



FSTG

FLAMMABILITY STANDARDIZATION TASK GROUP

23 JUNE, 2011

IAMFTWG UPDATE



Purpose

- To 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



Agenda

- Present Part 1 items with little or no changes
- Present Part 1 items with significant changes
- Present Part 2 Items



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PART 1 ITEMS

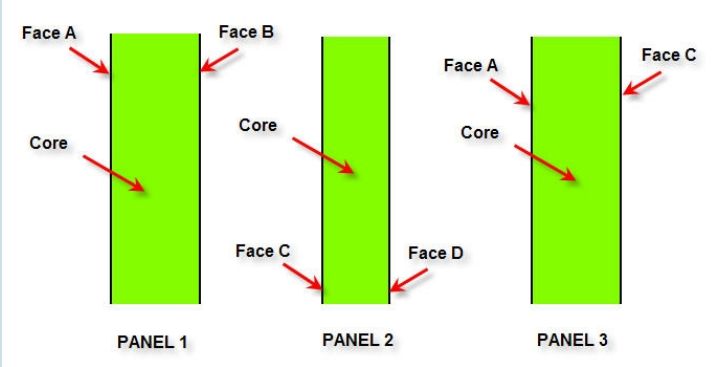
Part 1, Ref # 9 - Current

Ref #	Feature / Construction	25.853(a) Bunsen Burner	25.853(d) Heat Release and Smoke
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.

Definitions

- Sandwich Panel –
 - A rigid panel fabricated using face sheets on either side of a core material.
- Face Sheet –
 - Either reinforced thermoset resins or metal.
- Core Material –
 - A rigid foam or a honeycomb structure made of aluminum, Ultem[®], or phenolic resin reinforced with Nomex[®], Kevlar[®], or fiberglass)

Part 1, Ref # 9 - Proposed

Ref #	Feature / Construction	25.853(a) Bunsen Burner	25.853(d) Heat Release and Smoke
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.



Status

- Rev NC submitted to FAA Jan 27, 2011.
 - FAA responded on April 12, 2011.
 - No changes suggested.

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

Definitions

- Clear plastic windows
 - Clear plastic materials used functionally as windows, e.g. interior window pane, partition window, etc.
- Clear plastic signs
 - Clear plastic materials used functionally as signs e.g. safety information placards, exit signs, light covers etc.
- Examples of clear materials include PMMA (Plexiglas), polycarbonates, PEI (polyetherimide), acrylic etc.
- Note that mineral glass is not considered in this document as it is not a plastic material, even though it can be clear.

Part 1, 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



Status

- Rev NC submitted Aug 11, 2010
 - FAA commented Sept 2, 2010
- Rev A submitted Nov 15, 2010
 - No further comments from FAA to date



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ITEM 20 - 22 - BONDED METAL

Part 1, Ref # 20 - Current

Ref #	Feature / Construction	25.863(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	25.863(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

