

CORACHAR® | CORAGUARD® | ENVIROCRO®

Battery Fire Protection

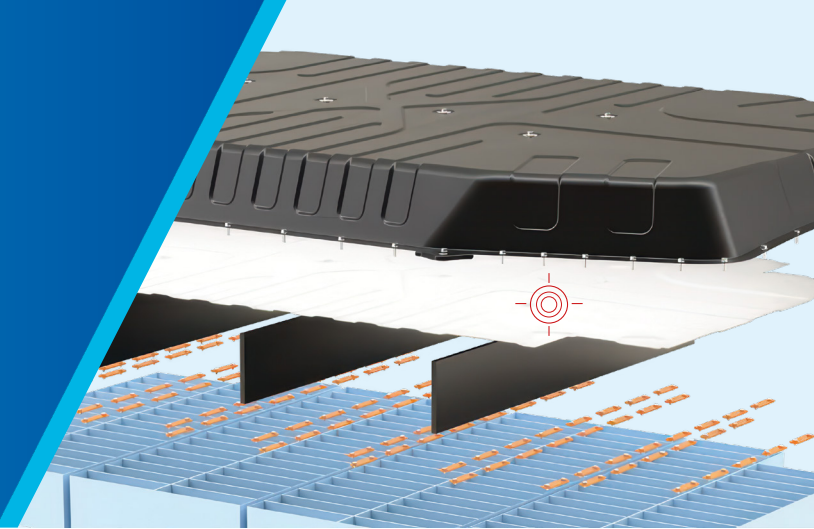
Our next generation fire protection and thermal insulation coatings



We protect and beautify the world®

Thermal Insulation CORACHAR® SE & CORAGUARD® SE

(Low) Intumescent fire protection coatings with proven record of industrial-scale application and passing thermal runaway tests



CORACHAR®

PPG's **CORACHAR® SE Series** are high-performance fire protection intumescent coatings that form a protective barrier that can help prevent the spread of fire in the event of a battery failure.



NORMAL CONDITION

- ✔ Thin coating
- ✔ Eko/Shaug

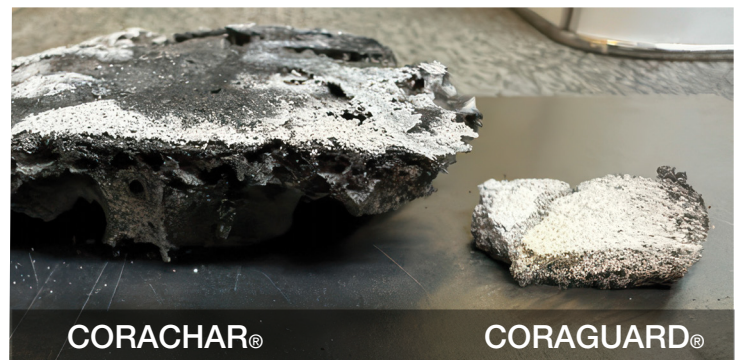


FIRE CONDITION

- ✔ Expanded char
- ✔ Thermal insulating barrier

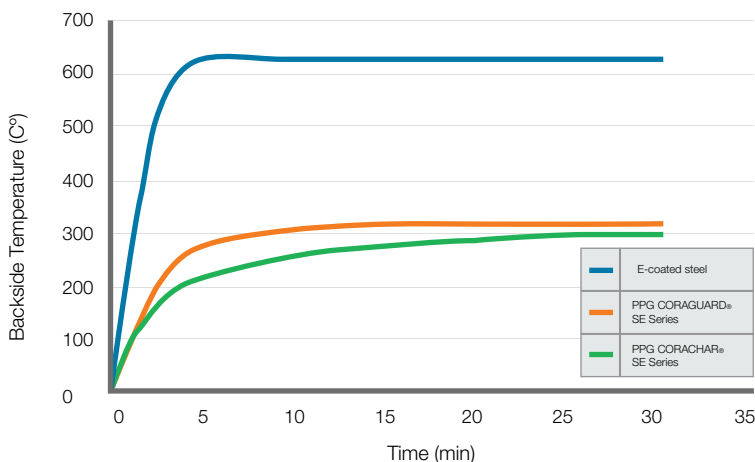
CORAGUARD®

PPG's **CORAGUARD® SE Series** is a low intumescent product range specifically designed to fit into narrow spaces and provide high post-fire dielectric resistance.



	CORACHAR® SE series	CORAGUARD® SE series
Chemistry	1K/2K Epoxy	2K Epoxy
Expansion	Intumescent	Low Intumescent
Post Fire Dielectric	< 2kV DC	≥ 3.5kV DC

1200°C, 30 MINUTES, BENCH BURN TEST



PRODUCT FEATURES

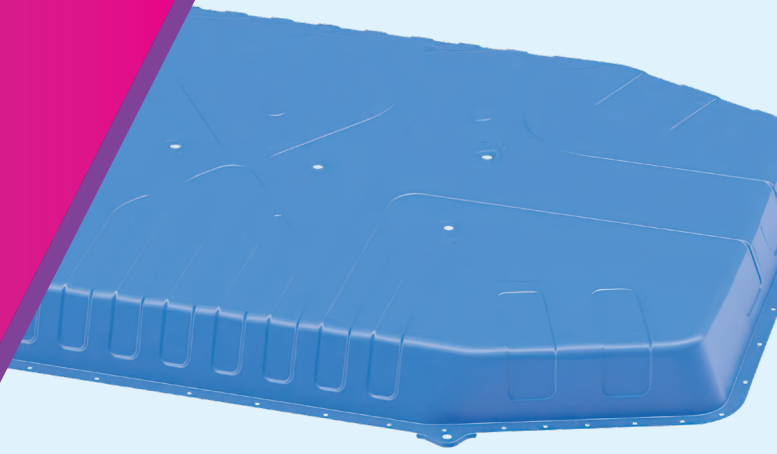
- ✔ (Low-) intumescent fire protection technology
- ✔ formulated with 100% solids and light weight
- ✔ UL94 V-0

APPLICATION

- ✔ Battery pack assembly and energy systems
- ✔ Airless or flat stream
- ✔ Enables higher throughput compared to manual application
- ✔ Aluminum, steel, and composites

PPG ENVIROCRON® Flame Retardant Powder Solution

Reducing the risk of ecoat self-ignition



Flame Retardant Powder

Envirocron® is flame retardant powder tailored for EV battery lids, reducing the risk of ecoat self-ignition.

