FIRE BLANKET OPERATOR GUIDANCE

Lithium-ion batteries are becoming more and more common as the number of devices utilising these high energy batteries increases to encompass almost every walk of modern life. From mobile phones and computerised devices through to garden tools and cars, batteries are a clean and environmentally friendly format for energy supply.

Of course lithium-ion batteries, by the nature of their construction, can burn and so there are more fires which involve batteries than ever before and these fires do come with a number of associated problems.

If it's a car, the battery is very large and not easily accessible and so the battery can burn for a long period of time. In some cases it may take a great deal of water to prevent the car fire from spreading to adjacent vehicles, property and buildings. Fires may occur in public locations such as multi storey car parks, passenger ferries, tunnels and in charging stations which may be located at supermarkets, car repair and maintenance facilities or inside the owner's garage and these fires could pose a significant threat to life and safety as well as property.

AVD FIRE BLANKETS

AVD Fire has developed this high temperature range of lithium-ion battery fire blankets ("Blankets") specifically for lithium-ion battery fires and we offer a range of sizes which include Blankets capable of covering a complete electric vehicle (EV). An AVD Fire Blanket is one of the most effective ways to bring a battery fire under control and once placed over the burning battery, for example an EV, it is designed to assist with:

- Preventing the propagation of fire,
- Containing the spread of smoke and toxic fumes,
- Allowing for safe evacuation.

The AVD Fire Blankets are manufactured from technical fabrics which are designed to withstand extremely high temperatures over a prolonged period of time as well as being robust enough to assist with the containment of hot metallic fragments which may be expelled from the battery module during an incident.

APPLICATIONS OF THE AVD FIRE BLANKET

SMALL & MEDIUM SIZE BLANKETS

From personal electronic equipment (mobile phones, tablets, computers), gardening and DIY tools to electric bikes (E- Bikes) and electric scooters (E-Scooters).

LARGE SIZE BLANKETS

Cars and forklift trucks and bulk handling equipment.

AVAILABLE SIZES

The blankets can be supplied in the following standard sizes:
1700 x 2000 mm. 2600 x 3300 mm. 6000 x 8000 mm.

AVD Fire Blankets can be used in conjunction with Lith-Ex fire extinguishers.

The most effective method of utilising an AVD Fire Blanket is to simply smother the flames in a fire, reducing the oxygen supply and preventing the fire from spreading. It should be noted that certain types of lithium-ion battery generate their own oxygen during the process of thermal runaway and therefore the fires will be likely to continue to burn for an extended period of time.

fire protection
TECHNOLOGIES

FIRE BLANKET OPERATOR GUIDANCE

The Blanket may be folded to give a double layer if the battery cells are exposed and the battery size is significantly smaller than the Blanket.

Anyone who might be required to use the Blanket should read and ensure they understand the information in the user guide which is supplied along with the Blanket and which can be downloaded from the AVD Fire website.

IN CASE OF FIRE

1. Have everyone evacuate the area immediately,
2. Call the fire brigade (or equivalent) even if the fire appears to be small - small fires quickly become **LARGE** fires,
3. **Be aware that batteries can re-ignite,**
4. It is for the user to assess the suitability of the Blanket for use on any given fire,
5. Large fires should be fought by professionals. Be prepared to leave the area if there is any doubt,
6. Do not throw a large Blanket over the fire.

HOW TO USE THE FIRE BLANKET

Only use the blanket if you feel confident to do so and have the relevant training.

1. Fully unfold the Blanket.
2. Using the pull-loops provided, cautiously place the Blanket over the fire to smother it; ensure the Blanket covers the entire area of the battery pack or the device containing it.
3. **Always be sure to shield yourself from the flames as you approach the fire, paying special attention to your hands as you carefully place the Blanket over the fire.**
4. Try to minimise the number and size of the folds in order to minimize the oxygen intake under the Blanket.
5. For larger Blankets two or more people may be required to safely deploy it. It is recommended that one person on each side of the Blanket should take hold of the pull-loops and simultaneously drag the blanket over the fire ensuring the blanket is evenly placed directly over the flames or device.
6. Be aware that toxic fumes can be emitted by lithium-ion batteries even when they are not burning.
7. Once the blanket has been applied, move well away from the area.
8. For larger fires, including EV fires, always call the fire brigade, emergency services or local authorities to ascertain when the fire incident has ended and when the Blanket can be safely removed.
9. Contact the relevant authorities for the safe removal and disposal of the device.

RE-USE OF THE FIRE BLANKET

After removal of the Blanket check to see if any significant damage has occurred such as degradation of the sacrificial coating or tears or rips in the body of the fabric. If there are any tears or rips in the fabric then it is advised that the Blanket be discarded and replaced.

If the Blanket has only lost the sacrificial coating and the base fabric is exposed but undamaged then it is possible to re-use the Blanket.

During a battery fire the Blanket will become coated with soot and some toxic chemicals, precautions should therefore be taken to ensure that the operator is protected from these potentially harmful chemicals during inspection and retrieval.

The operator may decide that it is appropriate to clean the blanket; note that the water and any washing materials will become contaminated with the chemicals washed from the Blanket.

The Blanket should then be returned to its original packaging.

The number of times the Blanket should be re-used can only be judged on the basis of its condition after a fire has taken place. The final condition of the Blanket will depend on several factors including the intensity of the fire, the length of exposure to the flames and any physical abuse to which it may be subjected during the process of covering a fire and removal. Any damage to the Blanket including the coating, stitching, grab handles and/or the base fabric, can only be assessed visually by those in attendance at the fire. This Blanket is not restricted to lithium-ion battery fires and may be used for traditional fire Blanket applications.