Definitions – Ref # 20

Embedded Metal Detail

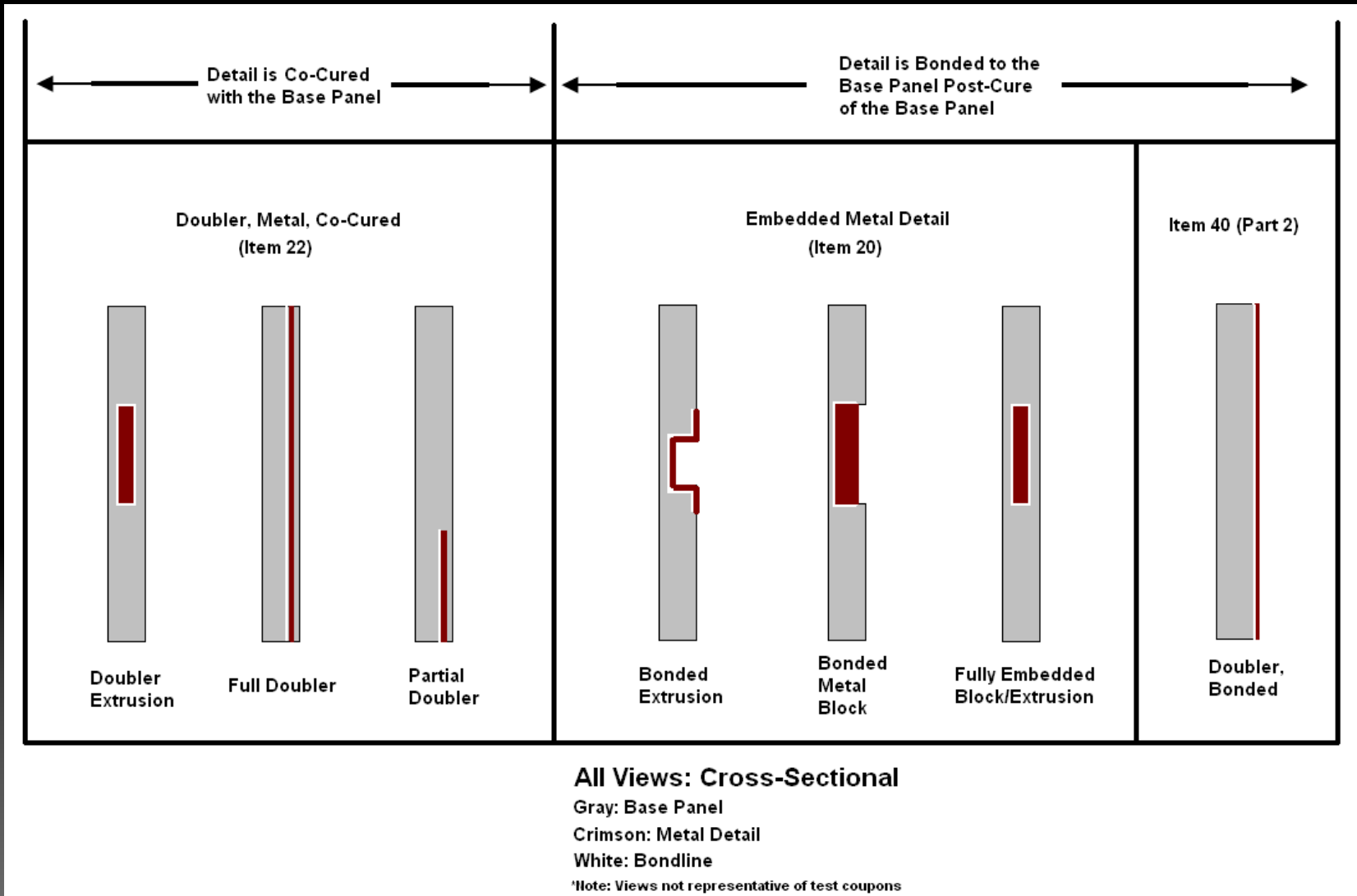
- An embedded metal detail is defined as a metal detail of various shape that is bonded to a sandwich panel, post cure of the sandwich panel. Usually, part of the base (stock) sandwich.
- Panel is modified by removing core or face sheets before bonding the embedded metal detail to the base panel.

Definitions – Ref # 22

Doubler, metal, co-cured

- A co-cured metal doubler (sheet, block or extrusion) is defined as a detail, co-cured with the composite skin materials. Additional adhesive (usually film adhesive) is typically added to the sandwich panel construction to adhere the doubler to honeycomb and prepreg.

