FlexiChar®

Q55 EV intumescent coating

Is an intumescent coating that protects lightweight and thin components from the effects of fire or lithium ion cell thermal runaway. When the material is exposed to high temperatures it foams rapidly to form a tough, insulating char that will provide insulation to protect the substrate.

Our product has been formulated for application to high volume components in a continuous production environment. It is a reactive material suitable for spray application, followed by curing at elevated temperature to allow rapid completion and further assembly.

This coating is highly durable and is intended for use in vehicle underbody conditions. It is resistant to wetting, salt spray and cycles of heat and humidity. It is normally used as a single coating, without a primer or topcoat, and will adhere to metallic or polymeric substrates.

Product characteristics

Extreme event performance

- Protects against temperatures of +1200°C, resistant to flame erosion and provides insulation
- Good reaction to fire properties
- Low smoke and toxicity.

In-service performance

- High continuous in-service temperatures of +80°C or greater, cyclical testing from -52°C to +180°C
- Highly flexible and resistant to vibration
- Will maintain flexibility at temperatures of -40°C or less
- Resistant to water and durable in vehicle underbody conditions
- Electrically insulative
- Suited for structures and elements undergoing vibration.

Typical applications

Protection against extreme one-off events such as hydrocarbon and battery fires. FlexiChar® Q55 EV is spray applied to form a dry film of between 0.4mm and 1.2mm. The degree of fire protection will increase with coating thickness.

- Insulating battery compartments from external fires to delay or prevent thermal run away
- Upgrading fire resistance of compartments within battery packs to delay and limit the extent of propagation
- Preventing structural failure or burn though of materials such as aluminium, composites or SMC
- 2k reactive material suitable for airless spraying.

Performance and properties

Properties	Value
Bond strength (cohesive failure)	3.7 MPa
Density (wet, mixed)	1450 Kg/m^3
Flash point • Part A • Part B	+ 33ºC + 82ºC
VOC* • Part A • Part B	135 g/l (9.16%) 76 g/l (7.68%)
Volume solids	90% ± 3%
Mix ratio (by volume)	2.43 : 1
Mix ratio (by weight)	3.75 : 1
Mix ratio tolerance	±10% by volume
Cure time in 80ºC oven • To vacuum lift • Full cure	10 minutes (part at 80ºC, excluding ramp up) An additional 1 hour at ambient temperature

*according to VOC Solvents Directive 1999/13/EC. Actual release to atmosphere will be only 6.2% b.w. of mixed product as materials react into the film and cease to be volatile.

Viscosity	Brookfield	Spindle No	Speed (rpm)	Viscosity (cP)
Part A	LV	4	1.5	210,000
Part B	LV	3	20	2,800
A+B	HB	506	50	76,000

The values given in the tables are typical measured properties. They are not meant to imply specification limits and should not be used for this purpose.

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