



FSTG

# FLAMMABILITY STANDARDIZATION TASK GROUP

20 OCTOBER, 2011

IAMFTWG UPDATE



# Agenda

- Show the differences between the current FAA draft policy memo and what is being proposed by the teams of the Flammability Standardization Task Group.
- Provide Individual Team Status

# Part 1, Ref 1- Current

| Ref #                | Feature / Construction | 25.853(a)<br>Bunsen Burner   | 25.853(d)<br>Heat Release and Smoke   |
|----------------------|------------------------|--|---|
| Part 1<br><br>Item 1 | Panels,<br>General     | 60-second vertical test data will substantiate configurations that only require 12-second vertical data. Vertical Bunsen burner data will substantiate configurations that only require horizontal Bunsen burner testing | Test requirement is decided based on size criteria.<br>1) Test required if greater than 2 sq ft;<br>2) No test if less than 1 sq ft; and<br>3) Specific determination required between 1 and 2 sq ft. |

# Ref 1- Proposed

| Ref #            | Feature / Construction | 25.853(a)<br>Bunsen Burner | 25.853(d)<br>Heat Release and Smoke  |
|------------------|------------------------|----------------------------|--|
| Part 1<br>Item 1 | Panels,<br>General     | Same as Draft Policy memo  | Test requirement is decided based on size criteria.<br>1) Test required if greater than 2 sq ft;<br>2) No test if less than 1 sq ft; and<br>3) Specific determination required between 1 and 2 sq ft. <b>Aspects to consider with this determination are location, quantity, and function of the given components.</b> |

# Part 1, Ref 2- Current

| Ref #                | Feature / Construction                             | 25.853(a)<br>Bunsen Burner  | 25.853(d)<br>Heat Release and Smoke |
|----------------------|--|---|-------------------------------------|
| Part 1<br><br>Item 2 | Thickness ranges<br>(panels, thermoplastics foams) | Data from testing a thinner construction substantiates a thicker construction made of the same materials. |                                     |

# Part 2, Ref 2- Current

| Ref #            | Feature / Construction                          | 25.853(a)<br>Bunsen Burner | 25.853(d)<br>Heat Release and Smoke  |
|------------------|---|----------------------------|--|
| Part 2<br>Item 2 | Thickness ranges (panels, thermoplastics foams) |                            | <p>Except for foam core panels with prepreg skins where each thickness will be tested, use the following approach:</p> <p>Sandwich panels, laminates, thermoplastic parts, and parts made from a single material are shown to be compliant with § 25.853(d) (appendix F, parts IV and V) by test, or by similarity to a part with similar thickness (in the same thickness range). For certification purposes, thickness ranges are defined to eliminate the need to test every possible thickness. It is an acceptable practice to test a given thickness within a tight range and use these data to substantiate all thicker items within that range. The following table details standard thickness ranges currently used.</p> <p>Flammability Standardization Task Group</p> |

# Part 2, Ref 2- Current

| Type Part                        | Thickness Range (inch) |
|----------------------------------|------------------------|
| Sandwich Panels - Core Thickness | 0.125 - 0.187          |
|                                  | 0.188 - 0.249          |
|                                  | 0.250 - 0.499          |
|                                  | 0.500 - 0.749          |
|                                  | 0.750 - 1.749          |
|                                  | 1.750 and thicker      |
| Laminates and Thermoplastics     | 0.020 - 0.039          |
|                                  | 0.040 - 0.059          |
|                                  | 0.060 - 0.079          |
|                                  | 0.080 - 0.099          |
|                                  | 0.100 - 0.199          |
|                                  | 0.200 - 0.299          |
|                                  | 0.300 - 0.499          |
|                                  | 0.500 - 0.749          |
|                                  | 0.750 - 1.749          |
|                                  | 1.750 and thicker      |
| Single Unit Materials            | 0.080 - 0.119          |
|                                  | 0.120 - 0.249          |
|                                  | 0.250 - 0.499          |
|                                  | 0.50 - 1.749           |
|                                  | 1.75 and thicker       |

# Part 1, Ref 24- Current

| Ref #   | Feature / Construction          | 25.853(a) Bunsen Burner   | 25.853(d) Heat Release and Smoke   |
|---------|---------------------------------|---|--|
| Item 24 | Thermoplastic, Thickness Ranges | Data from testing a thinner construction substantiates a thicker construction made from the same materials. | It is an acceptable practice to test a given thickness within a tight range and use these data to substantiate all thicker items within that range. See item 2 in this attachment for acceptable thickness ranges. |



