



# Developing the 1<sup>st</sup> Edition of the Standard for Safety for Battery Fire Containment Products, UL 5800

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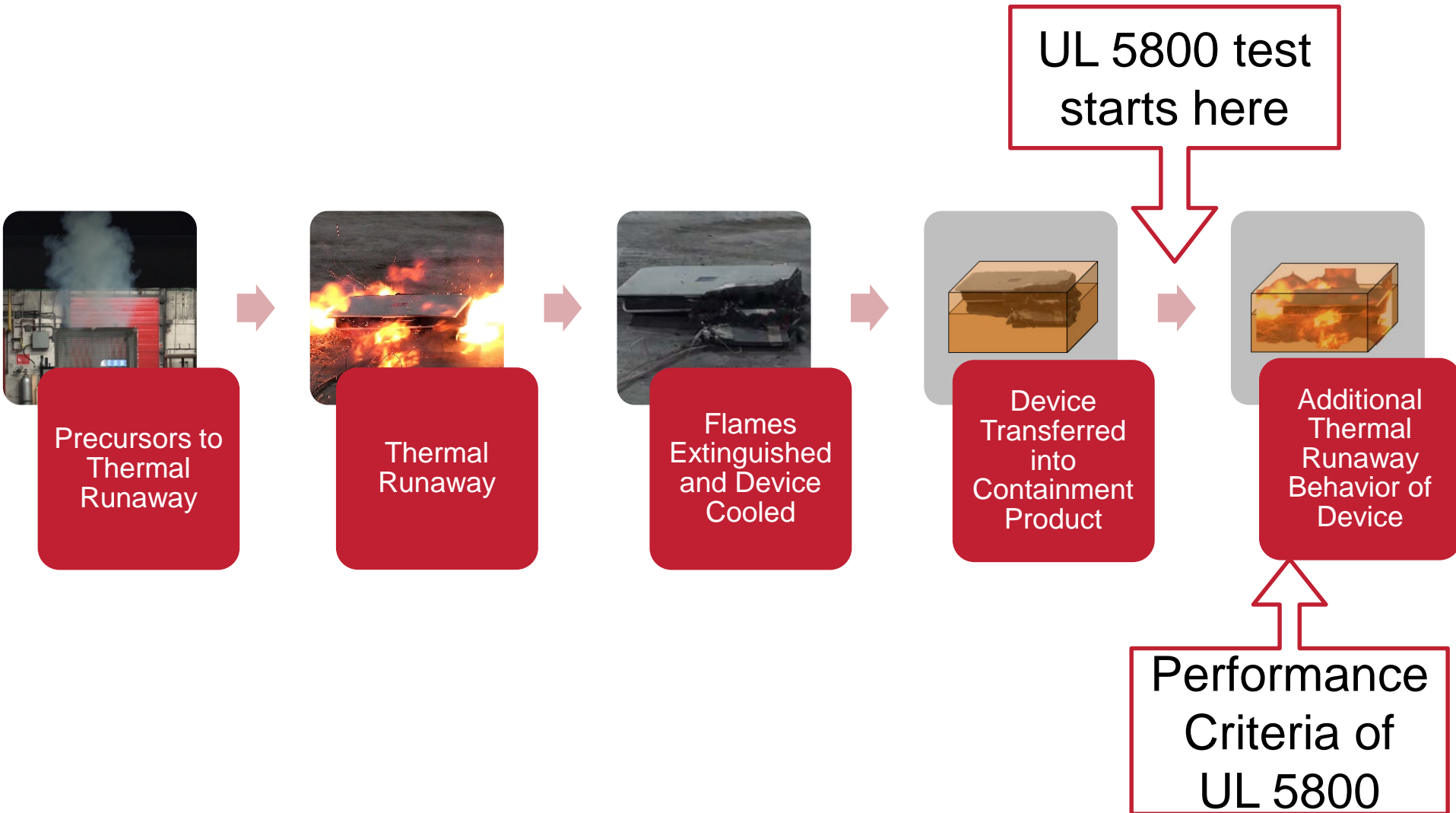
August 5, 2020