Definitions – Ref # 20, 21, and



Part 1/2, Ref # 20, 22, 40 - Proposed

Ref #	Feature / Construction	25.863(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 by magnesium or magnesium alloys</p>	No Test Requirement. Data from Base Panel substantiates

Part 1, Ref # 21 – Accepted

Ref #	Feature / Construction	25.863(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

Status

- Item 20 –
 - Approved by FSTG
 - Received and addressed 1 comment by FAA representative Jeff G. dated 4/28/2011. (Awaiting Reply)
- Item 21 –
 - Approved by FAA
- Item 22 –
 - Approved by FSTG
 - Awaiting any comments from FAA



FSTG

ITEM 5A – PAINT

Part 2, Ref 5- Current

Ref #	Feature / Construction	25.863(a) Bunsen Burner	25.853(d) Heat Release and Smoke
2-5a	paint/ ink systems	<p>Test the part with same chemistry/ ink system. Test of one color substantiates other colors of the same paint/ ink system.</p> <p>Substantiate unpainted with painted panels.</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>



Definitions

- Provide individual substantiation for each paint product.
- Respect influence of paint layer thickness
- Consider inter-lab variation of heat release & smoke density test results

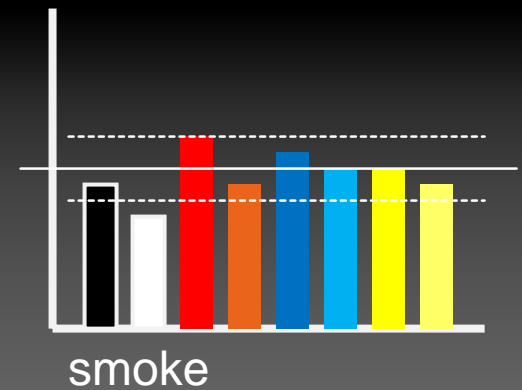
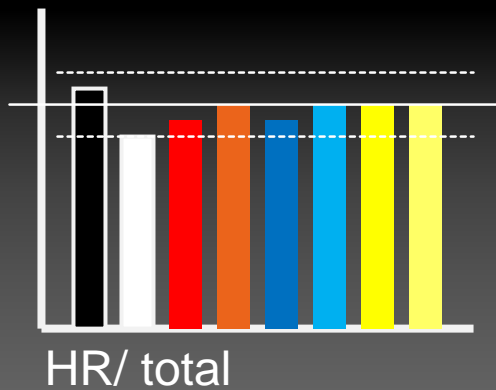
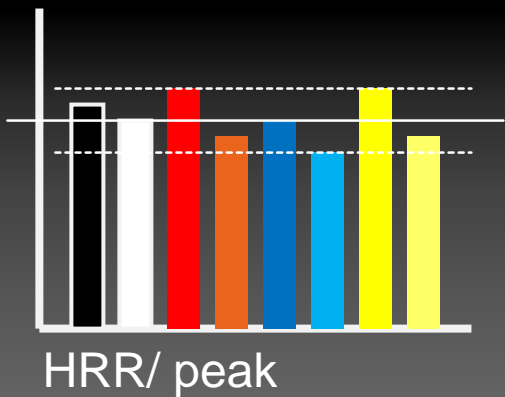
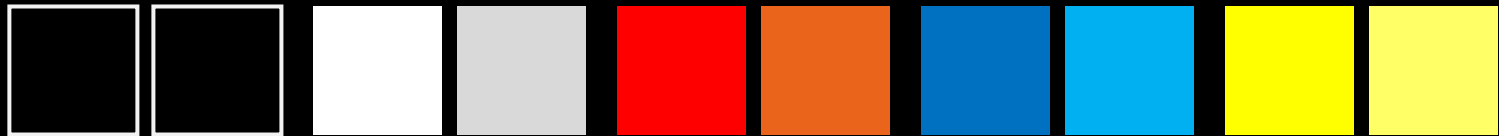
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Part 2, Ref 5a- Proposed

Ref #	Feature / Construction	25.863(a) Bunsen Burner	25.853(d) Heat Release and Smoke
2_5a	paint color	Test of one color substantiates any other color with the same paint chemistry.	the same.