# Ref 2 & 24- Proposed

| Ref #  | Feature / Construction                            | 25.853(a)<br>Bunsen Burner | 25.853(d)<br>Heat Release and Smoke  |                            |                                       |                                  |  |                                 |   |                               |  |                                |   |                                  |   |                                   |   |  |                           |  |  |
|--|---|----------------------------|--|----------------------------|---------------------------------------|----------------------------------|--|---------------------------------|---|-------------------------------|--|--------------------------------|---|----------------------------------|---|-----------------------------------|---|--|---------------------------|--|--|
| Part 1<br><br>Item 2<br>and 24                             | Thickness ranges (panels, thermoplastics foams)   | Same as Draft Policy       | Same as Draft Policy except thickness range table <table border="1"> <thead> <tr> <th>Part or material thickness</th> <th>Thicknesses tested to show compliance</th> </tr> </thead> <tbody> <tr> <td>0.02 - 0.06 inch<br/>0.5 - 1.5 mm</td> <td>0.02 inch &amp; 0.06 inch<br/>or<br/>0.5 mm &amp; 1.5 mm</td> </tr> <tr> <td>0.06 - 0.1 inch<br/>1.5 - 2.5 mm</td> <td>0.06 inch &amp; 0.1 inch or<br/>1.5 &amp; 2.5 mm</td> </tr> <tr> <td>0.1 - 0.25 inch<br/>2.5 - 6 mm</td> <td>0.1 inch &amp; 0.25 inch or<br/>2.5 mm &amp; 6 mm</td> </tr> <tr> <td>0.25 - 0.5 inch<br/>6 - 12.5 mm</td> <td>0.25 inch &amp; 0.5 inch or<br/>6 mm &amp; 12.5 mm</td> </tr> <tr> <td>0.5 - 1.0 inch<br/>12.5 - 25.5 mm</td> <td>0.5 inch &amp; 1.0 inch or<br/>12.5 mm &amp; 25.5 mm</td> </tr> <tr> <td>1.0 - 1.75 inch<br/>25.5 - 44.5 mm</td> <td>1.0 inch &amp; 1.75* inch<br/>or<br/>25.5 mm &amp; 44.5* mm</td> </tr> <tr> <td>1.75 inch &amp; thicker<br/>44.5 mm &amp; thicker</td> <td>1.75* inch or<br/>44.5* mm</td> </tr> <tr> <td colspan="2">* 1.75 inch or 44.5 mm specimens are not tested for smoke.</td> </tr> </tbody> </table> | Part or material thickness | Thicknesses tested to show compliance | 0.02 - 0.06 inch<br>0.5 - 1.5 mm | 0.02 inch & 0.06 inch<br>or<br>0.5 mm & 1.5 mm | 0.06 - 0.1 inch<br>1.5 - 2.5 mm | 0.06 inch & 0.1 inch or<br>1.5 & 2.5 mm | 0.1 - 0.25 inch<br>2.5 - 6 mm | 0.1 inch & 0.25 inch or<br>2.5 mm & 6 mm | 0.25 - 0.5 inch<br>6 - 12.5 mm | 0.25 inch & 0.5 inch or<br>6 mm & 12.5 mm | 0.5 - 1.0 inch<br>12.5 - 25.5 mm | 0.5 inch & 1.0 inch or<br>12.5 mm & 25.5 mm | 1.0 - 1.75 inch<br>25.5 - 44.5 mm | 1.0 inch & 1.75* inch<br>or<br>25.5 mm & 44.5* mm | 1.75 inch & thicker<br>44.5 mm & thicker | 1.75* inch or<br>44.5* mm | * 1.75 inch or 44.5 mm specimens are not tested for smoke. |  |
| Part or material thickness                                 | Thicknesses tested to show compliance             |                            |  |                            |                                       |                                  |  |                                 |   |                               |  |                                |   |                                  |   |                                   |   |  |                           |  |  |
| 0.02 - 0.06 inch<br>0.5 - 1.5 mm                           | 0.02 inch & 0.06 inch<br>or<br>0.5 mm & 1.5 mm    |                            |  |                            |                                       |                                  |  |                                 |   |                               |  |                                |   |                                  |   |                                   |   |  |                           |  |  |
| 0.06 - 0.1 inch<br>1.5 - 2.5 mm                            | 0.06 inch & 0.1 inch or<br>1.5 & 2.5 mm           |                            |  |                            |                                       |                                  |  |                                 |   |                               |  |                                |   |                                  |   |                                   |   |  |                           |  |  |
| 0.1 - 0.25 inch<br>2.5 - 6 mm                              | 0.1 inch & 0.25 inch or<br>2.5 mm & 6 mm          |                            |  |                            |                                       |                                  |  |                                 |   |                               |  |                                |   |                                  |   |                                   |   |  |                           |  |  |
| 0.25 - 0.5 inch<br>6 - 12.5 mm                             | 0.25 inch & 0.5 inch or<br>6 mm & 12.5 mm         |                            |  |                            |                                       |                                  |  |                                 |   |                               |  |                                |   |                                  |   |                                   |   |  |                           |  |  |
| 0.5 - 1.0 inch<br>12.5 - 25.5 mm                           | 0.5 inch & 1.0 inch or<br>12.5 mm & 25.5 mm       |                            |  |                            |                                       |                                  |  |                                 |   |                               |  |                                |   |                                  |   |                                   |   |  |                           |  |  |
| 1.0 - 1.75 inch<br>25.5 - 44.5 mm                          | 1.0 inch & 1.75* inch<br>or<br>25.5 mm & 44.5* mm |                            |  |                            |                                       |                                  |  |                                 |   |                               |  |                                |   |                                  |   |                                   |   |  |                           |  |  |
| 1.75 inch & thicker<br>44.5 mm & thicker                   | 1.75* inch or<br>44.5* mm                         |                            |  |                            |                                       |                                  |  |                                 |   |                               |  |                                |   |                                  |   |                                   |   |  |                           |  |  |
| * 1.75 inch or 44.5 mm specimens are not tested for smoke. |   |                            |  |                            |                                       |                                  |  |                                 |   |                               |  |                                |   |                                  |   |                                   |   |  |                           |  |  |

# Ref 2- Proposed

| Part or material thickness                                 | Thicknesses tested to show compliance          |
|--|--|
| 0.02 - 0.06 inch<br>0.5 - 1.5 mm                           | 0.02 inch & 0.06 inch or<br>0.5 mm & 1.5 mm    |
| 0.06 - 0.1 inch<br>1.5 - 2.5 mm                            | 0.06 inch & 0.1 inch or<br>1.5 & 2.5 mm        |
| 0.1 - 0.25 inch<br>2.5 - 6 mm                              | 0.1 inch & 0.25 inch or<br>2.5 mm & 6 mm       |
| 0.25 - 0.5 inch<br>6 - 12.5 mm                             | 0.25 inch & 0.5 inch or<br>6 mm & 12.5 mm      |
| 0.5 - 1.0 inch<br>12.5 - 25.5 mm                           | 0.5 inch & 1.0 inch or<br>12.5 mm & 25.5 mm    |
| 1.0 - 1.75 inch<br>25.5 - 44.5 mm                          | 1.0 inch & 1.75* inch or<br>25.5 mm & 44.5* mm |
| 1.75 inch & thicker<br>44.5 mm & thicker                   | 1.75* inch or<br>44.5* mm                      |
| * 1.75 inch or 44.5 mm specimens are not tested for smoke. |  |

# Ref 2 – Modified Proposal

- For 853(d), suggested looking at a % range of thickness or a range of .045" to accommodate .08-.125".]