# Agenda

1. Review of battery fire containment products
2. Update on technical development of UL 5800
3. Status of UL 5800 Standard and Standards Technical Panels

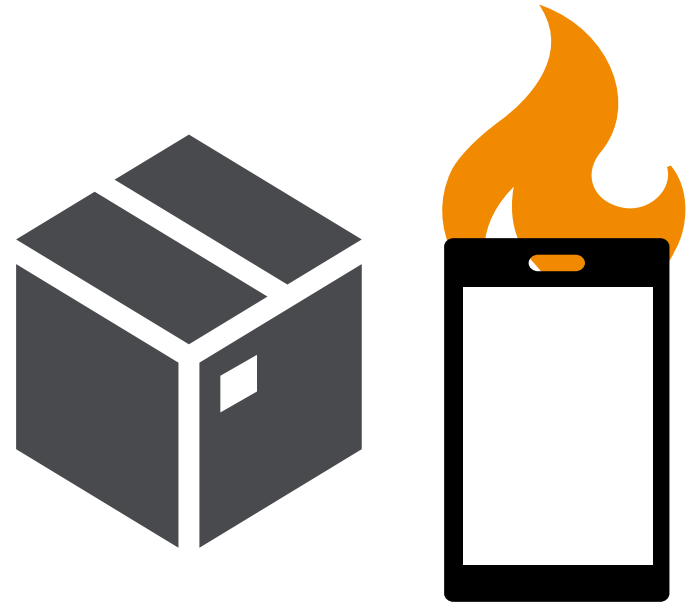


# Thermal Runaway and Containment Timeline



# Battery Fire Containment Products

- Designed for passenger cabin, not cargo applications
- No standard for performance criteria
- Intended for one-time use
- Hard cases and soft pouches
- Some include suppression agents
- Some are packaged with fire extinguishers
- Some include PPE



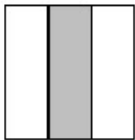
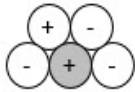
# Addressing Unresolved Items from STP Meetings

1. What should the finalized fuel loads be?
2. How to quantify a threshold for “too much smoke”?
3. How to protect users from handling prescribed vents? Should prescribed vents meet the external temperature criteria of the rest of the product?
4. How can the standard best address reuse of the product or use for multiple devices at one time?
5. Is it appropriate to require the gloves comply with NFPA 1971?

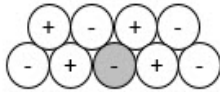
# Fuel Load and Classification Approach

Class	Representative Capacity (Wh)	Number of Cells	Cell	Cell Configuration	Maximum Free Space
1	$0 \leq 60$	5	18650 format 3400 mAh	2 rows	1 cell
2	$61 \leq 100$	9	18650 format 3400 mAh	2 rows	2 cells
3	$101 \leq 160$	14	18650 format 3400 mAh	2 rows	2 cells
4	$161 \leq 300$	25	18650 format 3400 mAh	3 rows	4 cells

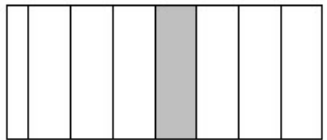
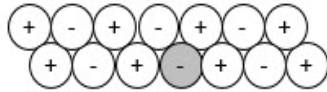
Class 1



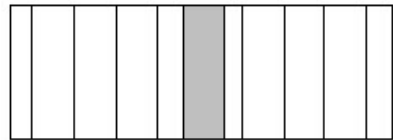
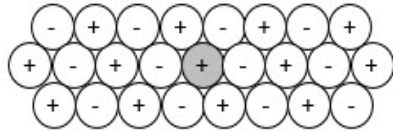
Class 2