Status 2_5a “paint color”

Proposal (for each paint product): Test plain colors (black, white, red, blue, yellow), organic & inorganic (if available) on inert substrate (alu). Define acceptance criteria.



Part 2, Ref 5a- Proposed

Ref #	Feature / Construction	25.863(a) Bunsen Burner	25.853(d) Heat Release and Smoke
2_5a	backside paint	Test - or use other applicable MoC (e.g. FASE, pt. 1 ref. 9)	An item tested <i>with</i> paint on the backside (non-test surface) substantiates the identical construction <i>without</i> paint on the backside surface.



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ITEM 15 – SYNTHETIC LEATHER/SUEDE

Part 1, Reference Item #15 - Francisco Landroni - Embraer

Ref #	Feature / Construction	25.863(a) Bunsen Burner	25.853(d) Heat Release and Smoke
15	Synthetic Leather/Suede	See Part 2 of this attachment	Testing of each color synthetic leather/suede material is required



Definitions

- “Same material” means same manufacturer, same material composition (except for the color composition) and same test specimen build-up.

Part 1, Reference Item #15 – Francisco Landroni - Embraer

Ref #	Feature / Construction	25.863(a) Bunsen Burner	25.853(d) Heat Release and Smoke
15	Synthetic Leather/Suede	Data from testing one synthetic leather/suede material sample will substantiate other colors of the same material	See Part 1 of this attachment



Status

- Closed and approved by FAA – Scott and Michael please confirm this approval. I do not see the FAA approval date in the Share point (Team Status excel table)



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ITEM 23 – COLOR OF THERMOPLASTICS

Part 2, Ref # 23 - Current

Ref #	Feature / Construction	25.863(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.

Definitions

COLOR - The complete visual appearance of a decorative sheet used in the interiors of transport category airplanes, including base color, prints, images, text or design.

THERMOPLASTIC - A polymer-based, single or multilayer heavy-gage, self-supporting sheet capable of being formed using heat multiple times.

SAME - The term “the same” in the context of this item refers to a thermoplastic from:

The same manufacturer or specification¹,

The same product family (same chemistry other than color pigmentation), and

The same nominal thickness (within industry standard tolerances)².

¹ – The specification must control the flammability properties and general chemistry (i.e., polycarbonate or Nylon) for materials to be the same from different manufacturers but qualified to the same specification, including types, classes, etc. that control chemical properties.

Part 2, Ref # 23 - Proposed

Ref #	Feature / Construction	25.863(a) Bunsen Burner	25.853(d) Heat Release and Smoke
23	Color of thermoplastics , elastomers and floor panels	Data from testing one color of thermoplastic can be used to substantiate another color of the same thermoplastic at the same thickness	Data from testing one color of thermoplastic can be used to substantiate another color of the same thermoplastic at the same thickness TBD Data still to be analyzed, draft policy and industry proposal not necessarily supported by current data/



Item 23 Status

- Data collected
- Draft report written
- Analysis underway
- Tentative Release to industry vote – June 24



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ITEM 28 – BONDED DETAILS

Part 1, Ref # 28 - Current

Ref #	Feature / Construction	25.863(a) Bunsen Burner	25.853(d) Heat Release and Smoke
28	Bonded Details	See Part 2 of the attachment	<p>The test requirement is decided based on size criteria.</p> <ol style="list-style-type: none">1) Test required if greater than 2 sq ft2) No test if less than 1 sq ft and3) Further considerations required between 1 and 2 sq ft

Definitions

BONDED DETAIL

- an additive element that is secured by non-mechanical means to a panel surface.
- Typical bonded details include, but are not limited to, rub strips, edge trims, hook & loop fasteners, placards, brackets & clips, external wire raceways, kick strips, felt, pre-cured doublers, and plastic mirrors.



Definitions

PANEL SURFACE AREA

- A surface is a single panel or multiple individual panels that butt together with minimal or no gap to provide a contiguous surface.