# Part 2, Ref 3-Current &

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| Ref #            | Feature / Construction | 25.853(a)<br>Bunsen Burner   | 25.853(d)<br>Heat Release and Smoke  |
|------------------|------------------------|--|--|
| Part 2<br>Item 3 | Core, Density          | Data from testing a lower density honeycomb core substantiates a higher density honeycomb core, provided the core is made from phenolic aramid (e.g., Nomex <sup>®</sup> and Kevlar <sup>®</sup> ) paper, phenolic fiberglass, or aluminum). | Data from testing a core's lightest and heaviest densities substantiates all densities in between. |

# Part 2, Ref 4-Current &

## Proposed

| Ref #            | Feature / Construction | 25.853(a)<br>Bunsen Burner   | 25.853(d)<br>Heat Release and Smoke   |
|------------------|------------------------|--|---|
| Part 2<br>Item 4 | Core, Cell Size        | Data from testing ANY core cell size/shape substantiates other core cell sizes/shapes of the same material, provided the core is made from phenolic aramid (e.g., Nomex <sup>®</sup> and Kevlar <sup>®</sup> ) paper, phenolic fiberglass, or aluminum). | Data from testing a core's smallest and largest cell sizes substantiates all cell sizes in between. |

# Part 2, Ref 5- Current

| Ref #            | Feature / Construction | 25.853(a)<br>Bunsen Burner  | 25.853(d)<br>Heat Release and Smoke   |
|------------------|------------------------|---|---|
| Part 2<br>Item 5 | Paint/ Ink Systems     | <p>Test the part with same chemistry paint/ink system. Test of one color substantiates other colors of the same paint/ink system.</p> <p>Substantiate unpainted with painted panel.</p> | <p>Test of a part with one color substantiates any other color with the same paint/ ink chemistry.</p> <p>Additionally, testing of a painted part substantiates an unpainted part with the same construction.</p> |

# Ref 5a- Proposed

| Ref # | Feature / Construction            | 25.853(a)<br>Bunsen Burner   | 25.853(d)<br>Heat Release and Smoke  |
|-------|-----------------------------------|--|--|
| 2_5a  | Paint Color<br><br>Backside Paint | Test of one color substantiates any other color with the same paint chemistry.<br><br>Test, or use other applicable MoC [e.g. FASE (part 1, ref. 9)] | Test of one color substantiates any other color with the same paint chemistry.<br><br>An item tested with paint on the backside (non-test surface) substantiates the identical construction without paint on the backside surface. |

# Ref 5b- Proposed

| Ref # | Feature / Construction | 25.853(a)<br>Bunsen Burner  | 25.853(d)<br>Heat Release and Smoke   |
|-------|------------------------|---|---|
| 5b    | Decorative Laminates   | Data from testing one color of a decorative laminate substantiates the same decorative laminate in a different color. | Data from testing one color of a decorative laminate substantiates the same PVF film or decorative laminate in a different color. |



# Part 2, Ref 6- Current

| Ref #            | Feature / Construction           | 25.853(a)<br>Bunsen Burner                               | 25.853(d)<br>Heat Release and Smoke   |
|------------------|----------------------------------|--|---|
| Part 2<br>Item 6 | Doublers, non-metallic, co-cured | No test required for same co-cured material as the skin. | Data from testing the thinnest and thickest doublers substantiates the thickness for all doublers in between. |

# Ref 6- Proposed

- No industry input to this Part 2 item; therefore, it is likely not to be included in the final FAA policy memo.
- Rationale
  - 25.853(a) - Other MoCs can be used for vertical burn.
  - 25.853(d) – Industry team saw no usage for this MoC.

# Part 2, Ref 7-Current &

| Ref #               | Feature / Construction    | 25.853(a) Bunsen Burner  | 25.853(d) Heat Release and Smoke                |
|---------------------|---------------------------|--|---|
| Part 2<br>Item<br>7 | Fiber Reinforcement Cloth | Test of one fiber reinforcement cloth of a given weight class in a given resin type (e.g., phenolic, epoxy, etc.) substantiates other fiber reinforcement cloth of the same weight class and fiber type provided the weave is the only change. This applies to cloth made from fiberglass, aramid, or carbon. For example, fiberglass weaves 1581, 7781, and 181 are all equivalent within a given weight class. | Weaves within same weight class are equivalent. |

# Part 1, Ref 7 – Issue

- Waiting on data to show equivalency for 25.853(d)

# Part 1, Ref 8-Current &

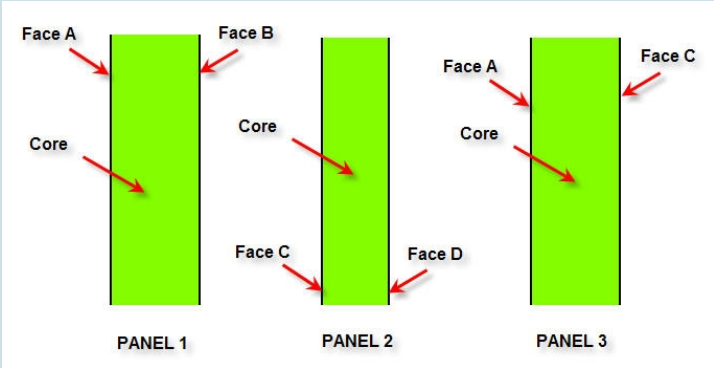
## Proposed

| Ref #            | Feature / Construction       | 25.853(a) Bunsen Burner   | 25.853(d) Heat Release and Smoke   |
|------------------|------------------------------|---|--|
| Part 1<br>Item 8 | Skin ply layup - orientation | Data from testing one panel construction substantiates any orientation of the skin plies for the same panel construction. | Data from testing a skin buildup is valid for use in any orientation of the same skin ply materials. |

