Q57

Is a self-adhesive coated fabric used to provide protection against extreme events such as fires and releases of high temperature gasses. This "dry fit" flexible film is extremely resistant to erosion by high velocity or turbulent flames and is very effective in preventing penetration and destruction of thin and lightweight compartment walls.

It may be used to line the inside of casings and housings for lithium ion battery packs to contain thermal run away events and ensure that there is no uncontrolled release of flame. A key benefit is a significant reduction in the temperature of the external surface of the housing which controls the risk of secondary fires or damage. It is effective on light gauge aluminium alloy, sheet moulding compound, composite and thermoplastic substrates.

The material is typically pressed onto the substrate to be protected using a roller or a low-pressure tool. This simple process can either be manual or automated. It may also be "over-moulded" in either injection moulding or resin injection processes. A standard grade is available from stock, and alternatives can be made to order to suit less or more severe exposure conditions.

Product characteristics

Extreme event performance:

- Protects against temperatures of over 1200 °C, resistant to flame erosion and maintains barrier properties
- Tough ablative char resists impact and abrasion from vented debris and tolerates blast and pressure waves
- Good reaction to fire properties
- Low smoke and toxicity.

In service performance:

- High continuous in-service temperatures of 150 °C or greater
- Highly flexible and resistant to vibration
- Will maintain flexibility at low temperatures of -40 °C or less
- Excellent water and chemical resistance
- Electrically insulative.

Component supply and use:

- Available by the roll, 900 mm+ wide and 100 m+ long
- With or without adhesive backing for bonding by mechanical means, spray adhesive or over-moulding
- or as slit tape
- or as pre-cut shapes to customer design
- pressed onto the substrate to be protected manually using a roller
- or may be automated using a low-pressure tool, or over-moulding process.

Typical applications

- Protection against extreme one-off events such as lithium ion battery thermal runaway
- Internal surfaces of battery pack casings to prevent escape of flame jets
- Lining partitions and dividers to enhance resistance to flame and delay propagation
- Protection of vulnerable components such as coolant hoses, bus bars and cables.

System properties

Parameter	System value	Units
Thickness	0.9	mm
Weight	1150	gsm
Thermal conductivity	0.1838	W/(m K)
Specific heat capacity (at 60 °C)	1.26	J/(g K)
Dielectric strength	2.76	kV/mm
Volumetric resistivity	1×10^{14}	Ωcm
Dielectric constant at 1 kHz	2.4	-
UL 94 V0 and V5A	Pass	1.5 mm aluminium
UL 2596 *	Pass	0.9 mm, 1.2 mm, and 1.5 mm aluminium

* based on internal indicative testing.

Details of all Q57 live testing is available on request.

Disclaimer

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