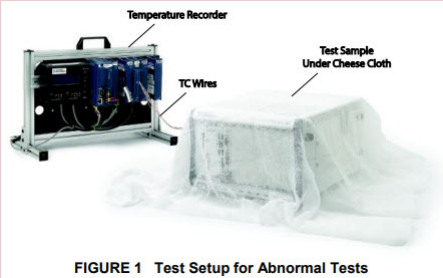
Class 3



Class 4



# Performance Criteria including Visible Smoke

Flames	Heat	Shrapnel	Visible Smoke														
<p>Flames do not breach the containment product as determined by glowing or igniting of the cheesecloth or tissue paper.</p>  <p>FIGURE 1 Test Setup for Abnormal Tests</p>	<p>Exterior surface temperature limits:</p> <table border="1"> <thead> <tr> <th rowspan="2">Location</th> <th colspan="2">Composition of surface.<sup>a</sup></th> </tr> <tr> <th>Metallic</th> <th>Nonmetallic</th> </tr> </thead> <tbody> <tr> <td>A handle, knob, or surface that is grasped for lifting, carrying or holding.</td> <td>50°C (122°F)</td> <td>60°C (140°F)</td> </tr> <tr> <td>A surface that may be contacted but does not involve lifting, carrying, or holding.</td> <td>60°C (140°F)</td> <td>85°C (185°F)</td> </tr> <tr> <td>A dedicated vent.<sup>b</sup></td> <td>100°C (212°F)</td> <td>100°C (212°F)</td> </tr> </tbody> </table> <p><sup>a</sup> A handle, knob, or similar part made of a material other than metal, that is plated or clad with metal that is less than or equal to 0.13 mm (0.005 in) thick is determined to be a nonmetallic part.</p> <p><sup>b</sup> Dedicated vents shall be marked in accordance with 10.2.</p>	Location	Composition of surface. <sup>a</sup>		Metallic	Nonmetallic	A handle, knob, or surface that is grasped for lifting, carrying or holding.	50°C (122°F)	60°C (140°F)	A surface that may be contacted but does not involve lifting, carrying, or holding.	60°C (140°F)	85°C (185°F)	A dedicated vent. <sup>b</sup>	100°C (212°F)	100°C (212°F)	<p>Shrapnel, sparks or other harmful debris of the test do not escape the containment product.</p>	<p><u>Performance Level 1</u> All visible smoke is confined within the containment product.</p> <p><u>Performance Level 2</u> No more than 5 m<sup>2</sup> of total smoke is released from the containment product.</p>
Location	Composition of surface. <sup>a</sup>																
	Metallic	Nonmetallic															
A handle, knob, or surface that is grasped for lifting, carrying or holding.	50°C (122°F)	60°C (140°F)															
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A dedicated vent. <sup>b</sup>	100°C (212°F)	100°C (212°F)															



## Dedicated Vents and Temperature Criteria

- 10.2.1 A containment product having a dedicated vent, as noted by temperature limits in Table 8.2 shall be marked with the word "CAUTION" and the following or the equivalent: "Risk of burn. Avoid contact." The marking shall be located on or adjacent to the surface in question.

## Option for Re-Use

- 1.9 This standard covers containment products to be used for only one thermal runaway event.



# Requirements for Glove Performance

13.1 Appropriate personal protective equipment shall be specified by the manufacturer and packaged with the containment product.

13.2 Gloves shall be required to be packaged with the containment product. Gloves shall comply with either the structural fire fighting glove requirements of NFPA 1971 or the Type B welding glove requirements of EN 12477.

