

Battery Solutions for electric vehicles



Coatings for EV battery performance

In a rapidly evolving automotive landscape, Axalta Coating Systems stands at the forefront of progress. We are dedicated to pushing the boundaries of technology, continuously innovating solutions that safeguard EV battery components, enhancing their efficiency, safety, and cost-effectiveness.

Dielectric coating

Battery top cover and other structural components

Thermal Insulation Coating

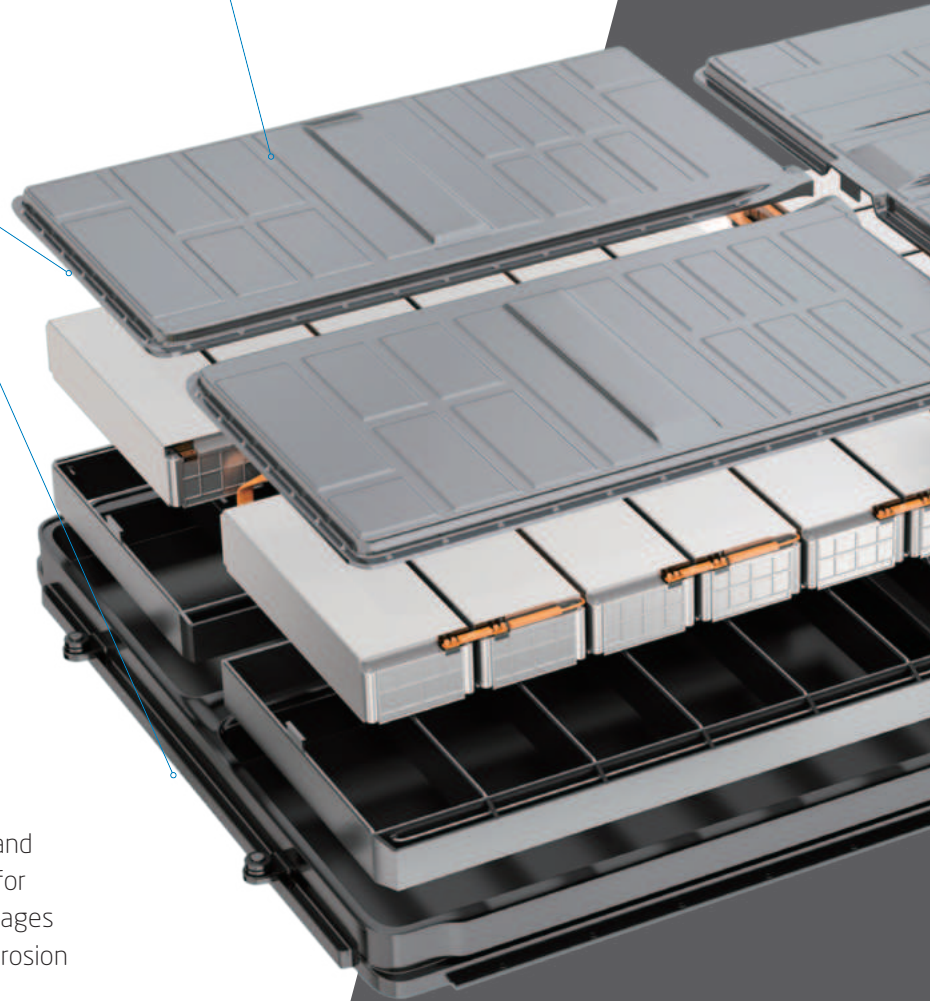
Under battery top cover
Under battery tray

