



Where Standards Meet Reality

Debated Issues with Portable Fire Equipment



Agenda

Extinguisher Ratings and Potential Changes

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General Manager, FlameStop

Lithium-ion Extinguishers

Ray Mergard

Fire Suppression & Fire Equipment Consultant, Multitorque

First Responders Guidance

Rob Lind

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Extinguisher Ratings and Potential Changes

Ben Parkhill
General Manager, FlameStop

Ratings – A Class Fires

What does the rating mean?

- Class A fire extinguishers are rated by number – not size
- Rating numbers range from **1 to 10**, with possible ratings: 1A, 2A, 3A, 4A, 6A, 10A
- The number indicates the extinguishing potential – the higher the number, the larger the fire it can put out
- Based on fire tests using wooden cribs made from dry timber
- Crib size and fuel load increase with higher ratings



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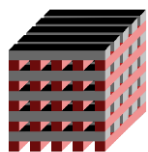
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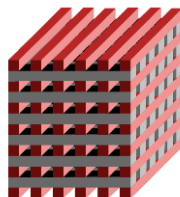
Ratings – A Class Fires

What does the rating mean?



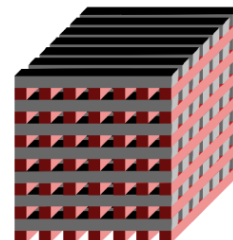
1A

10 Layers of 5
Timber Size:
45x45x500mm



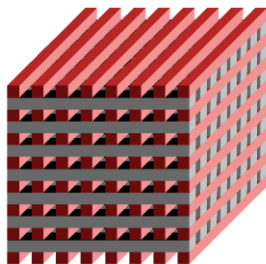
2A

13 Layers of 6
Timber Size:
45x45x600mm



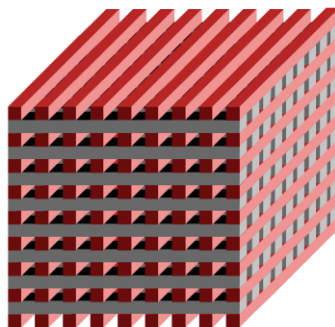
3A

14 Layers of 7
Timber Size:
45x45x750mm



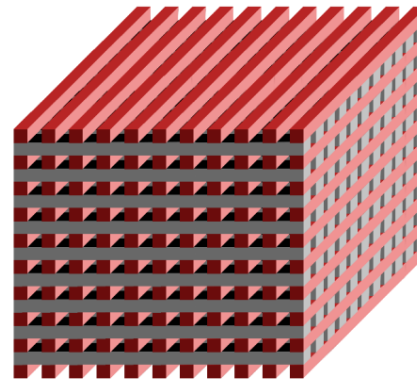
4A

15 Layers of 8
Timber Size:
45x45x850mm



6A

17 Layers of 9
Timber Size:
45x45x1000mm



10A

19 Layers of 11
Timber Size:
45x45x1200mm



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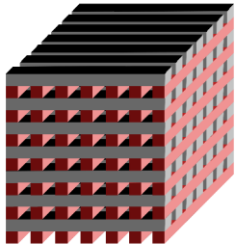


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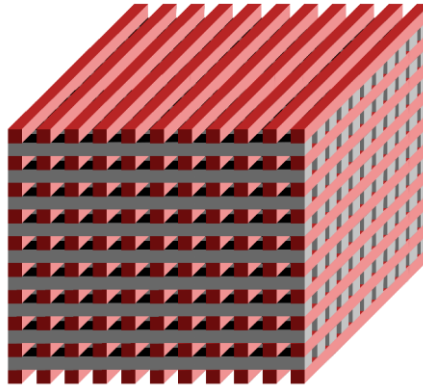


Expanding Ratings – A Class Fires

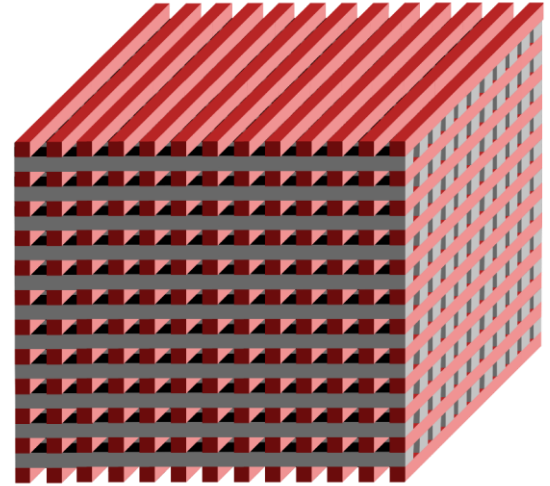
- We are advocating for the introduction of a 20A Rating



3A



10A



20A

- Currently a 9kg ABE carries a 10A rating and a wheeled mobile can also achieve a 10A



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Ratings – B Class Fires

What does the rating mean?