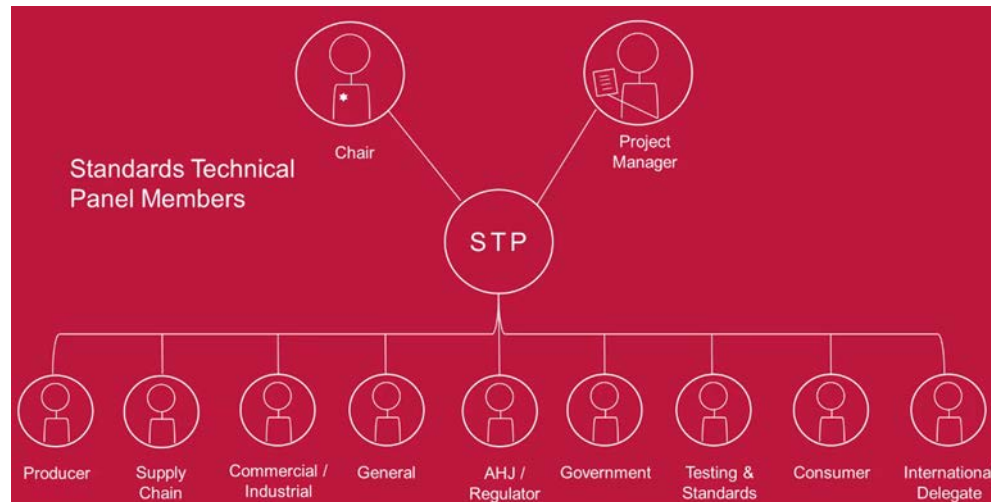
13.3 All materials, such as personal protective equipment or suppressing agents, required for the operation of the containment product shall be packaged with the containment product. If materials are considered optional for use, the materials do not need to be packaged with the containment product.



# UL STP Standards Development Process

The Standards Technical Panel (STP) is the heart of the UL Standards Development Process. It is the Consensus body for developing and maintaining UL Standards. Formed to review, comment, and vote on proposals for UL Standards. Membership is limited to one member per company.

STP members represent a balance of interest categories and STP 5800 now has 43 voting members.



# UL STP Standards Development Process

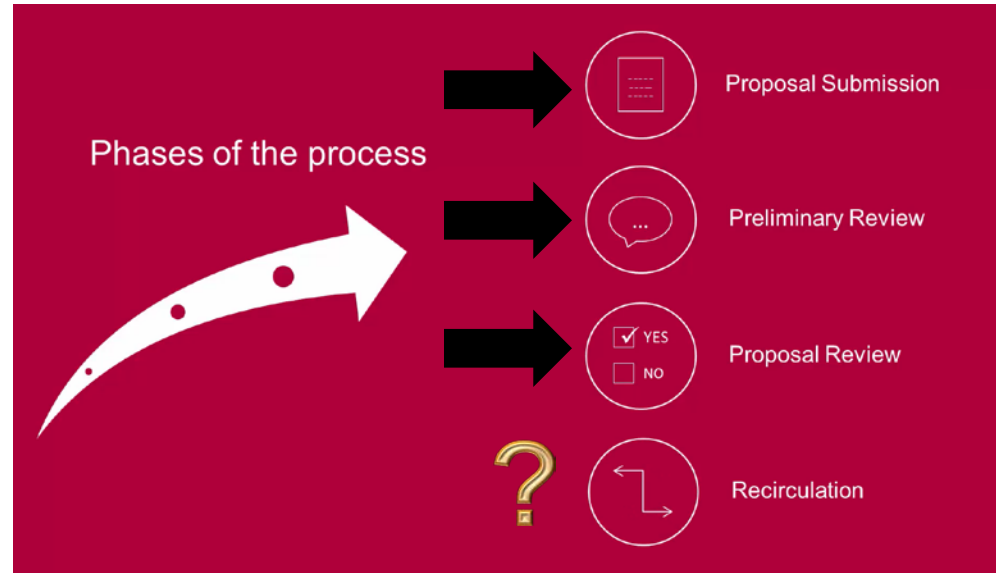
**Proposal Development and Submission** – The STP met in person 3 times and UL used the resulting discussions, decisions, and research and drafted the proposed First Edition of UL 5800 to be the American National Standard and a National Standard of Canada.

**Preliminary Review** – This was conducted from 2020-03-04 through 2020-05-08. All input was acknowledged in a document shared with the STP to explain the changes incorporated in the draft standard for ballot.

