FIRE CLOAK™

Electric Vehicle Fire Blankets

BY PROSOL UK

ISSUE 7 - NOVEMBER 2023

Contains Electric and Hybrid Vehicle fires **Minimises** collateral damage

electricvehiclefireblanket.co.uk

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Launched after many months of research, development and testing the Fire Cloak™ EV Car fire blanket has been designed, to contain EV (electric vehicle) fires.

If an electric vehicle high energy propulsion battery is damaged, or a manufacturing fault causes just a single cell to short circuit this can start a fire, generating temperatures over 1,000°C (1,832°F). This fire spreads from cell to cell creating a domino-effect known as “Thermal Runaway” and in a short space of time an intense fire is established.

Lithium battery Thermal Runaway fires cannot be extinguished by conventional means. The battery electrolyte usually contains flammable hydrocarbons and the lithium oxide cathode is highly reactive and self-oxidising, so the fire feeds itself. If left unchecked extremely high temperatures and intense fires can result. When a Fire Cloak™ EV Fire Blanket is deployed the combustion potential can be minimised by depriving the fire of oxygen. This means that because the fire is contained, temperatures drop which helps prevent damage to surrounding vehicles and property.

Manufactured from a specially modified silica quartz material and coated with a fire-resistant polymer, the resulting Fire Cloak™ high-tech fabric has extremely high temperature resistance.

Fire Cloak™ has been extensively tested in real-life EV fire demonstrations and has also been independently certified to a number of international fire and flame resistance standards.

BS476 Parts 6 & 7 = Class 0 (similar to UL Class A in USA)

ASTM D6143

EN13501-1: 2018

Thermal Runaway fires cannot be extinguished by conventional means

CLASS 0 - FIRE RESISTANCE RATING

The Fire Cloak™ EV (electric vehicle) fire blanket leads the world in proven fire resistance, being the only product of its type to have achieved a CLASS 0 rating according to BS476: Part 6:1989+A1:2009 and Part 7:1997.

CLASS 0 is an amalgamation of some BS476 standards, which relate to spread of flame and fire propagation index. When combined, these demanding tests determined the fire resistance of the high tec fabric used in the manufacture of the Fire Cloak™.

To achieve a **CLASS 0 rating** the fabric must demonstrate limited combustibility and a very low fire propagation index.

We contracted an independent, world renowned laboratory who are leaders in testing, inspection and certification services to achieve this objective.

FIRE CLOAK™ HAS ACHIEVED THE HIGHEST FIRE RESISTANCE RATINGS AGAINST GLOBAL STANDARDS

Not content with achieving the best possible British Standard for fire resistance **CLASS 0**, Fire Cloak™ has been further subjected to **ISO** (European) and **ASTM** (USA) test standards. The results have yet again shown Fire Cloak™ to be the class leading electric vehicle fire blanket.

ISO EN BS 13501-1:2018 - Classification of Reaction to fire performance

ASTM D6143 - Vertical Flame Resistance - Best possible result achieved against this standard.

At the time of publication (Nov 2023) further testing against **FMVSS 302 - Flammability of Automotive Materials** is underway. This is a technically equivalent standard to **ISO 3795** (used in Europe, Canada and Japan) and also **ASTM D5132-04** used in USA.

Fire Cloak™ will also undergo testing against **BS476: Part 20** (1.5m x 1.5m furnace test). This will expose the Fire Cloak™ fabric to a temperature of 1,000˚C (1,832˚F) and based on information assimilated from the fabric supplier's database should retain its integrity for at least 90 minutes.

FAQS

Q. Will the Fire Cloak™ EV fire blanket extinguish an EV Fire?

A. No the Fire Cloak™ EV fire blanket will not extinguish an EV fire, although it has been designed to contain and control the burn preventing collateral damage to surrounding vehicles and property.

Q. Can the Fire Cloak™ be used on a Petrol or Diesel Car Fire?

A. - Yes, the Fire Cloak™ EV fire blanket works equally as well on I.C.E. (internal combustion engine) vehicle fires and reduces the water required to put out the fire thus minimising polluted water run-off.

Q. Can anybody use the Fire Cloak™ EV fire blanket?

A. - Nobody, except trained fire and rescue personnel, should use the Fire Cloak™ EV fire blanket in relation to a car that is actually on fire. In circumstances where the Fire Cloak™ EV fire blanket is used on a precautionary or preventive basis, properly equipped and prepared personnel can use it in accordance with the Instructions for Use, provided that a proper assessment of all risks present is made and all relevant precautions taken.

Q. Has the Fire Cloak™ EV fire blanket been independently tested?

A. Yes, the Fire Cloak™ EV fire blanket has been extensively tested by independent laboratories. It has passed internationally recognised fire resistance standards and real-life EV fire demonstrations.