Definitions

LINEALLY APPLIED

- A bonded detail is considered to be lineally applied when it is a long thin part typically with a width of 2.0" or less and the surface area is spread out in a long, narrow band.



Definitions

CUMMULATIVE DETAIL

- Groupings of small items of same construction, each of which individually falls below the 1 to 2 sq ft rule but as a collective group on a single panel may exceed that criteria.

Part 1, Ref # 28 - Proposed

Ref #	Feature / Construction	25.863(a) Bunsen Burner	25.853(d) Heat Release and Smoke
28	Bonded Detail	Ref Part 2	<p><i>The test requirement for a bonded detail is decided based on size and installation/proximity criteria defined below.</i></p> <ol style="list-style-type: none"><i>1) Test required if cumulative total greater than 2 sq ft;</i><i>2) No test if cumulative total less than 1 sq ft; and</i><i>3) Further considerations required between 1 and 2 sq ft</i><i>4) A Bonded Detail can be excluded from testing if</i>

Part 1, Ref # 28 - Proposed

Ref #	Feature / Construction	25.863(a) Bunsen Burner	25.853(d) Heat Release and Smoke
28 (continued)	Bonded Detail		<p><i>a) It is a bond line less than 1.0" wide on an individual item</i></p> <p><i>b) It is located fully within 2.0" of panel edge</i></p> <p><i>c) It is located fully within 4.0" of cabin floor</i></p> <p><i>(d) It is lineally applied and less than 2 sq ft in total surface area</i></p>