With the flexibility of single or double layer coating it offers an exceptional combination of flame retardancy and corrosion protection, helping to ensure safety and durability for your electric vehicles.



ENVIROCON® flame retardant powder solution helps to protect the ecoat from self ignition

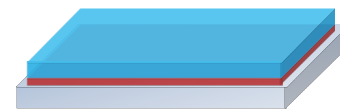
Product/Formulation

- ✓ Temperature improvement of PCM50120 greater than 700o C vs. ecoat 300 - 350o C
- ✓ Great corrosion protection with outstanding fire retardancy
- ✓ Reduced manufacturer complexity

Application

- ✓ No special application equipment required
- ✓ Can be applied automatic or manual device
- ✓ Thickness
 - ~100 µm (1 Coat)
 - ~ 140 µm (powder + powder or ecoat + powder)

Powder on Ecoat



Module Racking; Structural Components; Enclosure and Lid

~ 140 µm (eccoat + powder) and ~ 100 µm (1 ecoat)

Good

Ecoat line, powder spray line and conventional or IR bake

Example Applications

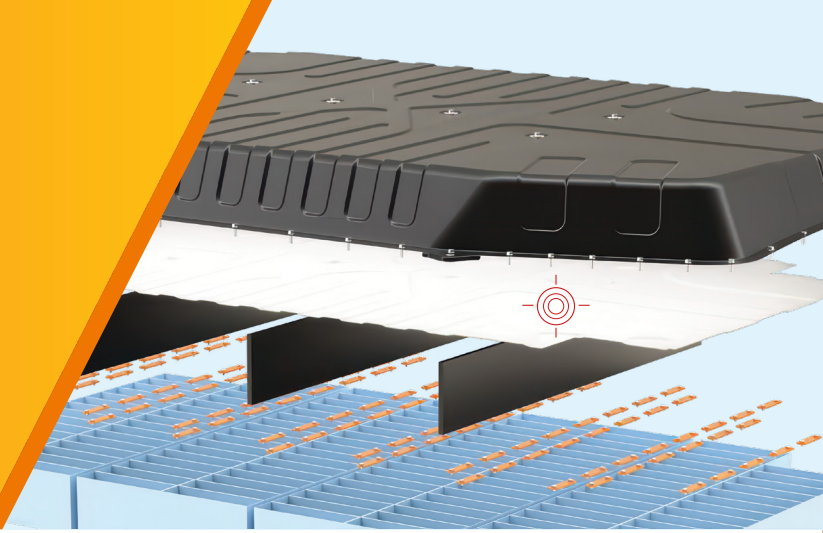
Total DFT (µm)

Lap Shear Strength

Capital Assets

CORAGUARD® ANTI-BLAST

Advanced and tailored fire protection coating
for extreme blasting requirements



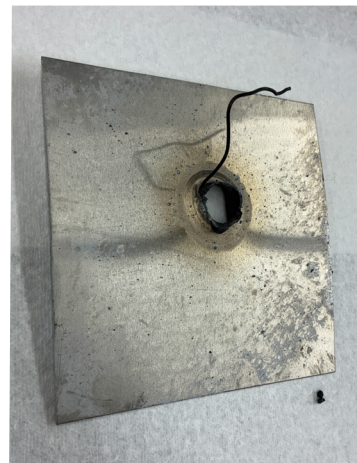
CORAGUARD® SE ANTI BLAST

CORAGUARD® SE Anti-blast coatings offer additional features such as fire blasting resistance to meet evolving market standards in terms of particle bombardment and temperature.

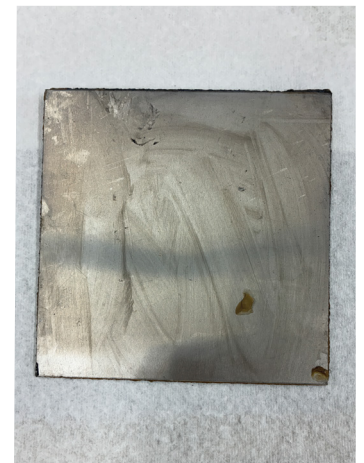
Protecting Battery Enclosures from Burn Through and Impact During Thermal Runaway

TYPICALLY

- ✓ Steel, aluminum, or composites
- ✓ LFP and NMC compatible:
NMC 6xx, NMC 8xx, NMC 9xx
- ✓ Excellent environmental cycling performance
- ✓ Excellent particle resistance



Backside panel without
CORAGUARD® SE Anti-blast



Backside panel with CORAGUARD®
SE Anti-blast

PPG Value Leveraging Core Competencies

Product/Formulation

- ✓ Adjustable fire blasting resistance
- ✓ Provide good substrate thermal insulation
- ✓ Conformant coating coverage
- ✓ Lightweight to enable improved battery performance
- ✓ Formulated with 100% solids, solvents NIA

Application

- ✓ Suitable for application to battery pack assembly components and energy storage systems
- ✓ Spray and dispensing application, ability to automate for mass production
- ✓ Enables high throughput
- ✓ Great aging and vibration resistance (flexibility)





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