# Part 1, Ref # 9 - Current

| Ref #  | Feature / Construction                        | 25.853(a) Bunsen Burner   | 25.853(d) Heat Release and Smoke |
|--------|---|---|----------------------------------|
| Item 9 | Skin testing (FASE – Face As Separate Entity) | <p>Data may be collected from each face of a sandwich panel independently.</p> <p>Note: The test coupon is a completed sandwich panel. The data from each face may be used to substantiate a panel when the panel thickness is greater than 0.25" and the thickness is the only difference between the core materials</p> | Not applicable.                  |

# Ref # 9 - Proposed

| Ref #  | Feature / Construction                        | 25.853(a) Bunsen Burner  | 25.853(d) Heat Release and Smoke |
|--------|---|--|----------------------------------|
| Item 9 | Skin testing (FASE – Face As Separate Entity) | <p>Data may be collected from each face of a sandwich panel independently.</p> <p>Note: The test coupon is a completed sandwich panel. The data from each face may be used to substantiate a panel when the panel thickness is greater than 0.25" and the thickness is the only difference between the core materials</p>  <p>Certification data from Panel 1, Face A and Panel 2 Face C, can be used to substantiate panel 3 provided the core material for all three panels is identical except for thickness and each panel is 0.25 inches thick or greater.</p> | Not applicable.                  |

# Part 2, Ref 10 - Current

| Ref #             | Feature / Construction                                       | 25.853(a) Bunsen Burner  | 25.853(d) Heat Release and Smoke   |
|-------------------|--|--|--|
| Part 2<br>Item 10 | Surfacing materials (pin-hole filler, sweep and sand, Bondo) | No test requirement when surfacing material is controlled within an approved process specification to assure conformance to flammability requirements, or that these materials do not contribute to the propagation of a fire. | No test requirement when surfacing material is controlled within an approved process specification to assure conformance to flammability requirements, or that these materials do not contribute to the propagation of a fire. |



# Ref 10 - Proposed

| Ref #   | Feature / Construction                                       | 25.853(a) Bunsen Burner   | 25.853(d) Heat Release and Smoke  |
|---------|--|---|---|
| Item 10 | Surfacing materials (pin-hole filler, sweep and sand, Bondo) | No test required when surfacing material is controlled within an approved process specification that has been validated using the method described within this MOC. | No test required when surfacing material is controlled within an approved process specification that has been validated using the method described within this MOC. |

# Ref 10 – Proposed Method

- Manufacture a nominal 0.50" (12mm) thick Nomex honeycomb sandwich panels with 2 plies each side of standard Phenolic prepreg. Panels should be built using the same manufacturing method (press cure or vacuum bag layup). It is highly recommended that the same panel is used for all tests.
- A minimum of 3 samples of each configuration will be tested. Test can be engineering tests, i.e. no FAA witness is required.
  1. Test baseline panel with no filler applied
  2. Test panel with filler applied at the maximum amount (Weight per square area) allowed per the approved process specification (see definition).
  3. Test a minimum of 1 set of samples at an intermediate density application.
- If the surface filler maximum density yields values that show appreciable fire properties differences from the bare panel, then a lower maximum density needs to be defined.

# Part 2, Ref 11 – Proposed & Current

| Ref #                | Feature / Construction | 25.853(a) Bunsen Burner  | 25.853(d) Heat Release and Smoke   |
|----------------------|------------------------|--|--|
| Part 2<br>Item<br>11 | Backside Decorative    | Test of a panel with a backside decorative substantiates a panel with a backside that has no decorative. | Test of a panel with a backside decorative substantiates a panel with a backside that has no decorative. |

# Part 2, Ref 11 - Issue

- Testing on this has not been completed so there is a risk that this item will not be included in the final FAA policy.

# Part 2, Ref 12 – Current

| Ref #                | Feature / Construction | 25.853(a) Bunsen Burner   | 25.853(d) Heat Release and Smoke  |
|----------------------|------------------------|---|---|
| Part 2<br>Item<br>12 | Tedlar                 | Testing of Tedlar® material on a decorative panel substantiates the same panel construction with the same type and thickness of Tedlar® with a different color. | Testing of Tedlar® material on a decorative panel substantiates the same panel construction with the same type and thickness of Tedlar® with a different color. |

# Ref 12 – Proposed

- Tedlar falls within the category of decorative laminates. Tedlar color similarity therefore is a special case of decorative laminate color similarity and can be substantiated by the data submitted for #5b for 25.853(a) and (d).
- The industry team recommends deleting #12 and merging it under # 5b.

# Part 1, Ref 13 – Proposed & Current

| Ref #                | Feature / Construction | 25.853(a) Bunsen Burner  | 25.853(d) Heat Release and Smoke   |
|----------------------|------------------------|--|--|
| Part 1<br>Item<br>13 | Texture                | Data from testing one texture of a decorative type substantiates a panel with the same decorative type with a different texture. | Data from testing one texture of a decorative type substantiates a panel with the same decorative type that has a different texture. |

# Part 1 & 2, Ref 14 – Current

| Ref #   | Feature / Construction          | 25.853(a) Bunsen Burner   | 25.853(d) Heat Release and Smoke  |
|---------|---------------------------------|---|---|
| Item 14 | Decorative Laminate Orientation | Data from testing one decorative laminate orientation substantiates a panel with the same decorative laminate that has a different orientation.<br><br>(Part 1) | Data from testing one decorative laminate orientation substantiates a panel with the same decorative laminate with a different orientation.<br><br>(Part 2) |



# Ref 14 – Proposed

| Ref #   | Feature / Construction          | 25.853(a) Bunsen Burner  | 25.853(d) Heat Release and Smoke   |
|---------|---------------------------------|--|--|
| Item 14 | Decorative Laminate Orientation | Data from testing one decorative laminate orientation substantiates the same decorative laminate with a different orientation. | Data from testing one decorative laminate orientation substantiates the same decorative laminate with a different orientation. |

# Part 2, Ref 15 – Current & Proposed

| Ref #   | Feature / Construction   | 25.853(a) Bunsen Burner   | 25.853(d) Heat Release and Smoke                                   |
|---------|--------------------------|---|--|
| Item 15 | Synthetic Leather/ Suede | Data from testing one synthetic leather/suede material sample will substantiate other colors of the same material | Testing of each color synthetic leather/suede material is required |



# Part 2, Ref Item #15 - Issue

- Only Tapis data has been submitted to date and so this MoC may only apply to that one supplier.

