

# Lithium Ion Battery Fire Extinguishers



















## **LITHIUM ION BATTERY**

## FIRE EXTINGUISHER

**"EVERY SOLUTION FOR YOUR SPECIAL HAZARD PROBLEMS"** 

With the rise in technology that uses lithium batteries, comes the added risk of lithium battery fires. How prepared are you for a lithium battery fire?

#### **AVD FIRE**

AVD fire offers a range of lithium battery fire portable extinguishers, trolley extinguishers and specialized fire blankets.

AVD is an aqueous dispersion of chemically exfoliated vermiculite. It is applied to lithium battery fires as a mist, extinguishing them and preventing the propagation of the fire.

The fire extinguishers have been locally approved according to AS 1840 & 1851 for a Class A with additive type extinguisher only. At this point in time standards Australia has not published an approval protocol for lithium-ion risk.

AVD however has been independently tested and verified to be effective on extinguishing lithium-ion battery fires according to the following international test protocols:

- Kiwa Test Protocol NTA 8133
- ZSW Germany
- UL Certification (File EX29073 & EX28967)

Lithium battery failure can be caused by the following:

- Physical impact or penetration
- Overheating
- Short circuits
- Internal cell failure
- Manufacturing defects



When Lithium-ion batteries are exposed to heat, physical/impact damage or over charging they go into thermal runaway.

The cells are sufficiently swollen releasing hot flammable gases (hydrocarbons) which can ignite.

#### **BENEFITS**

The AVD lithium battery fire protection agent is a unique product that provides a solution to an otherwise unsolved problem. AVD's exceptional performance includes the following:

- Water content cools the fire source
- Vermiculite platelets encapsulate the fuel source creating an oxygen barrier
- The vermiculite film is not electrically conductive
- AVD is nearly twice as effective as water on a class A • fires
- AVD can be applied as a fire break to prevent the ٠ propagation of fire
- AVD can be deployed using standard fire-fighting equipment
- AVD is environmentally friendly. Vermiculite is a naturally occurring mineral. It is chemically and physically inert, only releasing steam when exposed to raised temperatures. It is also non-toxic to humans, plant life and animals.

#### INDUSTRIES AND APPLICATIONS

Lithium batteries are a common part of everyday life, at home and at work. They're used in children's toys, electronics, computers, personal devices, factory equipment and much more – which means that the dangers they pose are prominent. Lithium battery fire hazards can be caused by physical impact, overheating, internal cell failure, short circuits or manufacturing defects.

AVD fire provides a range of lithium battery fire solutions for a variety of vertical sectors to suit their individual requirements. With the use of lithium batteries on the rise, having the right protection in place is vital. Some of the industries and applications AVDFire works with include:

- Transport e.g. Aviation, Automotive
- Energy Storage
- Shipping
- Logistics
- Marine
- Automotive
- Domestic
- Industrial
- Waste and Recycling Facilities



The Hydrocarbons burn vigorously athigh temperature and rapidly materials resulting in a significant fire.

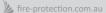
AVD is applied as a fine mist, which instantly cools the batteries and heat surrounding cells and extinguishes the flames.

**HOW IT WORKS** 

The AVD encapsulates the fuel source and insulates the cells preventing further thermal runaway; bringing the fire under control.

**OUR COMMITMENT** "To provide our customers with the best possible service, the highest quality products and the right solution for your needs"

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## LITH-EX FIRE EXTINGUISHER

A high-performance fire extinguisher designed to combat lithium battery fires fast.

Extinguisher Type	LITH EX 1 L	LITH EX 2 L	LITH EX 6 L	LITH EX 9 L	
Brim Full Capacity / ml	1,240	2,520	7,780	11,325	
Fill Volume AVD Agent / ml	1,000	2,000	6,000	9,000	
Approx. Weight Agent / kg	1.1	2.2	6.6	9.9	
Approx. weight of Unit / kg	2.1	3.9	10.7	15.0	
Cylinder Ø / mm	85	110	170	170	
Cylinder Height / mm	320	380	522	664	
Unit Height / mm	350	410	530	672	
Handle	Metal - Red				
Hose	N,	/A	Yes with Magnet		
Base	Integral Base & Wall Bracket		Green PP		
Bracket	1		Wall Hanger		
Fire Rating	3A	5A	13A	13A	
EN3 Certified	Not Allowed	Yes	Yes	Yes	
Propellant	Nitrogen (He Tracer)				
Operating Pressure / bar *	15				
Operating Temperature	+5°C to +60°C				
Approx. Discharge Time / s	25	50	120	180	
Discharge Range / m	1.5 - 2.0				
Packaged Unit I x w x h / mm	102 x 104 x 360	125 x 128 x 420	197 x 267 x 525	199 x 226 x 670	
Units per Box	10	6	1		
Box Dimensions / mm	394 x 535 x 226	444 x 392 x 265	N/A		



