

DISPOSITION OF PUBLIC COMMENTS
POLICY STATEMENT NO. PS-ANM-25.853-01 (Formerly ANM-115-09-XXX)
TITLE: Flammability Testing of Interior Materials

No.	Comment	Requested Change	Disposition
Commenter: Airbus			
1	Airbus doubts that the HRR OSU & Smoke NBS chambers are able to consistently distinguish between various sample colors or other subtle variations, as we all know their poor performance in terms of test results reproducibility.		<p>While the reproducibility of the heat release and smoke emissions apparatus are a recognized concern, it's not directly related to the content of the policy.</p> <p>No change was made to the policy statement in response to this comment.</p>
2	Airbus' main concern is the tremendous increase of test cases that may result from this policy, would current similarity approaches be questioned due to insufficient accuracy of test methods like HRR (the conservative approach being to test more instead of relying on a certain sense of reality).		<p>We do not agree that the policy would result in additional tests. In fact, the policy should help reduce the quantity of testing that is required.</p> <p>No change was made to the policy statement as a result of this comment.</p>

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No.	Comment	Requested Change	Disposition
	Commenter: B/E		
1	Part I, Ref. NO.8 25.853(d).	Suggest adding ... “for the same panel construction (i.e. facing ply count/thickness)”.	The policy refers to the same panel construction. No change was made to the policy statement as a result of this comment.
2	<p>I agree with the concept of treating each face separately during the Bunsen burner test of sandwich panels, especially given the suggested name placement described in the fire test handbook, which is always more discriminating (at least for traditional commercial aerospace cores).</p> <p>If the burner is placed directly under the centerline of the panel, the flame gets “smooshed” and barely licks around onto the faces (depending on the panel thickness). Typically the decor or paint drives the burn length, (with seldom any after burn of finish/decor).</p>	Suggest deleting the term “Skin testing” as this implies the skins are removed for test (i.e. separated from the core and the core discarded from test).	The policy statement was revised to clarify that the requirement applies to assembled panels, and the allowance to address each face of the panel in separate tests is for the assembly.
3	Part I, Ref. No. 16 (§ 25.853(d) The way it is currently written implies metal parts as a rule are subject to heat/smoke testing.	Suggest adding ... “Unless they contain magnesium or magnesium alloys, unfinished metal parts do not require testing.”	The policy statement is clear regarding when metal parts may require testing and has been revised to define the threshold amount of magnesium as 10%.

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4	Part I, Ref. No. 17 (§ 25.853(d) The way it is currently written implies that even small powder coated metal pieces (trim, clips, etc.) would require heat/smoke testing.	Suggest adding ... “The least requirement is decided based on size criteria. 1) Test required if greater than 2 sq. ft.; 2) No test if less than 1 sq. ft.; and Specific determination required between 1 and 2 sq. ft.”	The distinction between parts that do and do not require heat release/smoke emissions testing is based on size, and not whether the part is metal. The significant point of the policy was the need to address all colors. However, size criteria are in the description.

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5	<p>Part 1 and 2, Ref. No. 28 (§ 25.853(a)) I support the FAA’s idea of developing a test method to apply to adhesives (proper) so that once tested (qualified at a material level), (the adhesive can be used to join any two parts without further testing [think this would accomplish a number of things: 1) it would provide incentive for adhesive manufacturers to develop fire retardant versions, thus increasing the safety of <i>all</i> interiors, 2) it would reduce repetitive testing requirements for applicants, 3) it would eliminate the current inconsistencies between applicants and alleviate much confusion, 4) it would require adhesives to be tested, thus exempting them from a small part criteria (which is often overused for adhesives, without basis). However - When developing a test method to apply to adhesives I think careful consideration will be required to determine the proper test. An acceptable level of safety for adhesives will have to be determined in conjunction with the issue of current non-compliant materials. For example, if a 12 or 60-second vertical test is selected to apply to a “brick form” of adhesive, this will resolve the current issue of epoxies used for DAP applications (i.e., when adhesive manufacturers develop a new BMS 5-92, Type V version), however, one must also consider what to do with the 60 plus adhesive types in BAC 50-10 (which are used exclusively by industry for interior bonding applications on Boeing airplanes), very few of these types would pass a vertical test in a standalone configuration.</p>	<p>Should probably define acceptable test coupon configuration for the test of “adhesive by itself” option.</p> <p>Also clarify what is meant by “detail and adhesive together.” This could be construed to mean either the detail as bonded to II substrate (i.e. representing actual production configuration), or a layer of adhesive applied to the surface of the detail.</p>	<p>The policy statement was revised to reflect the available data. For methods where a test of adhesive alone is viable, a test coupon is specified. However, the objective of a generic test for adhesives that could be used in essentially any application has not come to fruition. In those cases where the data support not requiring tests, the specific adhesives are not an issue.</p>
6	<p>Part 1. Ref. No. 21 (§ 25.853(a)) Does this mean bonded metal trim?</p>	<p>Suggest adding clarification where this may overlap with “thermoformed parts.”</p>	<p>The policy statement was revised to include definitions that help make the different items distinct.</p>