**Proposal Review (Ballot)** – The ballot was opened on 2020-07-10 and will close on 2020-09-08.

**Recirculation** – Depends on consensus and comments received during ballot.

**Publication** – Depending on the ballot and recirculation outcomes. Target to publish by the end of 2020.



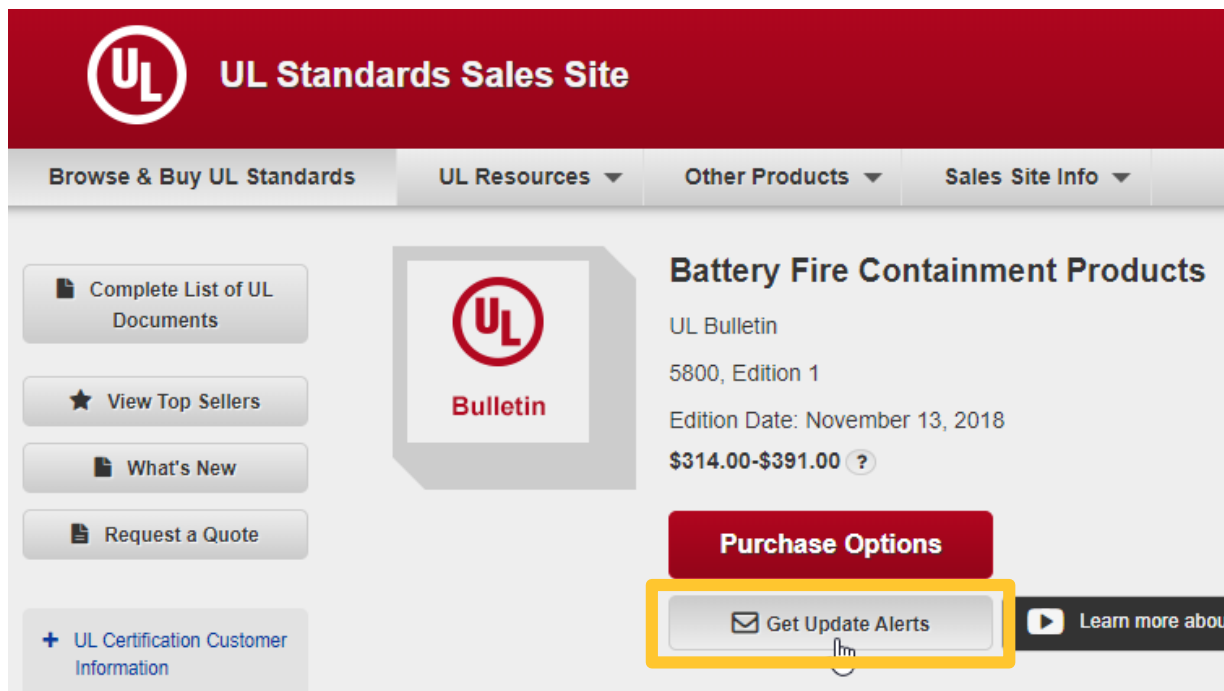
# Stakeholder and Public Review Involvement

- ✓ The UL Standards development process is open and anyone can participate.
- ✓ Encourage participation by all stakeholders.
- ✓ Stakeholders can submit proposals, comment on proposals, participate in working/task groups, attend STP meetings.
- ✓ Stakeholders are not STP members and cannot vote.

# Stay Informed – Get Update Alerts

On the [UL Standards Sales Site](#) “Browse Standards,” then choose UL 5800 and select the **Get Update Alerts** button on the page for that standard.

You will be prompted to register, free of charge, on the site. Then, when anything (new proposals and new standard revisions) is published for UL 5800 you will get an email notification, along with links and instructions for obtaining access to that information.



# Helpful Links for the UL Standards Development Process

Standards Development Process YouTube video:

<https://www.youtube.com/watch?v=PU3apx7gLVU#action=share>

General Standards Website:

<http://ulstandards.ul.com/>

Request Access to Review and Comment on the Current UL 5800 Ballot:

<https://csds.ul.com/Home/ProposalsDefault.aspx>

Join a Standards Technical Panel (STP) with the online membership application:

<https://csds.ul.com/STPInfo/ApplicationHomePage.aspx>

Get Update Alerts:

<https://www.shopulstandards.com/>





Thank you for listening.  
Questions?

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