Q. Is Fire Cloak™ EV fire blanket reuseable?

A. If the Fire Cloak™ EV fire blanket is used where an EV fire event is avoided, for example, when it is used to isolate a quarantined or suspicious vehicle that is exhibiting an elevated battery temperature according to a Thermal Imaging Camera reading or hissing/popping sounds can be heard and the vehicle does NOT burst into flames, the answer is YES it can be reused PROVIDED THAT it has been fully checked for signs of mechanical damage, contamination or heat degradation and found to be fully undamaged before storage.

In general where any EV fire event has taken place the Fire Cloak™ EV fire blanket is not reusable. ANY fire blanket that is deployed on a vehicle that ultimately sets on fire or is already alight will result in the blanket material being heavily contaminated after use. There will probably be deposits of heavy metals such as nickel, manganese and cobalt along with other chemicals that could include HF acid, organic carbonates and PCB's. ANY EV fire blanket would then need to be decontaminated and resealed before being used again. This is a specialised and expensive process.

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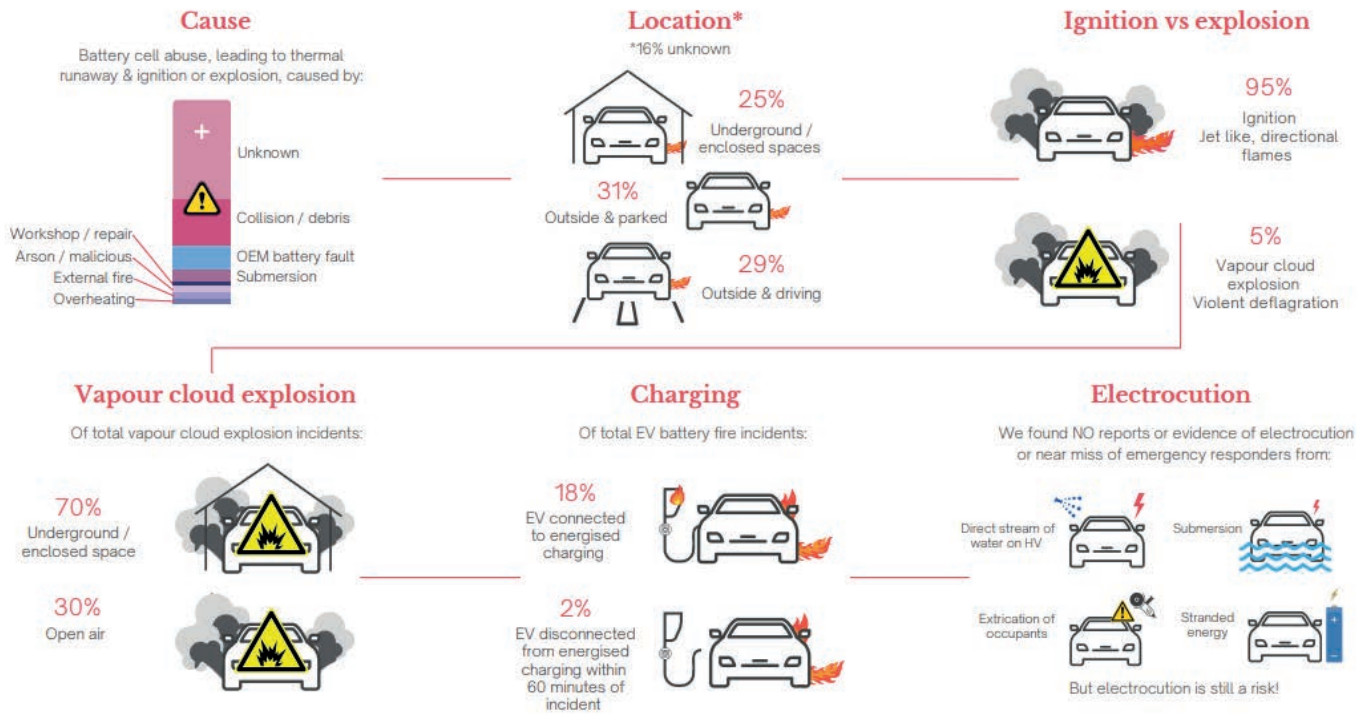
WHO NEEDS FIRE CLOAK™?

With the continuing rise in electric and hybrid vehicle sales, more and more settings need to consider safety in the event of fire:

- Motor Dealers
- Charging Stations
- Car repairers
- Car Parks
- Ferries
- Recovery Services
- Airports
- Road Tunnels
- Shopping Centres

WHAT CAUSES EV FIRES?

EV Battery fires are rare but present new risks and challenges for emergency responders.



