



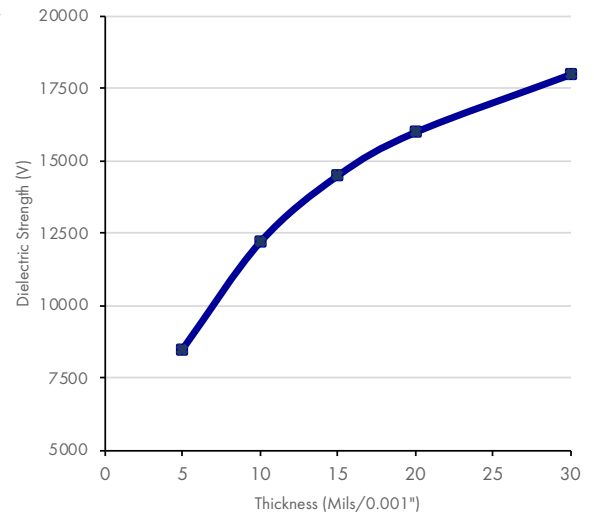
## SOLUTIONS FOR THE ELECTRICAL INSULATION INDUSTRY

### Benefits of Rilsan<sup>®</sup> coatings for bus bars, battery racks, electrical devices and more

Rilsan<sup>®</sup> 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 **biobased** 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<sup>®</sup> powder coatings can be as high as 1625 V/mil (65 kV/mm) at 5 mils (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 4 mils (100 μm), while in other applications a thickness of up to 50 mils (1.25 mm) can be applied resulting in a dielectric resistance over 20 kV!



#### BETTER COATING PERFORMANCE

- **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 ASTM D522 (1/8" conical mandrel bend) at over 10 mils



Rilsan<sup>®</sup> PA11 coated bus bars, applied by Advanced Industrial Coatings in Stockton, CA



BENDING A BAR WITH A 16 MIL THICK RILSAN<sup>®</sup> 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 40 ft<sup>2</sup>/lb at 4 mils
- **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



GREAT MASKING WITH RILSAN® COATINGS



POOR MASKING WITH EPOXY COATINGS

## OTHER BENEFITS

- Rilsan® polyamide 11 is derived from renewable plant-based 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



The castor plant, the source of Rilsan® Polyamide 11

## RELATED APPLICATIONS

- Bus bars
- 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.

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