#### FIRE SUPPRESSION KIT

The kit includes an extinguisher to fight the fire and a bag for the safe suppression and removal of the extinguished device. The Lith-Ex fire suppression kit is designed for the safe storage of extinguished lithium battery devices, while reducing the risk of explosion once the flames have been put out.

The Lith-Ex Fire Suppression Kit includes:

- Fire resistant bag, designed to withstand temperatures of up to 1000°C
- Lith-Ex 500 ml Aerosol extinguisher or 1 litre extinguisher
- Safety glasses •
- Safety gloves ٠



#### **FIRE RESISTANT CONTAINER**

The insulating properties of the lithium battery container allow for the safe storage and transportation of high-value flammable goods. Lithium batteries have the potential to 'short', leading to thermal runaway. This poses a fire risk to the surrounding environment if these batteries are not stored appropriately.

The AVD fire-resistant storage container acts as a thermal shield, reducing the threat of potential heat transfer. That makes it the perfect solution for transporting and storing potentially combustible products, such as batteries, fireworks and other flammable chemicals.



- Fire resistant re-enforced multi-layered edge lining
- •



The Lith-Ex aerosol fire extinguisher is designed for safe use on small personal devices.

Мо Fill Vo Total Appr Appro Unit Unit Min. Max. Appr Appr Cyline Extin Prope Packa

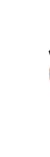
# Units Box D

#### LITH-EX TROLLEY FIRE EXTINGUISHER

Achieve results that are unobtainable with conventional extinguishing agents and prevent the propagation of fire with a Lith-Ex 25 or 50 litre trolley fire extinguisher unit.

Extinguisher AVD Type	AVD 25 Litre	AVD 50 Litre
Volume of Agent / I	25	50
Agent	AVD	AVD
CE / PED	Yes	Yes
Aproximate Weight in Working Order / kg	55	100
Height ~ / mm	970 ±10	1090 ±10
Width / mm	558	558
Cylinder Ø / mm	350	350
Typical Hose Length / m	5	5
Propellant	Nitrogen (Helium Tracer) +5°C to +60°C	
Operating Temperature Range		
Working Pressure / bar *	8	8
Supply Bottle / bar	160	160
Discharge Time / mins	3.5	7
Attack Distance / m	5	5





#### **BATTERY FIRE BLANKET**

Blankets are capable of withstanding extremely high temperatures for a prolonged period of time as well as being robust enough to offer protection against potential debris and shrapnel expelled during a battery fire event.

- **Typical Properties:**
- Working temperature up to 1000°C
- Fire resistant technical fabrics
  - Fire resistant industrial stitching
  - Handling loops on all corners

#### FIRE RESISTANT CONTAINER

del	Lith-Ex Aerosol
olume of AVD Agent / ml	500
l Capacity of Canister / ml	794
rox. Weight Agent / g	545
rox. Weight of unit / g	690 +/- 15 (excluding clip)
Height / mm	300
Width / mm	canister 65 inc handle 95
Working temp.	+5°C
. Working temp.	+50°C
rox. Discharge Time / s	90
rox. Discharge Range / m	2.0
der Test Pressure / bar	21
nguishing Agent	AVD-Li
ellant	Nitrogen
aged Unit l x w x h / mm	100 x 72 x 320
s per Box	6
Dimensions / mm	250 x 230 x 320



#### **PRODUCTS:**

#### Gaseous Suppression



Inert Gas (IG-01, IG-55, IG-100, IG-541) Novec 1230<sup>™</sup> Fluid (FK-5-1-12) FM-200<sup>®</sup> (HFC-227ea.) Carbon Dioxide (CO₂) Hybrid Systems (N₂ / 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 / №) Monitors & Delivery Systems High Speed Deluge

#### Foam Suppression



Foam Concentrates Foam Proportioning Foam Delivery Systems Compressed Air Foam Foam Concentrate Testing

#### **Explosion Protection**

WE	
EXPLOSION	

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 Marine & Offshore Vapour Mitigation Li-Ion Fire Systems

#### Support Services

Design / Engineering Technical Support Services & Testing

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