- Class B extinguishers are rated by number – e.g. 2B, 5B, 10B, up to 80B
- Rating numbers range from **2 to 80**, with possible ratings: 2B, 5B, 10B, 20B, 30B, 40B, 60B, 80B
- The number reflects the size of a flammable liquid fire the extinguisher can control
- Based on tests using n-heptane or hydrocarbon solvents (flammable liquids similar to petrol)
- Higher number = larger fuel load extinguished



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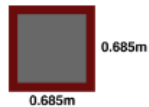
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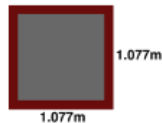


Ratings – B Class Fires

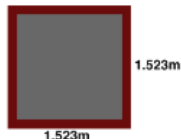
What does the rating mean?



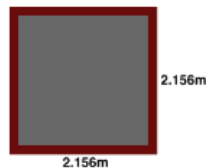
2B



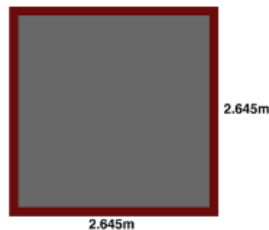
5B



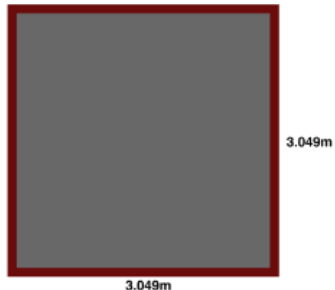
10B



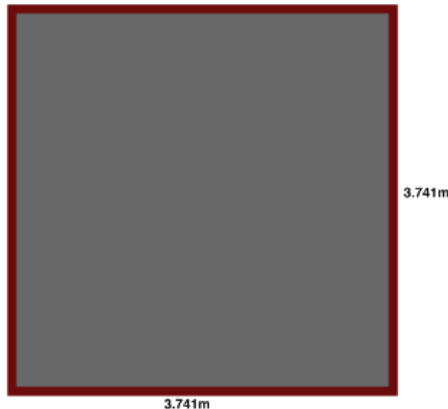
20B



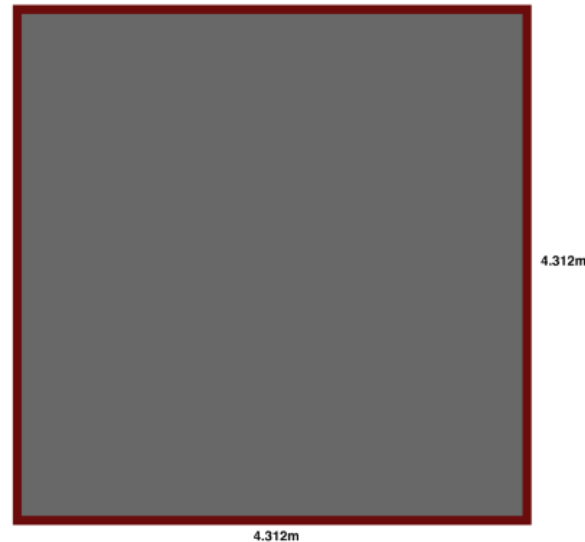
30B



40B



60B



80B



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Expanding Ratings – B Class Fires

- We are advocating for the introduction of a 120B and a 160B Rating



80B



120B



160B



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Ratings – F Class Fires

What does the rating mean?

- Class F extinguisher ratings range from 1F to 4F (Possible ratings: 1F, 2F, 3F, 4F)
- Based on tests using sunflower oil in a controlled deep fat fryer scenario
- The number refers to the surface area of the fire the extinguisher can handle:
 - 1F = 0.07m^2
 - 4F = 0.5m^2
- Higher number = larger oil surface area extinguished
- Helps determine suitability for small vs. large kitchen or commercial cooking environments
- Only wet chemical extinguishers are rated for Class F fires