# Part 1, Ref # 16 - Current

| Ref #   | Feature / Construction                                   | 25.853(a) Bunsen Burner   | 25.853(d) Heat Release and Smoke  |
|---------|--|---|---|
| Item 16 | Aluminum/steel/titanium parts (excluding powder coating) | <p>Unless they contain magnesium or magnesium alloys, unfinished metal parts do not require testing. Finished metal parts do not require testing provided:</p> <ol style="list-style-type: none"> <li>1) standard paint/finishes are used and</li> <li>2) the parts do not contain magnesium or magnesium alloys.</li> </ol> <p>Standard paint/finishes are defined as inorganic finishes (e.g., anodize, alodine), epoxy primers and topcoats, urethane topcoats, and corrosion inhibiting dry films. See item 17, below, for powder coatings.</p> | <p>The test requirement is decided based on size criteria.</p> <ol style="list-style-type: none"> <li>1) Test required if greater than 2 sq ft;</li> <li>2) No test if less than 1 sq ft; and</li> <li>3) Specific determination required between 1 and 2 sq ft.</li> </ol> |

# Ref # 16 - Proposed

| Ref #   | Feature / Construction                                   | 25.853(a) Bunsen Burner  | 25.853(d) Heat Release and Smoke  |
|---------|--|--|---|
| Item 16 | Aluminum/steel/titanium parts (excluding powder coating) | <p>Finished metal parts do not require testing provided:</p> <ol style="list-style-type: none"> <li>1) Standard paint/finishes are used and</li> <li>2) The parts do not contain magnesium containing alloys.</li> </ol> <p>Standard paint/finishes are defined as aircraft OEM inorganic finishes (e.g., anodize, chromate conversion coatings), epoxy primers and topcoats, urethane topcoats, and corrosion inhibiting coatings. See item 17, below, for powder coatings.</p> | <p>The test requirement is decided based on size criteria.</p> <ol style="list-style-type: none"> <li>1) Test required if greater than 2 sq ft;</li> <li>2) No test if less than 1 sq ft; and</li> <li>3) Specific determination required between 1 and 2 sq ft.</li> </ol> |

# Ref #16 – Proposed (cont.)

- *Aircraft (Original Equipment Manufacturer) OEM qualified is defined as finishes and coatings that have been approved by the manufacturer (internally or through their supplier system) for use on that specific model aircraft for the specific application being certified.*
- *Magnesium containing alloys are defined as any metal alloy system comprised of greater than 20% magnesium metal. This definition includes Magnesium based alloys typically used in aircraft structure and are defined as magnesium alloys containing greater than 80% magnesium. Other methods of testing are required for certification of magnesium containing alloy parts.*

# Part 1, Ref 17 – Current & Proposed

| Ref #   | Feature / Construction | 25.853(a) Bunsen Burner  | 25.853(d) Heat Release and Smoke                           |
|---------|------------------------|--|--|
| Item 17 | Powder Coated Metal    | Unless they contain magnesium or magnesium alloys, powder coated metal parts do not require testing. | Testing each color of powder coating material is required. |

# Part 1 & 2, Ref 18 – Current

| Ref #   | Feature / Construction                              | 25.853(a) Bunsen Burner  | 25.853(d) Heat Release and Smoke   |
|---------|---|--|--|
| Item 18 | Decorative laminate on metal skin of sandwich panel | Test the panel with decorative laminate using the appropriate requirement in appendix F, part I.<br><br>(Part 1) | Data from testing a decorative laminate and an adhesive on a nonmetallic panel substantiates a metal skinned panel with the same decorative laminate and adhesive.<br><br>(Part 2) |



# Part 1 & 2, Ref 18 - Issue

- The industry team elected to not submit a proposal on the 25.853(d) Part 2 portion of this MoC; therefore, it will probably not be in the final FAA policy memo.

# Part 1 & 2, Ref 19 – Current

| Ref #   | Feature / Construction              | 25.853(a) Bunsen Burner   | 25.853(d) Heat Release and Smoke  |
|---------|-------------------------------------|---|---|
| Item 19 | Metal skinned foam/honeycomb panels | Test the metal skinned foam/honeycomb panel to the appropriate requirement in appendix F, part I.<br><br>(Part 1) | Data from testing the thinnest and thickest metal skinned panels substantiates the thickness for all panels in between.<br><br>(Part 2) |

# Part 1 & 2, Ref 19 - Issue

- The industry team elected to not submit a proposal on the 25.853(d) Part 2 portion of this MoC; therefore, it will probably not be in the final FAA policy memo.

# Part 1, Ref # 20 - Current

| Ref # | Feature / Construction | 25.853(a) Bunsen Burner  | 25.853(d) Heat Release and Smoke |
|-------|------------------------|--|----------------------------------|
| 20    | Embedded Metal Detail  | <p>Test the adhesive by itself or the detail and adhesive together per 12-second vertical.</p> <p>Limitation – detail may not be constructed of magnesium or magnesium alloys.</p> | No Test Requirement              |

# Part 1, Ref # 22 - Current

| Ref # | Feature / Construction   | 25.853(a) Bunsen Burner                                 | 25.853(d) Heat Release and Smoke |
|-------|--------------------------|---|----------------------------------|
| 22    | Doubler, metal, co-cured | No Test Requirement. Data from base panel substantiates | No Test Requirement              |

