

LITHIUM-ION BATTERY FIRE / Hoverboard

Brighton Area Fire Authority - Brighton Michigan



January 1, 2017

A fire within the finished basement of a residential dwelling resulted in approximately \$500,000 loss to the home and its contents.

The homeowners arrived home from a family trip and discovered a strong smell of smoke and soot staining in the home's foyer. There was no heat or flames visible. On arrival, the fire department discovered a ventilation-limited fire that had occurred in the basement of the structure. Upon further investigation, it was found that the fire had completely self-extinguished, however the environment was warm. The day of the fire is undetermined as the family had been out of town for multiple days.

Investigation revealed that the family had owned two "hoverboards", one for each son. One of the devices was plugged into the wall outlet in the basement family room charging for an unknown amount of time. Similarly to the UL test video, it was found that the batteries had failed in an explosive manner spreading to a couch roughly 8' away. The synthetic materials ignited and spread to the sofa and adjoining finishes, however, it self-extinguished as it ran out of air due to the basement door being closed.

The family was displaced for approximately 8 months for cleanup and restoration.

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Brighton Area Fire Authority - *Continued*

Round Table Discussion / High Points

- Large, two story, single family residence, with a finished basement, Type V construction, NO residential sprinklers.
- No fire upon arrival. Heavy smell of smoke, and soot damage throughout structure
- Hydranted area, no water used
- 4 miles from closest staffed fire station.
- Ignition point determined to be a catastrophic Lithium-ion battery failure while plugged into a 120vac outlet
- Rapid fire spread contributed by standard residential furnishings however failed to overtake the structure due to the lack of oxygen.



View of the finished basement looking at the couch that caught fire from the exploding battery (out of frame to the lower left)



View of the hoverboard and catastrophic failure on the battery pack. Note the individual cells that were expelled from the battery pack