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ITEM 33 – EDGE FILL

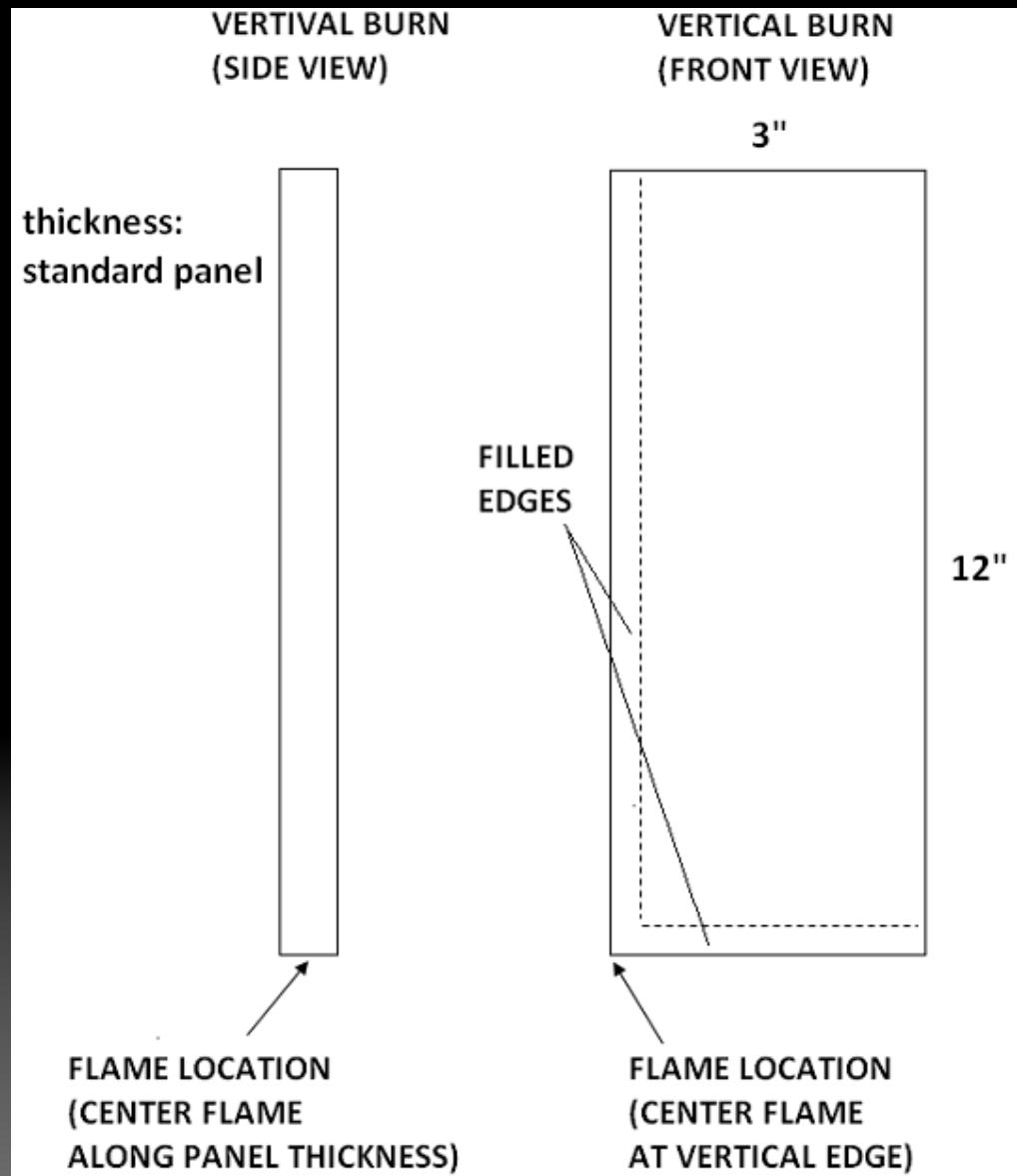
Task Group Members #33

- Dr. Patrick G. Zimmerman (3M)
- Klaus Boesser (SELL-ZODIAC)
- Daniel Boesser (SELL-ZODIAC)
- Dirk Langer (SELL-ZODIAC)
- Scott Campbell (C&D ZODIAC)
- Greg Bunn (Magnolia)
- Bill Marter (Magnolia)
- Chuck Wilson (Gulfstream)
- Dan Slaton (Boeing)
- Hector Alcorta (Bombardier)

Definitions

- Edge Fill Materials are used to reinforce the edges of honeycomb panels and to prevent moisture ingress into the edge of the panel
- Typically, compounds or foams are used to fill an edge

Definitions



Part 1&2, Ref # 33 - Current

Ref #	Feature / Construction	25.863(a) Bunsen Burner	25.853(d) Heat Release and Smoke
33	Edge potting and/or edge foam	<p><u>(Part 1)</u> Test a fabricated section of the panel containing the edge potting compound or foam to 60-second vertical burn.</p> <p><u>(Part 2)</u> 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"> 1. Test required if greater than 2 sq ft. 2. No test if less than 1 sq ft and 3. Further considerations required between 1 &2 sq ft.

Proposed Method of Compliance

Ref #	Feature / Construction	25.863(a) Bunsen Burner	25.853(d) Heat Release and Smoke
3	Edge potting and/or edge foam	<p><u>The edge fill in a panel may be shown compliant using one of the following options:</u></p> <p>Option 1: 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>Option 2: Test a standard panel (see para. 3.2.B) containing the edge fill material per Appendix F - Part I, (a)(1)(i).(60second vertical burn). (Standard Panel 3" x 12" with 0.125" to 1" of the edge fill material),</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"> 1. Test required if greater than 2 sq ft. 2. No test if less than 1 sq ft and 3. Further considerations required between 1 &2 sq ft.

Status

- Data Collection Complete
- Final Report on Sharepoint Site for Comment by Industry Group.
- Review with Regulators June 24th



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ITEM 43 – BONDED JOINTS

Definitions

1. Ditch & Pot (#43a)

- Single ditch:

Applied to fold a panel and build a single joint angle.

- Multiple ditch:

Applied to form a constant large radius/curve

2. Tab & Slot (#43b)

- Tab & Slot joints are used to build T-Joints with two panels.