# Ref 20, 22, 40 - Proposed

| Ref #      | Feature / Construction | 25.853(a) Bunsen Burner  | 25.853(d) Heat Release and Smoke                               |
|------------|------------------------|--|--|
| 20, 22, 40 | Metal Detail, Bonded   | <p>No Test Requirement. Data from Base Panel substantiates (Provided that the detail is at least .01" thick).</p> <p>Limitation – Detail may not be constructed of magnesium or magnesium alloys</p> | <p>No Test Requirement. Data from Base Panel substantiates</p> |

# Part 1, Ref 21– Current & Proposed

| Ref # | Feature / Construction | 25.853(a) Bunsen Burner   | 25.853(d) Heat Release and Smoke |
|-------|------------------------|---|----------------------------------|
| 21    | Edge trim, metal       | No Test Requirement provided edge trim is at least 0.02" thick. | No Test Requirement              |

# Part 2, Ref # 23 - Current

| Ref # | Feature / Construction                               | 25.853(a) Bunsen Burner  | 25.853(d) Heat Release and Smoke  |
|-------|--|--|---|
| 23    | Color of thermoplastics, elastomers and floor panels | Data from testing an integrally colored material substantiates the same material type and thickness for a different color. | For integrally colored thermoplastics, conduct engineering tests on a variety of colors to determine the most critical color. Conduct a certification test on the color that produces the most critical values. The resulting data can be used to substantiate other colors of the same materials by similarity/critical case analysis. |



# Ref # 23 - Proposed

| Ref # | Feature / Construction   | 25.853(a) Bunsen Burner  | 25.853(d) Heat Release and Smoke   |
|-------|--|--|--|
| 23    | Color of thermoplastics and elastomers <b>and floor panels</b> | Data from testing an integrally colored thermoplastic or elastomer substantiates the same thickness thermoplastic or elastomer of a different color. | Data from testing an integrally colored thermoplastic substantiates the same thickness thermoplastic of a different color. <b>Or, if FAA disagrees, then the following should be considered.</b> Data from testing an integrally colored thermoplastic substantiates the same thickness thermoplastic of a different color given the data used is less than or equal to:<br>55 KW/min/m <sup>2</sup> for 2 min Total, 55 KW/min <sup>2</sup> for Peak, and 180 Ds. |

# Part 1, Ref # 25 - Current

| Ref # | Feature / Construction          | 25.853(a) Bunsen Burner                 | 25.853(d) Heat Release and Smoke |
|-------|---------------------------------|---|----------------------------------|
| 25    | Clear plastic windows and signs | Test per Appendix F, part I, (a)(1)(iv) | No test requirement              |

# Ref # 25 - Proposed

| Ref # | Feature / Construction          | 25.853(a) Bunsen Burner  | 25.853(d) Heat Release and Smoke |
|-------|---------------------------------|--|----------------------------------|
| 25    | Clear plastic windows and signs | <p>Test per Appendix F, part I, (a)(1)(iv)</p> <p>The primary means of compliance for materials used as clear plastic windows and signs, will be the 15-second horizontal test.</p> <p>Clear plastic installations, such as front panels of bar units and stowages, will use the 12 second vertical Bunsen burner test as the compliance method.</p> <p>Installations meeting the criteria for 60 (or 12) second vertical, heat release and smoke density testing, as outlined in Chapter 4(c) – Exceptions, will use the appropriate tests to show compliance to flammability regulations.</p> <p>There is one exemption available: Windows and transparent panels inserted in cabin partitions that are necessary to provide flight attendants with an unobstructed view of the passenger cabin.</p> | No test requirement              |

# Part 1, Ref 26-Current &

| Ref #   | Feature / Construction      | 25.853(a) Bunsen Burner  | 25.853(d) Heat Release and Smoke |
|---------|-----------------------------|--|----------------------------------|
| Item 26 | Printed wiring boards (PWB) | The test coupons must replicate the PWB laminate; however, the copper tracing may be excluded from the coupon configuration. The test must include the PWB material with solder mask and conformal coating, if a conformal coating is used. Testing of the laminate in the thinnest cross section will substantiate other PWBs made of the same laminate with thicker constructions. | No test requirement              |

# Part 1, Ref # 28 - Current

| Ref #                          | Feature / Construction | 25.853(a) Bunsen Burner   | 25.853(d) Heat Release and Smoke   |
|--------------------------------|------------------------|---|--|
| Item 28 to 32, 34 to 39 and 41 | Bonded Details         | <p>Unless it can be concluded that the part is small and does not contribute to the propagation of a fire in accordance with Appendix F, Part I (a)(1)(v), testing of the detail, without adhesive, to the appropriate requirement in Appendix F, Part I (a)(1)(ii) or (a)(1)(iv) substantiates the bonded configuration.</p> <p>(Part 2)</p> | <p>The test requirement is decided based on size criteria.</p> <p>1)Test required if greater than 2 sq ft<br/>                 2)No test if less than 1 sq ft and<br/>                 3)Further considerations required between 1 and 2 sq ft</p> <p>(Part 1)</p> |

# Ref # 28 - Proposed

| Ref #  | Feature / Construction | 25.853(a)<br>Bunsen Burner  |
|--|------------------------|---|
| 28<br>to<br>32,<br>34<br>to<br>39<br>and<br>41 | Bonded<br>Detail       | <p>Unless it can be concluded that the part is small and does not contribute to the propagation of a fire in accordance with Appendix F, Part I (a)(1)(v), the following methods of compliance are available to substantiate the bonded construction.</p> <p><b>OPTION #1: Adhesive, Detail, and Substrate tested separately:</b></p> <p>Test the adhesive by itself to 12-sec VBB and separately test the detail and substrate, without adhesive, to the applicable requirements in Appendix F, Part I (a)(1)(i), (a)(1)(ii) or (a)(1)(iv).</p> <p>NOTE: This MoC is not applicable to hook/loop, placards, or other thin polymer films; use other MoCs options for compliance of these bonded features.</p> <p>NOTE: This MoC is also valid when adhesive is not used and the bonded construction is created from cocuring with a composite panel (e.g. no adhesive).</p> |

