than a century of operations in its two key international markets - "Energy Cables and Systems" and "Telecom Cables & Systems".

Prysmian Cables and Systems is the world's largest manufacturer of power and telecommunications cables, with 52 manufacturing facilities in 21 countries in five continents and a market share in excess of 10%.

Prysmian Energy Cables and Systems is a global solutions provider, offering a wide range of integrated solutions, such as cable systems, system design and engineering, project management, installation and post-sale services.

Prysmian Energy Cables and Systems concentrates on continuous product innovation and on achieving a competitive edge by focusing on research and development. This is done through Prysmian's own R&D centres and by co-operating with universities, scientific institutions and above all, our customers. Prysmian's world-wide organisation makes and delivers advanced technological solutions to customers anywhere in the world.

Prysmian started manufacturing insulated cables for electric power distribution around 1880 and soon afterwards initiated the development of the first cable accessories.

Prysmian's very long and successful experience in HV and EHV cable systems have lead to the development of a comprehensive range of accessories for extruded dielectric cables.

A relentless R&D effort focused on rubber compounds as well as on electrical design has created accessories for all applications, based on pre-moulded and factory tested joint sleeves and termination stress cones that are recognised worldwide for their unsurpassed reliability.



## Stress cone basics

The origin of the current product range of accessories for HV polymeric cables dates back to 1978 when Prysmian, strong of its very long and successful experience in Fluid Filled cable systems developed its first generation of accessories for extruded cable systems.

These accessories are based on pre-moulded electrical components, i.e. stress cones for terminations and one-piece sleeves for joints.

Pre-moulded sleeves and stress cones are currently available for HV polymeric cables from 72.5 kV up to 525 kV and adopt the same design at all voltage classes.

Thanks to its outstanding electrical and mechanical properties, ethylene-propylene rubber (EPR) has been favoured for the rubber mouldings manufacture. After a thorough research on rubber compounds properties, Prysmian developed a proprietary formulation with superior characteristics that is manufactured in-house, which guarantees an unsurpassed reliability of the products.

The mechanical properties of Prysmian special compounds ensure a constant pressure at the cable/moulding interface during the entire lifetime of the accessories, whilst the electrical design has been optimised to minimise the electrical stress concentration in the same area. Prysmian one-piece pre-moulded sleeves and stress cones are completely manufactured in-house.

The moulding process has been refined thanks to the long-standing presence of Prysmian in the rubber industry; each single moulding is mechanically and electrically tested in the factory (the applied electrical test parameters are stricter than those established by the international standards) and certified individually.

Prysmian HV Accessories quality system complies with both ISO 9001 and ISO 14001 standards. Prysmian HV accessories based on EPR mouldings represent a highly reliable solution that is considered a key component in the safe operation of a HV cable system.

The reliability of its HV accessories has made Prysmian the worldwide market leader in terms of design and quality and all major power Utilities consider Prysmian products the benchmark in terms of performance and service.

## Product range



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Prysmian porcelain termination solutions - based on EPR pre-moulded stress cones - include a wide range of products for the connection of underground circuits and overhead lines. The long-standing experience with porcelain insulators has allowed Prysmian to develop, for each voltage class, a comprehensive range of terminations including several different creepage distances. Furthermore, all pre-moulded stress cones undergo factory testing to check for manufacturing defects. This ensures that, once the termination is assembled, its reliability can be compared to that of the cable it is fitted on.

The pre-moulded stress cones, available for a wide range of cable sizes, are designed to fit with controlled interference over the cable insulation and to follow the cable's diameter variations. At the same time, they guarantee a sufficient positive pressure to control the electric field concentration under any service condition.

The terminations are filled with an insulating compound up to a level where the electric field is substantially reduced. The terminations base plates and the cable's metallic screen are electrically insulated from the supporting structure by means of stand-off insulators, designed to withstand both mechanical and electrical operating stresses.

More than 15,000 of these outdoor terminations have already been installed throughout the world for voltages of between 66 and 400 kV.