FIRE BLANKET OPERATOR GUIDANCE

INSTALLATION AND STORAGE

The Blanket should be stored in an easily accessible location in proximity to any known risk, preferably, for smaller blankets, wall mounted at eye level. It should be possible to rapidly deploy the Blanket at the first sign of fire.

The Blanket should be inspected monthly (and inspection records maintained) checking for any possible damage or access obstructions. The user guide should be located alongside the Blanket.

IMPORTANT NOTES

1. All orders for battery fire Blankets, fire resistant containers, EV battery bags and fire suppression kits ("Products") are subject to and incorporate the terms and conditions (including any warranties) of the contract between you and the company that supplied the Products to you.
2. The fabric used in the Products is made from glass fibre which is noncombustible.
3. The Products are for first response firefighting and should be deployed only when it is safe to do so. All fires behave differently, and the evolution of the fire will significantly affect the ability of an individual to achieve a successful result with the Product. The Products do not necessarily extinguish battery fires but if used properly and in accordance with this User Guide may prevent the propagation of the fire. The user must therefore assess the risk and use his or her judgement when determining whether the Product is suitable in the particular circumstances. Accordingly, neither the manufacturer, supplier nor distributor of the Products give any guarantee or warranty (whether express or implied) that the Products will contain and suppress all fires, regardless of fire size, type or origin.
4. The Products have a sacrificial protective coating which provides a measure of abrasion and weather resistance. The Product may in some circumstances be wiped clean after use and reused but this is for the user to determine after inspecting the Products following any exposure to fire (including the intensity of the fire and length of exposure to fire), the physical abuse to which it may be subjected during the process of covering a fire and upon removal from such a fire and any damage to the Product (including the coating, stitching and/or the Fabric). In some circumstances, fires including lithium-ion battery fires, generate toxic chemicals which unless properly cleaned will remain on the Blanket. If cleaned after use, the appropriate PPE must be used with the soiled cleaning materials being disposed of in accordance with the relevant local requirements or regulations. Products with excessive or pro-longed fire damage or where other materials have become embedded into the Product must not be reused.
5. The Products should be inspected on a periodic basis. Please refer to other sections of this user guide for recommended practice for handling, use, storage and inspection. In the event of any damage to the Fabric (such as a tear or puncture) then the blanket should be discarded. If the coating has suffered visible fire damage to a discrete part of the surface area but there is no damage to the integrity of the Fabric then it may be possible to re-use the blanket. Neither the manufacturer, supplier nor distributor of the Products give any guarantee or warranty (whether express or implied) that the Products can be reused.
6. If the Product is defective, the company supplying the defective Product to you, may repair or replace (at no charge) or provide a refund for the defective Product in accordance with the terms and conditions agreed with you for the sale of the Product. The Product will not however be repaired, replaced or a refund provided where the Product is damaged or defective as a consequence of an event outside the manufacturer's, supplier's or distributor's control including without limitation where the Product has been exposed to fire for an excessive or prolonged period of time, has been poorly handled, has been damaged in transit, has not had minor repair's performed, has not been regularly inspected by a trained and competent person in accordance with this user guide, has been improperly used, has wear and tear or has been contaminated, has surface damage, has been vandalised or even abused due to improper use of or modification to the Product etc.
7. You are responsible for using the Product safely and as directed. You must behave sensibly and follow any safety instructions and guidelines so as not to hurt or injure yourself or others. In the absence of any negligence by the company supplying the Product to you, the use of the Product is entirely at your own risk. The manufacturer, supplier or distributor shall not be responsible for any damage, destruction or loss of your property or belongings when you use the Product.

PRODUCTS:

Gaseous Suppression

- Inert Gas (IG-01, IG-55, IG-100, IG-541)
- Novec 1230™ Fluid (FK-5-1-12)
- FM-200® / NAF S 227 (HFC-227ea.)
- Ecaro 125® / NAF S 125 (HFC-125)
- Carbon Dioxide (CO_2)
- Hybrid Systems (N_2 / Water)
- Pressure Relief Vents
- Enclosure Integrity Testing Equipment
- Pipe & Fittings

Water Suppression

- Water Mist - High Pressure
- Water Mist - Intermediate Pressure
- Water Mist - Low Pressure
- Hybrid Systems (Water / N_2)
- Monitors & Delivery Systems
- High Speed Deluge

Foam Suppression

- Foam Concentrates
- Foam Proportioning
- Foam Delivery Systems
- Foam Concentrate Testing

Explosion Protection

- Explosion Suppression
- Explosion Isolation
- Explosion Vents & Pressure Relief
- Spark Suppression
- Explosibility Testing

Fire Detection

- Linear Heat Detection - Digital
- Linear Heat Detection - Fibre Optic
- Linear Heat Detection - Micro Chip
- Flame Detection
- Video Imaging Detection
- Spark Detection
- Control & Indicating Equipment
- Thermal Imaging Detection
- Aspirating Smoke Detection

Military & Defence

- Military Vehicles
- Naval Vessels

Special Applications

- Micro Environment
- Oxygen Reduction
- Kitchen Protection Systems
- Dry Chemical
- Vehicle Systems
- Compressed Air Foam
- Marine & Offshore Vapour Mitigation
- Lithium-Ion Fire Systems

Support Services

- Design / Engineering
- Technical Support
- Services & Testing

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Balcatta WA 6021
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1300 742 296
www.fire-protection.com.au

New Zealand

Auckland Office
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Albany North Shore 0632
New Zealand
www.fire-protection.net.nz

South East Asia

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