# Ref # 28 – Proposed (cont.)

| Ref #  | Feature / Construction | 25.853(a)<br>Bunsen Burner   |
|--|------------------------|--|
| 28<br>to<br>32,<br>34<br>to<br>39<br>and<br>41 | Bonded<br>Detail       | <p><b>OPTION #2: Non-metallic Bonded Construction of specific adhesive:</b><br/>Separately test the detail and substrate, without adhesive, to the applicable requirements in Appendix F, Part I (a)(1)(i), (a)(1)(ii) or (a)(1)(iv), and show compliance of the specific adhesive using data bonding two non-metallic materials together..</p> <p>Note: This option is not applicable to hook and loop, placards or thin films. These bonded details will need to be substantiated using option 3 or 4.</p> |

# Ref # 28 – Proposed (cont.)

| Ref #  | Feature / Construction | 25.853(a)<br>Bunsen Burner  |
|--|------------------------|---|
| 28<br>to<br>32,<br>34<br>to<br>39<br>and<br>41 | Bonded<br>Detail       | <p><b>OPTION #3: Specific Detail Bonded to a Worst Case Substrate:</b></p> <p>Test the specific detail bonded to a thin laminate such at a thickness of 0.20 or less (considered worst case) in accordance with Appendix F, Part I (a)(1)(ii). Once qualified in this manner, the detail/adhesive combination may be bonded to other substrates without further test. Data substantiates the bonded detail/adhesive combination on any substrate. Test data on the minimum thickness on a detail substantiates any thicker detail of the same material.</p> |



# Ref # 28 – Proposed (cont.)

| Ref #  | Feature / Construction | 25.853(a)<br>Bunsen Burner  |
|--|------------------------|---|
| 28<br>to<br>32,<br>34<br>to<br>39<br>and<br>41 | Bonded<br>Detail       | <p><b>OPTION #4: As Installed Configuration</b><br/>Test the "as installed" configuration to the applicable requirements in Appendix F, Part I (a)(1)(i), (a)(1)(ii) or (a)(1)(iv) based on the detail being bonded. If the bonded area of the detail is greater than 2 square feet, test the bonded construction to 60sec VBB.</p> <p>Note: If the base panel is over 0.25 inches, the back side would be either tested to the same test requirement, or by using item # 9 (FASE) to the base panel testing.</p> |

# Ref # 28 – Proposed (cont.)

| Ref #                     | Feature / Construction | 25.853(d) Heat Release and Smoke   |
|---------------------------|------------------------|--|
| 28 to 32, 34 to 39 and 41 | Bonded Detail          | <p>The test requirement for a bonded detail is decided based on size and installation/proximity criteria defined below.</p> <ol style="list-style-type: none"><li>1) Test required if cumulative total greater than 2 sq ft;</li><li>2) No test if cumulative total less than 1 sq ft; and</li><li>3) Further considerations required between 1 &amp; 2 sq ft</li><li>4) A Bonded Detail can be excluded from testing if:<ol style="list-style-type: none"><li>a) It is a bond line less than 1.0" wide on an individual item</li><li>b) It is located fully within 2.0" of panel edge</li><li>c) It is located fully within 4.0" of cabin floor</li><li>d) It is lineally applied and less than 2 sq ft in total surface area</li></ol></li></ol> |

# Part 1/2, Ref # 33 - Current

| Ref # | Feature / Construction        | 25.853(a) Bunsen Burner   | 25.853(d) Heat Release and Smoke   |
|-------|-------------------------------|---|--|
| 33    | Edge potting and/or edge foam | <p><b><u>(Part 1)</u></b> Test a fabricated section of the panel containing the edge potting compound or foam to 60-second vertical burn.</p> <p><b><u>(Part 2)</u></b> Test a block of foam or potting compound by itself per appendix F - part I, (a)(1)(ii).(12 sec)</p> | <p>Test Criteria is decided based on the size criteria</p> <ol style="list-style-type: none"> <li>1. Test required if greater than 2 sq ft.</li> <li>2. No test if less than 1 sq ft and</li> <li>3. Further considerations required between 1 &amp; 2 sq ft.</li> </ol> |

# Ref #33 - Proposed

| Ref # | Feature / Construction        | 25.853(a) Bunsen Burner   | 25.853(d) Heat Release and Smoke   |
|-------|-------------------------------|---|--|
| 33    | Edge potting and/or edge foam | <p>The edge fill in a panel may be shown compliant using one of the following options:</p> <p><b><u>Option 1:</u></b><br/>           Test a plaque of edge fill material by itself per Appendix F - Part I, (a)(1)(ii).(12 sec) (Plaque of nominal size: 0.25" x 3" x 12")</p> <p>(continued next page)</p> | <p>No Test Required when less than 1" of edge fill material is used. *</p> <p>If greater than 1" based on the size criteria</p> <ol style="list-style-type: none"> <li>1. Test required if greater than 2 sq ft.</li> <li>2. No test if less than 1 sq ft and</li> <li>3. Further considerations required between 1 &amp; 2 sq ft.</li> </ol> <p>*Wording subject to further clarification</p> |

# Ref #33 – Proposed (cont.)

| Ref # | Feature / Construction        | 25.853(a) Bunsen Burner  | 25.853(d) Heat Release and Smoke |
|-------|-------------------------------|--|----------------------------------|
| 33    | Edge potting and/or edge foam | <b><u>Option 2:</u></b><br>Test a standard panel (see para. 3.2.B) containing the edge fill material per Appendix F - Part I, (a)(1)(i). (60 second vertical burn). (Standard Panel 3" x 12" with 0.125" to 1" of the edge fill material), configured per Figure IV in Part 4.1 above. |                                  |

# Part 1/2, Ref 42 - Current

| Ref #   | Feature / Construction | 25.853(a) Bunsen Burner              | 25.853(d) Heat Release and Smoke |
|---------|------------------------|--------------------------------------|----------------------------------|
| Item 42 | Bonded Inserts         | Test adhesive to 12-second vertical. | See Part 2                       |
| Part 1  |                        |                                      |                                  |
| Part 2  |                        | No Test Required                     | No Test Required                 |