### > New filling medium

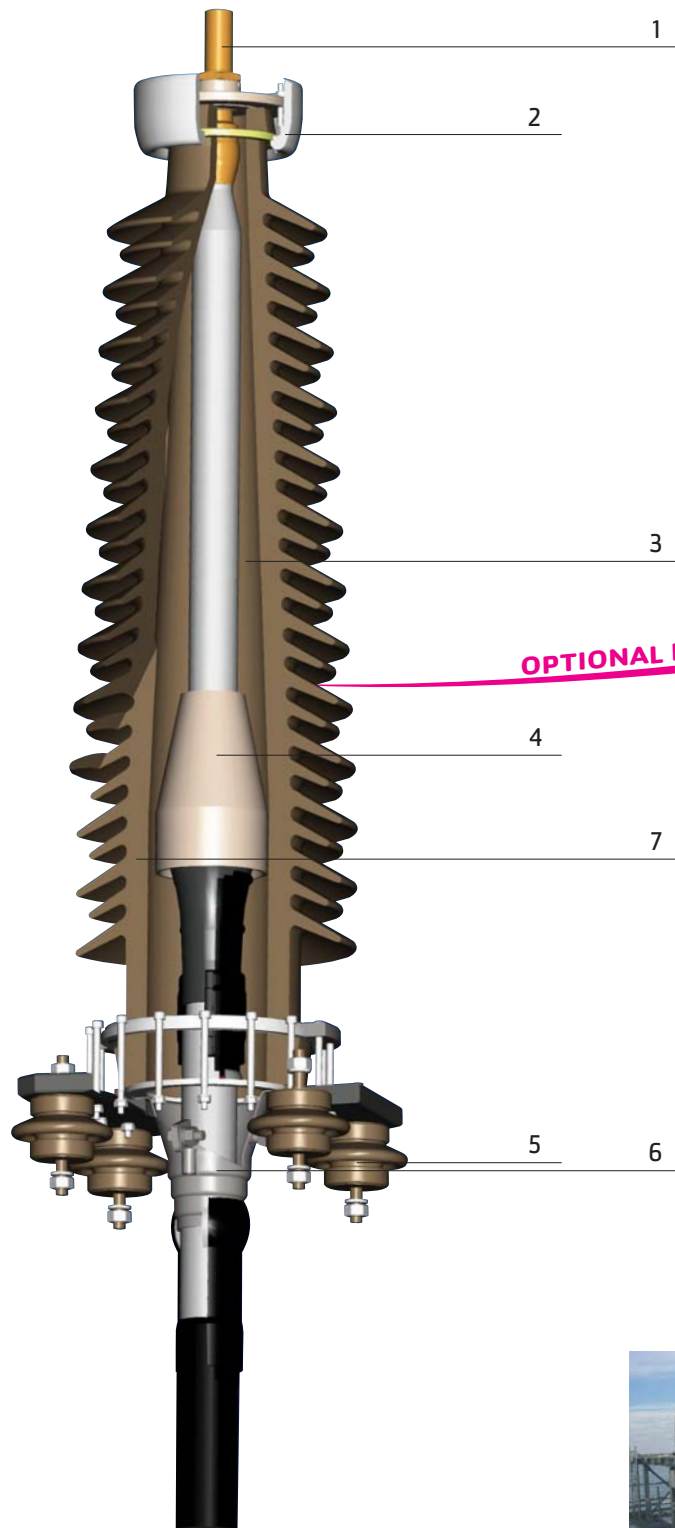
Prysmian's latest development in the field of outdoor terminations is a new type of filling medium that replaces the traditional silicon fluid.

The new patented medium is a special compound that becomes partially solid within a short time after the filling of the termination, thus avoiding any possibility of leakage. Nevertheless, the compound remains sufficiently elastic to withstand even the highest difference in temperature.



