

# NEW SOUTH WALES FIRE BRIGADES

## OPERATIONS BULLETIN 2009/04

### Lithium type batteries



Lithium type batteries, which are widely used in portable electronic devices such as laptop computers and phones, are susceptible to overheating. This may cause the batteries to catch fire and explode. This bulletin outlines the procedure for extinguishing lithium type battery fires.

#### Background

There are two types of lithium batteries:

- Disposable (lithium), and
- Rechargeable (lithium-ion).

Either type of battery may ignite and subsequently explode due to overheating.

Overheating results in thermal runaway, which can cause the release of either molten burning lithium or a flammable electrolyte. Once one cell in a battery pack goes into thermal runaway, it produces enough heat to cause adjacent cells to do the same.

The resulting fire can flare repeatedly as each cell ruptures and releases its contents.

#### Procedures

The following procedures are recommended for fighting fires in lithium type battery powered portable electronic devices. This advice is based on tests done by the Fire Safety Branch of the United States Federal Aviation Administration.



#### **WARNING**

**If the device is connected to another power source, eg mains power, isolate power to the device before tackling the fire.**



#### **CAUTION**

**Do not attempt to pick up and move a smoking or burning device! Personal injury may result.**

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### 1. Extinguish the fire

Use a water or CO2 fire extinguisher to extinguish the fire and to prevent it spreading to adjacent battery cells and material.

### 2. Cool the remaining cells

Water should be applied to the cells immediately after knocking down or extinguishing the fire to cool the batteries and stop the thermal runaway.

#### **NOTE**

Water, though it may react with the tiny amount of lithium metal found in a disposable battery, is the most effective medium for cooling remaining cells, stopping thermal runaway and preventing additional flare-ups. Significant cooling is needed to prevent the spread of fire to additional cells in a battery pack.

### Further information

A Federal Aviation Administration video on effective techniques for fighting lithium-type battery fires has been posted on [FireTube](#)

For additional information on lithium-type battery fires see:

[http://www.faa.gov/other\\_visit/aviation\\_industry/airline\\_operators/airline\\_safety/safo/all\\_safos/media/2009/SAFO09013sup.pdf](http://www.faa.gov/other_visit/aviation_industry/airline_operators/airline_safety/safo/all_safos/media/2009/SAFO09013sup.pdf)

Noted, Station Commander	A	B	C	D	Other

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### Previous Operations Bulletin: 2009/03 – Façade Mounted Aerial Bundled Cables