# Ref 42 - Proposed

| Ref #   | Feature / Construction | 25.853(a) Bunsen Burner  | 25.853(d) Heat Release and Smoke |
|---------|------------------------|--|----------------------------------|
| Item 42 | Bonded Inserts         | No test requirement for bonded inserts installed individually with adhesive localized to each insert. The bonded inserts shall not make up a majority of the panel area. | No Test Required                 |

# Part 1/2, Ref #43 - Current

| Ref #        | Feature / Construction                             | 25.853(a) Bunsen Burner                                | 25.853(d) Heat Release and Smoke  |
|--------------|--|--|---|
| 43a,c        | Ditch and Pot, Cut & Fold                          | Test panel and adhesive together (60-second vertical). | Test Criteria is decided based on the size criteria<br>Test required if greater than 2 sq ft.<br>No test if less than 1 sq ft and<br>Further considerations required between 1 & 2 sq ft. |
| 43b<br>d,e,f | Tab & Slot, Mortise & Tenon, T-Joints, Bonded Pins | No Test Required                                       | No Test Required  |



# Ref # 43a/f - Proposed

| Ref # | Feature / Construction   | 25.853(a) Bunsen Burner  | 25.853(d) Heat Release and Smoke  |
|-------|--|--|---|
| 43a-f | 43a: Ditch & pot<br>43b: Tab & slot<br>43c: Mortise & Tenon<br>43d: Cut & Fold<br>43e: T-joints<br>43f: Pins | <p>Compliance of a bonded joint construction can be shown by:</p> <p><u>Option 1:</u> Similarity to the base panel when the following are met:</p> <ol style="list-style-type: none"> <li>1) The Adhesive is an epoxy based material,</li> <li>2) Panel is a honeycomb core panel with composite skins. Meeting 14CFR 25.853(a), Appendix F, Part 1 (a)(1)(i), 60 sec VBB, which is the compliance data used for similarity analysis.</li> <li>3) Exposed adhesive is inside the bent/joined panel. (e.g. inside cut)</li> </ol> | <p><u>For ditch and pot and cut and fold joints:</u></p> <p>No test requirement if the exposed adhesive is 1" or less and a single cut.</p> <p>If outside this scope then test Criteria is decided based on the size criteria</p> <ol style="list-style-type: none"> <li>1. Test required if greater than 2 sq ft.</li> <li>2. No test if less than 1 sq ft and</li> <li>3. Further considerations required between 1 &amp; 2 sq ft.</li> </ol> <p><u>(continued next page)</u></p> |

# Ref # 43a/f – Proposed

(cont)

| Ref # | Feature / Construction | 25.853(a) Bunsen Burner   | 25.853(d) Heat Release and Smoke   |
|-------|------------------------|---|--|
| 43a-f | 43a: Ditch & pot       | <u>Option 2:</u> Test a plaque of adhesive by itself per appendix F - part I,(a)(1)(ii).(12 sec) (Plaque of nominal size: 0.25" x 3" x 12". Configured as per Figure III in 4.1 above   | <u>For Tab and slot, Mortise and Tenon, T-joints, Bonded Pins:</u><br>No test requirement. |
|       | 43b: Tab & slot        |   |  |
|       | 43c: Mortise & Tenon   | <u>Option 3:</u> Test the Adhesive in a standard honeycomb panel in accordance with Appendix F Part I (a)(1)(i) Per Figure IV in 4.1 above. Once qualified in this manner, the adhesive may be used in any other honeycomb panel configuration and shown to be compliant by similarity. |  |
|       | 43d: Cut & Fold        |   |  |
|       | 43e: T-joints          |   |  |
|       | 43f: Pins              |   |  |

# Ref # 43a/f - Proposed (cont.)

| Ref # | Feature / Construction   | 25.853(a) Bunsen Burner   | 25.853(d) Heat Release and Smoke |
|-------|--|---|----------------------------------|
| 43a-f | 43a: Ditch & pot<br>43b: Tab & slot<br>43c: Mortise & Tenon<br>43d: Cut & Fold<br>43e: T-joints<br>43f: Pins | <p><u>Option 4:</u> Test the adhesive in a standard honeycomb panel in accordance with the Foam Block Test Method defined in Appendix A. and meets the 60sec VBB requirement for burn length and drip extinguishing time. Once qualified in this manner the adhesive may be used in another honeycomb panel configuration and shown compliant by similarity.</p> <p><u>Option 5:</u> Test the “as installed” configuration to the applicable requirements in Appendix F, Part 1(a)(1)(i).</p> |                                  |

# Part 1/2, Ref # 44 -

## Support

| Ref # | Feature / Construction | 25.853(a) Bunsen Burner        | 25.853(d) Heat Release and Smoke  |
|-------|------------------------|--------------------------------|---|
| 44    | Sealant, Fillet Seals  | Part 2:<br>No test requirement | Part 1:<br>No test requirement. Industry has not traditionally tested fillet seals. |

# Ref #44 - Proposed

| Ref # | Feature / Construction | 25.853(a) Bunsen Burner | 25.853(d) Heat Release and Smoke |
|-------|------------------------|-------------------------|----------------------------------|
| 44    | Sealant, Fillet Seals  | No test requirement.    | No test requirement.             |

# Status

1. What's left to Submit to the FAA?
  1. Item 2 – Panel Thickness - Missing data on panels, have laminate and thermoplastic data
  2. Item 5a – Color of Paint - Data is difficult to interpret and missing some manufacturers
  3. Item 7 – Fiber Reinforced Cloth – Need resin content of tested panels
  4. Item 11 – Backside Decorative – Need test data
  5. Item 26 – Printed Wiring Boards – Looking for UL 94 V<sub>0</sub> data
  6. Item 44 – Fillet seals – Final format



# Handy Reference Sheet

- [Link to Reference Sheet](#)



# Questions?