TECHNICAL DATA

FIRE CLOAK™ - EV CAR FIRE BLANKET CFB2186

MATERIAL DESCRIPTION:
Silica quartz fabric blend with fireproof silicone coating to both sides.
Reinforced corners with heavy duty silicone fabric pull handles.
All seams and handles stitched with high temperature resistant thread.
Size: 8 x 6 metres (48m²) **Weight:** c.24Kg

MATERIAL SPECIFICATION – as per BS EN 112127:1998

	Units	Value	Tolerance
Weight	g/m²	420+100	±5%
Silicone Coating	g/m2	50 (each side)	±10%

TENSILE STRENGTH – ISO 4606:1995

Warp	N/5cm	4800
Weft	N/5cm	3700

MATERIAL TEST DATA: RESULTS

Test Standard	Parameter	# of Tests	Continuous	Compliance
BS 476: Part 7: 1997				
	Surface Spread of Flame	6	Class 1	Best Possible Result
BS 476: Part 6: 1989 + A1: 2009				
	Fire Propagation Index – I	6	4.3	Compliant
	Sub index, i1	6	3.1	Compliant
	Sub index, i2	6	1.0	Compliant
	Sub index, i3	6	0.2	Compliant

Based on the above test results the product is deemed as meeting CLASS 0 RATING for fire resistance. This is similar to the UL Class A fire resistance rating in the USA.

D6413 / D6413M-22 - USA standard for VERTICAL FLAME RESISTANCE
by Kinectrics, Kentucky, USA.

After Flame Time (sec)	5	0.0	Best Possible Result
Char Length	5	0.0	Best Possible Result
Melting	5	NONE	Best Possible Result
Dripping	5	NONE	Best Possible Result
Melting and Dripping	5	NONE	Best Possible Result

Directional (length and width) tests gave identical results.

Additional Tests by Intertek Testing Services (UK) Ltd		High	Low	Average
BS EN ISO 14419:2010	Oil / Hydrocarbon Resistance	7	7	7
BS EN ISO 9237:1995	Air Permeability @ 20°C	0.36mm/s	0.11mm/s	0.22 mm/s
BS EN ISO 9237:1995	Air Permeability @ 400°C	1.00mm/s	0.31mm/s	0.63 mm/s
BS EN 20811:1992/ ISO 811:1981	Hydrostatic Pressure Test - cm/H2O (Mbar)	528	467	492

Live testing at Horiba MIRA (Motor Industry Research Association, Nuneaton, UK)
The Fire Cloak EV Car Fire Blanket was deployed over a burning Nissan Leaf that was in an advanced stage of Thermal Runaway. The fire temperature dropped rapidly from over 900°C to 47°C in under 10 minutes.

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OUR PRODUCTS

FIRE CLOAK™ - EV CAR FIRE BLANKET

Product Code: **CFB2186**
Size: **8 x 6 metres** (26 x 19½ feet)
Weight: **c.24Kg** (53lbs)
Suitable for most cars and small vans

FIRE CLOAK XL™ - EV FIRE BLANKET

Product Code: **CFB1209**
Size: **12 x 9 metres** (39 x 29¼ feet)
Weight: **c.28Kg** (62lbs)
Suitable for Large Cars, 4x4s, SUVs Pick-Up Trucks and Panel Vans

FIRE CLOAK™ - LITHIUM BATTERY BLANKET

Product Code: **LBB6143**
Size: **4 x 3 metres** (13 x 9¾ feet)
Weight: **c.11Kg** (24lbs)
Designed for EV Lithium Battery Packs

STORAGE SOLUTIONS

Supplied in waterproof rolltop bag as standard. Personalised wall mounted box and mobile storage available

WALL MOUNTED STORAGE BOX

MOBILE STORAGE BOX

COMING SOON!

FIRE CLOAK™ - SKOOTA

For safe charging of small electric scooters.

FIRE CLOAK™ - POWER PACK

For safe charging of power tool and electric bike batteries.

FIRE CLOAK™ - PALLET SAFE

For safe storage of Lithium battery powered products on pallets.

...and more to follow

PENDRAGON

"The Pendragon Group has purchased a Fire Cloak™ vehicle blanket for each of its motor retail operations. It provides an effective option to manage the additional risks posed by the specific nature of fires involving electric vehicle batteries. A product that adds confidence to our operatives that our fire safety controls are robust and adopting to new challenges."

Oliver Walker, Pendragon Group Health and Safety Leader

rosenbauer

"The Fire Cloak™ EV Blanket may appear straightforward, but it's a meticulously engineered product, unmatched in its class. It stands as a highly valuable asset for Fire and Rescue Services across the UK."

Andrew Smith, Business Development Manager, Fire and Rescue Equipment Manager, Rosenbauer

MADE IN BRITAIN

SOLD WORLDWIDE
Just a few of our valued clients

London Luton Airport · BCA · Lookers A good deal. Better. · Formula E · GC Gloucestershire College

GSK · Hyundai · Irish Ferries · KIA · KPMG

Manchester United · Mercedes-Benz · Penske Automotive · Porsche · Humberside Fire & Rescue Service

savills · SEALINK · Tottenham Hotspur · Würth · Pendragon

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