

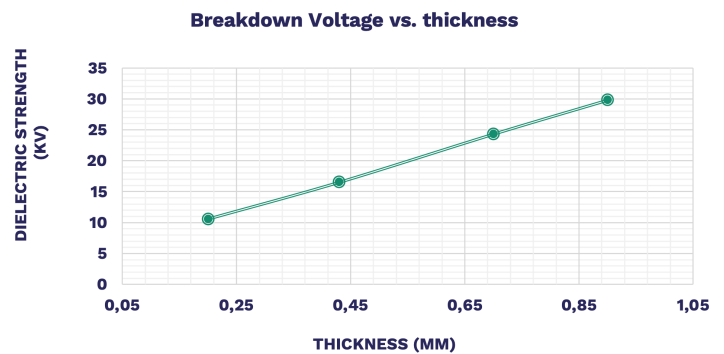
Benefits of Rilsan® coatings for busbars, battery racks, electrical devices and more

Solutions for the Electrical Insulation Industry

Rilsan® Polyamide 11 coatings have been used in applications involving electrical insulation since they were first applied to electrical cabinets in Denmark in the mid 90's. These **bio-based** polyamide coatings offer great protection from high voltage while also providing excellent flexibility, impact and abrasion resistance, corrosion protection, and UV resistance.

IMPROVED DIELECTRIC INSULATION

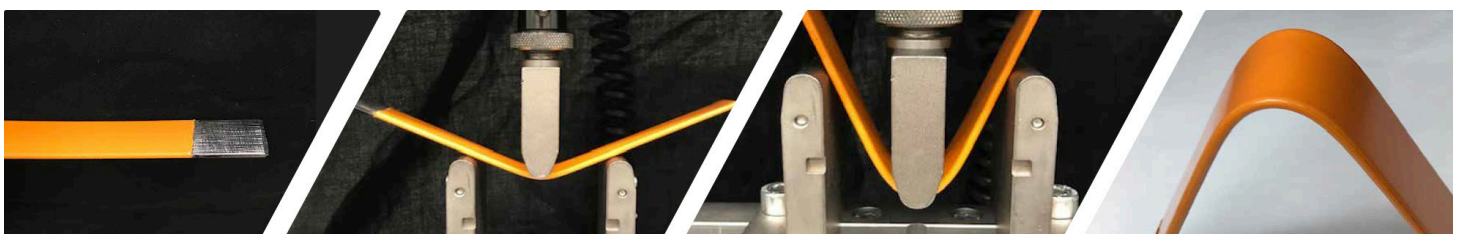
The dielectric resistance of Rilsan® powder coatings can be as high as 65kV/mm at 125 µm, depending on the grade selected. Since polyamide 11 is a thermoplastic material, final coating thickness can be easily tuned by adjusting processing conditions. This allows you to use less material for lower dielectric requirements, or build on a very thick coating for higher dielectric requirements. The insulation level required in electric vehicle battery components (5kV) can be reached with a thickness as low as 100 µm, while in other applications a thickness of up to 1.25 mm can be applied resulting in a dielectric resistance over 20 kV!



IMPROVED DIELECTRIC INSULATION

- **Unmatched mechanical durability** – significantly better wear and impact resistance than epoxy
- **Improved thermal efficiency** – higher dielectric resistance means a lower thickness is required which allows for better heat dissipation
- **Superior weatherability** – able to withstand intense UV exposure and extreme thermal cycling
- **Great chemical resistance** – unaffected by long-term exposure to solutions like 50% sodium hydroxide and 10% sulfuric acid (ambient temp.)
- **Excellent flexibility** – capable of passing ISO 6860 (3.175 mm conical mandrel bend) at over 250 µm

Bending a bar with a 400 µm thick Rilsan® PA11 Coating



Easy and Efficient Processing Reduces Cost

- **Easy thermoplastic processing** – unlike thermosets such as epoxy, thermoplastics do not need to undergo a chemical reaction to form a solid coating. This makes processing quicker and easier as you do not need precise cure times and temperatures
- **Parts can be formed or machined after coating** – parts can be bent after coating and the coating can be selectively machined away to create metal contact points
- **Low coating density = more parts per pound** – a density of 1.1 allows for a covering efficiency of over 8.2 m²/kg at 100 µm
- **Adhesion to a variety of substrates** – steel, aluminum, copper, nickel, and more
- **Quick and easy masking** – thanks to coating flexibility and the ability to use lower thicknesses for the same amount of dielectric protection



OTHER BENEFITS

- Rilsan® polyamide 11 is derived from renewable plantbased resources and Rilsan® coatings are BPA and TGIC free
- UL-94 V-0 compliant
- Approved and used in various applications by all major automotive OEMs

Related Applications

- Busbars
- Heat exchangers
- Battery racks
- Switchgears
- Connectors
- Field coils
- Toroidal inductors
- Rotors and stators
- Other electrical components
- Chiller plates
- Cooling channels

The high versatility of Rilsan® PA11 allows it to be used with other processing methods to suit the needs of the industry. Rilsan® PA11 can be used to insulate busbars using the cross-head extrusion process, which provides the same benefits to your final product (flexibility, chemical resistance, electric strength) while often allowing an even faster production rate.

Arkema Headquarter
420 rue d'Estienne d'Orves
92705 Colombes Cedex
France
T +33 (0)1 49 00 80 80

Arkema Inc.
900 1st Ave,
King of Prussia, PA 19406,
United States

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