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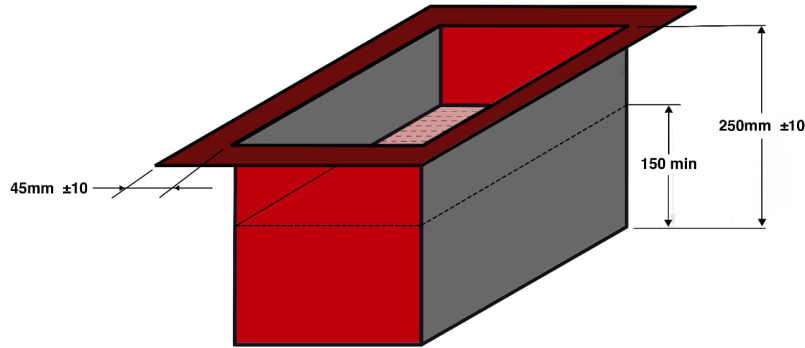
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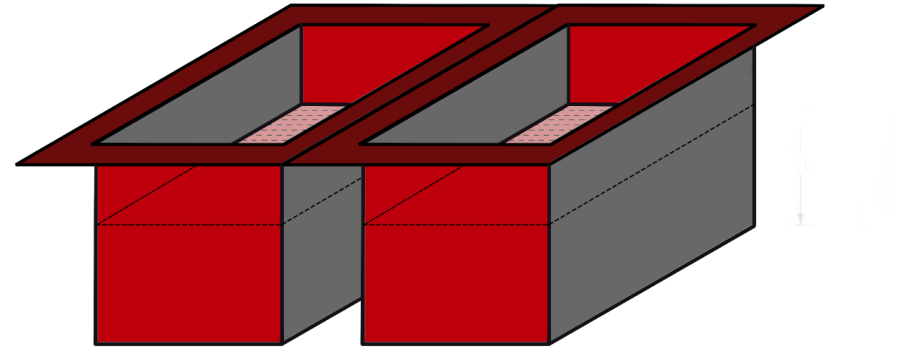


Expanding Ratings – F Class Fires

- We are advocating for the introduction of a 8F Rating



4F



8F

- Currently a 2L wet chem has a 4F and so does a 7L
- When would you put a 7L in over a 2L



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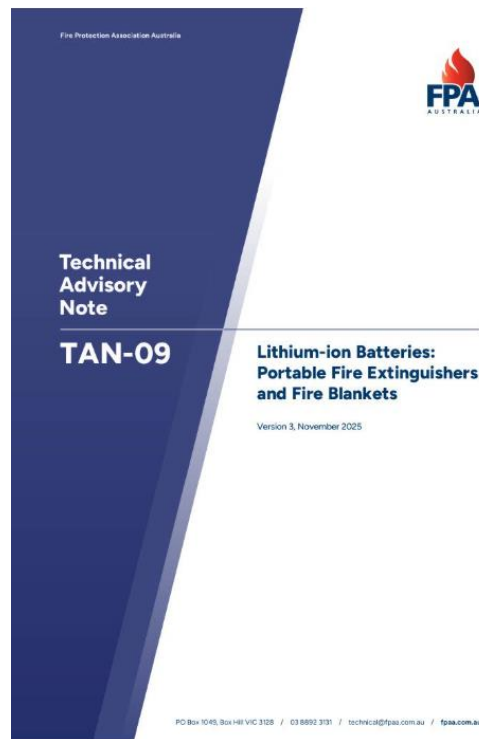
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TAN-09

Key Takeaways

- There are no Australian Standards specifically for fire extinguishers or fire blankets designed for lithium-ion battery fires
- Lithium-ion batteries are classified as energised electrical equipment
- Only Class E rated fire extinguishers, which are not conductive and safe for use on electrical equipment, are compliant for these types of fires
- Non E rated extinguishers, such as water or foam can conduct electricity and pose a serious electrocution risk
- Some products marketed as “lithium-ion suitable” may be unverified or misleading



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New Class For Lithium-ion Extinguishers

- Emerging fire risks demand purpose-built extinguishers and clear classification
- We're advocating for the introduction of Class L for Lithium-ion battery fires
- This new class would require extinguishers that address thermal runaway and re-ignition risks



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E Class Fire Requirements

- Fires involving energised electrical equipment.
- This is not a fire class in the traditional sense, as electricity is the source of ignition, not the fuel. Once the power is isolated, the fire becomes Class A or B.
- The 'E' rating signifies that the extinguishing agent must be non-conductive.
- Class E fire extinguishers require non-conductive agents like Carbon Dioxide (CO₂) or Dry Powder (ABE/BE)



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 FlameStop

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Lithium-ion Extinguishers

Ray Mergard

Fire Suppression & Fire Equipment Consultant,
Multitorque





First Responders' Guidance

Rob Lind

Safety and Quality Manager, Fire Equipment Services
(FES)

First Responder's Guidance

1. **Evacuate** all to safety
2. Call **000**



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First Responders' Guidance

- Only approach Li-Battery fires TRAINED and wearing full PPE, including BREATHING APPARATUS.
- An extinguisher is unlikely to extinguish a LI-B fire unless –
 - a very small battery
 - attacked very early
- *Suppression* may help evacuate people past a blocked exit ... but the RISKS are much higher
 - Fumes are toxic and can be fatal
 - Fumes are Flammable
 - Fumes, if concentrated can be explosive
 - Flame intensity – 'jet-like'
 - Fuel – Heat – Oxygen... are self sustaining from the chemical reaction
 - Smothering oxygen, cooling or sealing of fuel may not stop the fire/explosion
 - Electrocution if water used
 - Time ... to evacuate is critical
 - Fire may restart, without notice – seconds to months later