# Porcelain terminations

available from 72,5 kV up to 525 kV

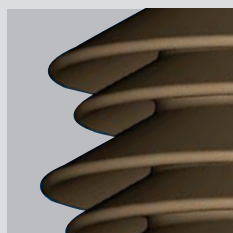


## Legend

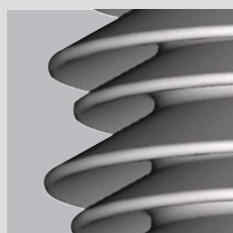
- 1 OHL connection stalk
- 2 Corona shield
- 3 Filling medium
- 4 Stress cone
- 5 Stand-off insulators
- 6 End bell
- 7 Insulator



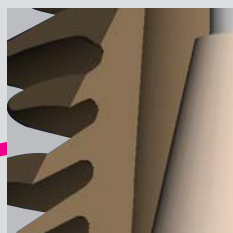
# YOUR ENERGY... OUR SYSTEMS... ANYWHERE



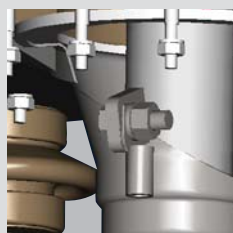
Brown colour



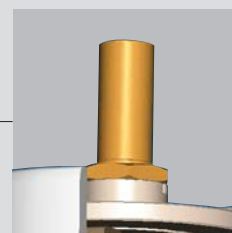
Grey colour



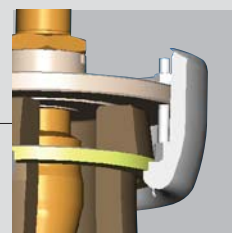
Different filling medium



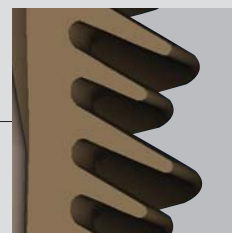
Optical fibres management on request



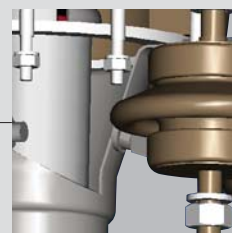
Several OHL connection stalk design / dimensions



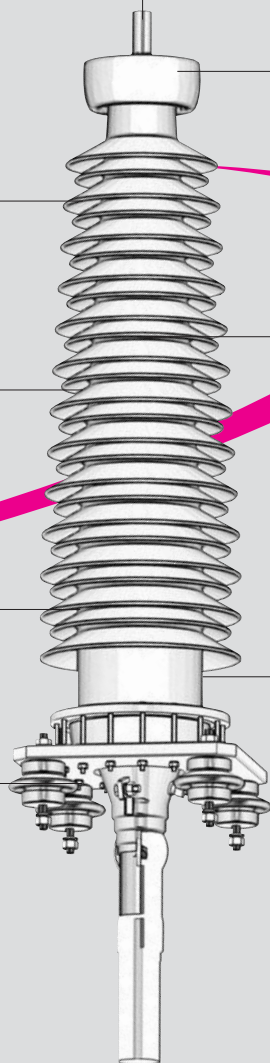
Arching horns available on request



Several creepage distances



Partial discharge sensor port on request



## Electrical rating

| U max<br>(kV) | 72,5<br>kV | 123<br>kV | 145<br>kV | 170<br>kV | 245/300<br>kV | 420<br>kV |
|---------------|------------|-----------|-----------|-----------|---------------|-----------|
|---------------|------------|-----------|-----------|-----------|---------------|-----------|

|                                             |     |     |     |     |      |      |
|---------------------------------------------|-----|-----|-----|-----|------|------|
| Basic Impulse Level                         | 350 | 550 | 650 | 750 | 1050 | 1425 |
| IEEE 48 = 1 min AC Dry withstand            | 175 | 205 | 310 | 365 | 460  | -    |
| IEEE 48 = 10 sec AC Wet withstand voltage   | 145 | 190 | 275 | 315 | 445  | -    |
| IEEE 48 = 6 h AC Dry withstand voltage      | 120 | 160 | 210 | 250 | 330  | -    |
| IEC 60840 - 62067 = 15 min AC Dry withstand | 90  | 160 | 190 | 218 | 320  | 440  |
| IEC 71-1 = 60 sec AC Dry withstand voltage  | 140 | 230 | 275 | 325 | 460  | -    |

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