Definitions

3. Cut & Fold (#43c)

- Applied to fold a panel and build a single joint angle
- Compared to a single ditch just the face sheet of one side is removed and the core is filled with adhesive

4. Mortise & Tenon (#43d)

- Mortise & Tenon joints are used to build a corner joint with two panels

Definitions

5. T Joints (#43e)

- T Joints are used to join two panels.
- Adhesive is applied to the face of panels and to plates. No Material will be cored back

6. Bonded Pins (#43f)

- Bonded Pins are used to reinforce a joint with two panels
- Adhesive is applied to fill the pin and the surrounding honey comb

Part 1, Ref # 43 - Current

Ref #	Feature / Construction	25.863(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 Test required if greater than 2 sq ft. No test if less than 1 sq ft and Further considerations required between 1 & 2 sq ft.
43b d,e,f	Tab & Slot, Mortise & Tenon, T-Joints, Bonded Pins	No Test Required	No Test Required

Part 2 Item # 43 Proposed

Ref #	Feature / Construction	25.863(a) Bunsen Burner	25.853(d) Heat Release and Smoke
43a-f	<p>43a: Ditch and pot</p> <p>43b: Tab and slot</p> <p>43c: Mortise and Tenon</p> <p>43d: Cut and Fold</p> <p>43e: T-joints</p> <p>43f: Pins</p>	<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: The Adhesive is an epoxy based material 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.</p> <p><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".</p>	<p><u>For ditch and pot and cut and fold joints:</u> 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"> 1. Test required if greater than 2 sq ft. 2. No test if less than 1 sq ft and 3. Further considerations required between 1 & 2 sq ft. <p><u>For Tab and slot, Mortise and Tenon, T-joints, Bonded Pins:</u> No test requirement.</p>

Part 2 Item # 43 Proposed

Ref #	Feature / Construction	25.863(a) Bunsen Burner	25.853(d) Heat Release and Smoke
43a-f	43a: Ditch and pot 43b: Tab and slot 43c: Mortise and Tenon 43d: Cut and Fold 43e: T-joints 43f: Pins	<p><u>Option 3:</u> Test the Adhesive in a standard honeycomb panel in accordance with Appendix F Part I (a)(1)(i). Once qualified in this manner, the adhesive may be used in any other honeycomb panel configuration and shown to be compliant by similarity.</p> <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. 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>	



Status

- Collecting Final Test Results from Industry Group Members
- Draft Test Report for Industry Comment on Sharepoint Site
- Further Discussion with Regulators June 24th



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ITEM 44 – FILLET SEALS

Definitions

- 'Fillet Seal' - A seal applied after assembly at the juncture of two adjoining parts or surfaces, or along the edges of faying surfaces as a continuous bead of sealing material. It can be applied over, along the edges of, and between installed parts.
- 'Sealant' – A viscous, elastomeric material which, once applied, changes state to become solid, and is used to fill voids and gaps of various sizes to prevent the passage of liquids or gaseous media, as well as to help meet health and safety requirements, and meeting aesthetics requirements.

Part 2, Ref # 44 - Current

Ref #	Feature / Construction	25.863(a) Bunsen Burner	25.853(d) Heat Release and Smoke
44	Sealant, Fillet Seals	No test requirement	See part 1 of this attachment (Part 1: "No test requirement. Industry has not traditionally tested fillet seals.")

Part 2, Ref #44 - Proposed

Ref #	Feature / Construction	25.863(a) Bunsen Burner	25.853(d) Heat Release and Smoke
44	Sealant, Fillet Seals	Test sealant by itself per Appendix F, Part I, (a)(1)(iv).	No test requirement.

Status

- Data from industry on 6 sealants tested by themselves shows that
 - All of them passed the 15 second HBB test.
 - Only 2 passed the 12 second VBB test.
 - None of them passed the 60 second VBB test.
- Plan to test sealants on OSU-compliant substrates and on Aluminum substrates