Dielectric Coating

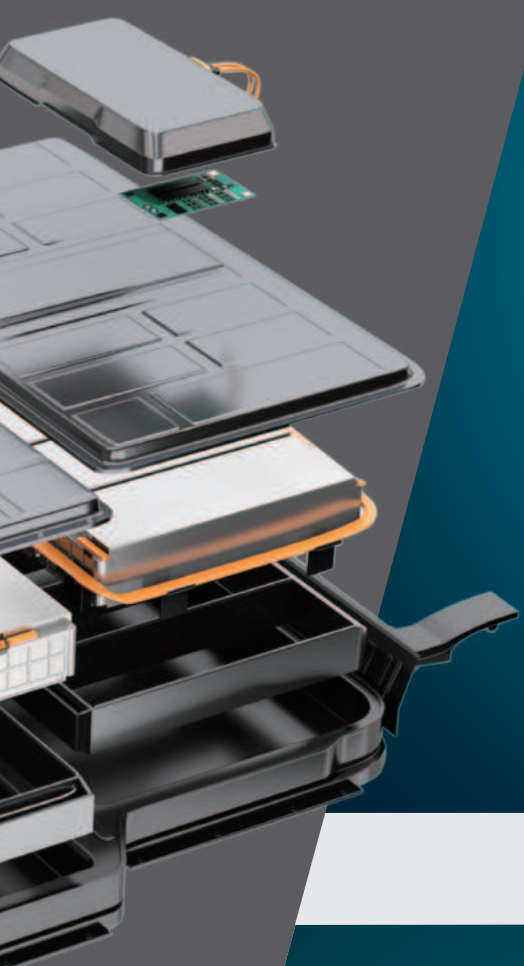
Electric insulation is a primary need for safeguarding battery components. Depending on battery design, component placement, and manufacturing demands, specialized coatings like thermoset, thermoplastic powder, electrocoat, UV, and specialty liquids can be used individually or layered for multifunctional performance. Coatings offer advantages such as edge coverage, electrical insulation, and corrosion protection.

Thermal Insulation Coating

Batteries are safety-critical, and Axalta provides a highly filled, low-carbon coating that insulates substrates from direct flame heat without requiring an expanded char layer. Its low thermal conductivity makes it suitable for thermal insulation between battery cells, side plates, or battery trays.



Innovative solutions for safety, efficiency, and affordability of electric vehicles

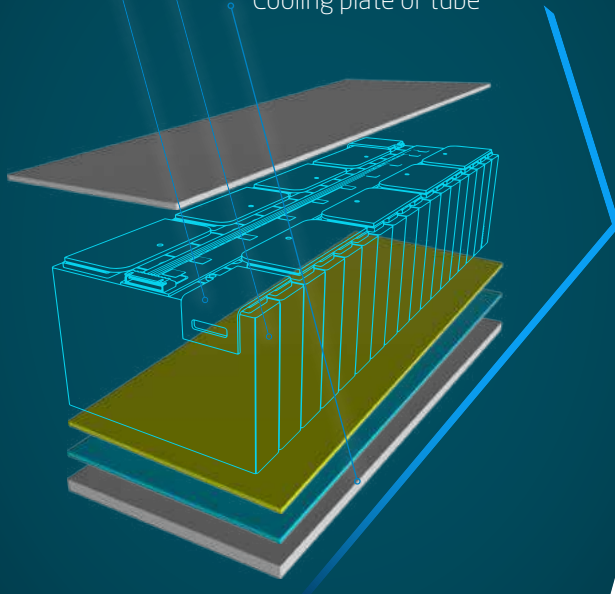


Dielectric Coating

Bus bar

Prismatic cell can

Cooling plate or tube



Thermal Insulation Coating

Our product offering for dielectric and thermal insulation coatings

Dielectric powder coatings	Dielectric strength EC60455-2; IEC60243-1	Film build	Salt spray**	Curing	UL94	Thermal conductivity
Alesta® EFH603P0 Bus Gray Alesta® ELH623S8 Epoxy Battery Gray	85kV/mm at 70+/-5µm	200µm-300µm*	1,440 hrs no blister or creepage	140°C (10 min)	V-0	0,35+/-0,05 W/mK
Alesta® EE80007368521 (or Alesta® EFH643S8) RAL 7035 Light Gray	85kV/mm at 70+/-5µm	200µm-300µm*	1,440 hrs no blister or creepage	170°C (10 min)	V-0	0,35+/-0,05 W/mK

* Depending on design of part and specification

** Depending on substrate and surface preparation

Epoxy e-coat	Dielectric strength*	Breakdownvoltage	Film build	Salt spray**	Cyclic corrosion***	Edge corrosion****
AquaEC™ 6100	140kV/mm at 25µm	-	Epoxy 20-30µm	504h d<1.0mm	10 cycles d<2 mm	Rating 0-1
AquaEC™ 3500EP	70-150 kV/mm	2 - 5 kV	Epoxy 20-45µm	1,000h d<1.5mm	10 cycles d<2 mm	Rating 0-1