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这才是最绝望的死法
被火炼死是非常痛苦的

《近日》《2021年》

何须怨、杨柳
危险行为请勿模仿

近日一段电动自行车电池在电梯内爆炸的视频广为流传

First Responders' Guidance

- Example:
 - Battery felt warm, so was being taken outside.
 - Lithium battery off-gassing with thermal runaway in a confined lift.
 - Note –
 - Small to medium sized battery
 - Speed of battery breakdown
 - Volume of toxic, flammable gas emission
 - Intensity of flame
1. **Evacuate** all to safety
 2. Call **000**



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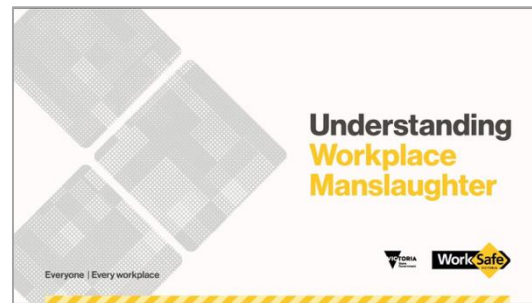
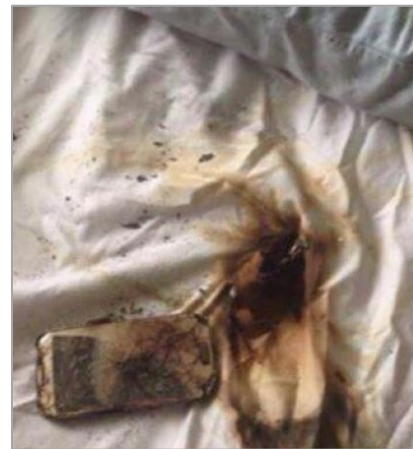


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First Responders' Guidance

- Lithium-Ion battery fires present additional risks.
- Safer behaviours by users are the best preventative.
- If any malfunction, isolate the device if safe to do so. Evacuate and call 000...
- Do not approach the fire – unless trained, in full PPE including BA.
- 'Non-Extinguisher' extinguishers! Exploding balls; Flare-like sticks ...
 - Claimed certification (AS1841.1) i.e. design of cylinders
 - MUST also pass performance testing of AS1850
- Workplace Manslaughter laws –
 - If an occupant, public or firefighter are a fatality, in a workplace ...
 - Businesses, individuals and their appointed service providers
 - Jointly and severally liable
 - Fines up to \$20 million and imprisonment up to 25 years



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First Responders' Guidance

FRV / CFA consumer and industry guidance includes ...

Occasionally, if a lithium-ion battery is improperly charged, handled, stored or disposed of there is a risk of overheating, catching fire or explosion. This also increases the risk of a house fire, garage fire or personal injury.

[Battery Safety for Consumers](#)

[Lithium-Ion Battery Safety Tips](#)

[Battery safety \(easy English\)](#)

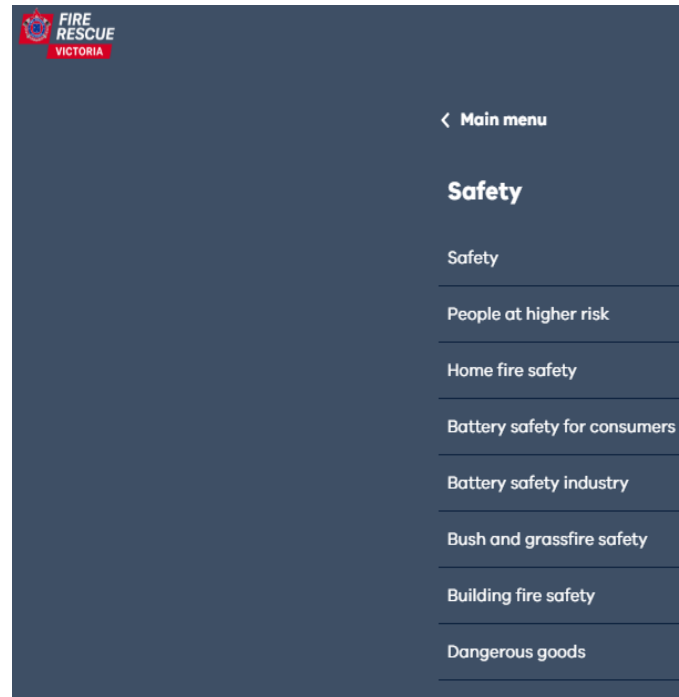
[Fire safety for E-bikes, e-scooters and other light electric vehicles \(LEV\)](#)

Lithium-ion Battery Warning Indicators

Lithium-ion Battery Disposal -

B-cycle www.b-cycle.com.au/drop-off

Planet Ark www.recyclingnearyou.com.au/batteries



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Thank You