* Depending on filmbuild and pretreatment

** ISO 9227

*** ISO 11997-1 / Cycle B

**** ISO 4628-1





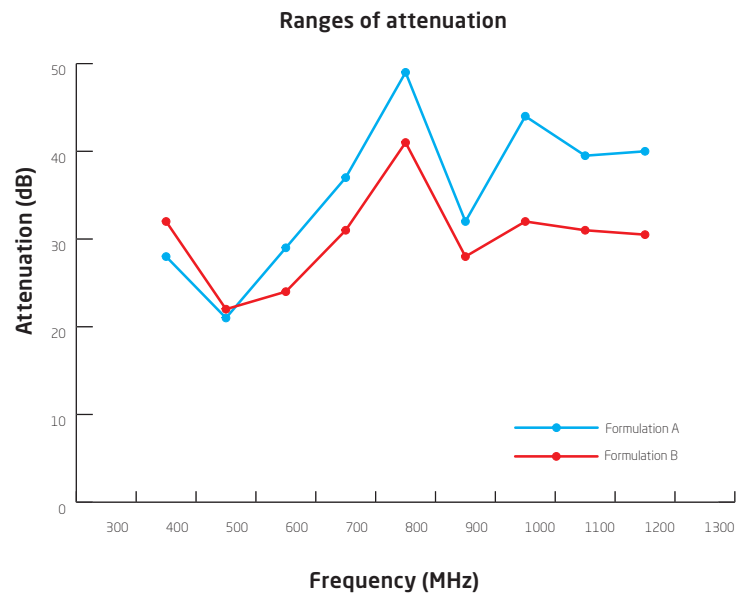
Thermal insulation coatings	Dielectric strength	Film build	Salt spray	Curing	UL94	Density	Thermal conductivity
Imron® Industrial	>5KV DC at 1.5mm initial >3KV DC at 1.5mm after 10 min 1100°C flame exposure	1-3mm	1,440 hrs no blister or creepage	ambient or 60° (30min)	V-0	0,85g/m³	0,04-0,08W/mK

Unveiling the dynamics: Attenuation over frequency ranges in EV batteries

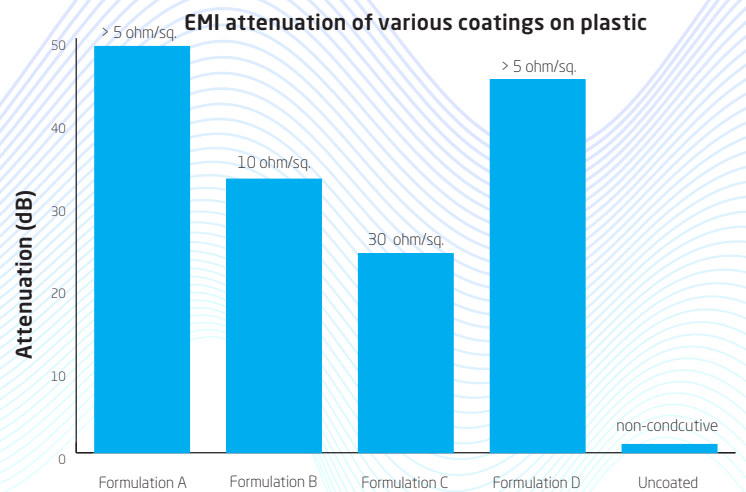
Attenuation over frequency ranges in electric vehicle (EV) batteries is a critical aspect of battery technology that plays a pivotal role in the overall performance and longevity of these energy storage systems.

As EVs continue to gain prominence as a sustainable and environmentally friendly mode of transportation, the efficiency and reliability of their batteries have become paramount.

Understanding how the electrical characteristics of these batteries change across different frequency ranges is essential for optimizing their performance, ensuring safety, and extending their operational lifespan.



- Initial round of coatings show appreciable attenuation over a dynamic frequency range
- >20 dB from 400-1200 MHz



- Highest achieved attenuation is 48 dB at 1 GHz frequency with a coating thickness of 2 mil
- Uncoated plastic control panel results in little to no attenuation (<1 dB)
- Can achieve several ranges of conductivity based on formulation
- Coating formulation A, B, C, D, ... (in the graph) contact Axalta for more technical information.





www.axalta.com/battery

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