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7	<p>Part 1, Ref. No. 25 (§ 25.853(a)) There are cases where clear plastic sign lenses are thermoformed (i.e. into a shape). In this case what would the appropriate test be?</p>		<p>The regulation is specific in one case regarding material of construction taking precedence. Otherwise, as noted in item 1, the usage will dictate the requirement.</p> <p>No change was made to the policy statement as a result of this comment.</p>
8	<p>Part 1, Ref. No. 28 and 43 (§ 25.853(a)) Although I do agree with the basic premise of requiring applicants to generate “supporting” data for Part 2 category MOC’s, I am somewhat hesitant to endorse this methodology.</p> <p>If my understanding of this approach is correct (and it may not be) there are a number of reasons why I am hesitant that I will try to articulate here in brief form:</p> <p>1) For applicants who perhaps do not have any supporting data at this time, or who’s management perhaps choose not to invest in generating additional data due to financial limitations, what would the MOC’s be for test/validation of various bonded entities?</p> <p>2) What would be considered “acceptable supporting data” (i.e. who must produce it ? the applicant, a supplier/vendor?, what would acceptable coupon configurations be</p>	<p>Suggest the FAA consider moving Part 2 items #28-1141 back into the Part I category and apply a standard test/certification approach.</p>	<p>The policy statement was revised based on data gathered in support of a generic method of compliance (MOC), that any applicant may use. To the extent that there may be limitations on the MOC, then a specific applicant may require data to support its approach. However, the MOCs in the policy do not require additional data in order to use them within the limitations noted. Items 28, 29, 30, 31, 32, 34, 35, 37, 38, 39, 40, and 41 have been combined into new item 21 and Part 2 is omitted in the final policy statement.</p>

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	<p>? what about the pedigree of the test articles? would there be a level of process and end item inspection required? Who would verify acceptability of this ? Would there be multiple batch/lots required? What about statistical variations, lab to lab, lot to lot, etc.” would there be a requirement for a formal or semi-formal report to be generated or would simple test datasheets archived in a lab somewhere be acceptable</p> <p>I think a better approach would be for the FAA to study and develop a standard test method for testing adhesives for use in aircraft interiors. This could include certain boundary conditions such as (applies to only membrane type bond lines used to attach 2 or more self-extinguishing adhesives, ... etc.).</p>		
9	<p>Part I. Ref. No. 33 25.853(a) Based on our data, testing a “brick form” of potting at or below the thickness of the panel is more conservative. Such allowance would also make the data more valuable to the applicant.</p>		<p>The policy statement was revised to account for this. Where testing of potting compound or adhesive by itself is included as part of the MOC, the test sample is specified, and follows the basic suggestion provided.</p>

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10	Part 1, Ref. No. 42 25.853(a) Just as an editorial note, this would have a significant impact, as floor panel inserts (i.e. bonded using BMS 5-10 Araldite and Epibond 420) will not meet a vertical test requirement. OEM's have large insert allowables data invested over several years. However, Given that insert adhesives cannot currently be classified as small parts, and given they are not self-extinguishing, perhaps this is the lime to phase them out and replace with new self-extinguishing versions.	Suggest clarifying the test coupon configuration.	The data submitted for inserts suggests that with suitable limitations, the adhesive used to bond inserts does not contribute to the growth or propagation of a fire. Therefore, the policy provides the guidance, as well as limitations necessary such that most inserts do not require testing.
11	Part 2, Ref. No. 11 (§ 25.853(a)) I'm not sure I understand the advantage of this. Doesn't the FASE approach preclude this from being an issue?		The FASE approach allows for Bunsen burner tests of the two sides of a panel essentially independently, if the panel is thick enough. In this case, the idea is to accept a decorative on the back face of a panel as being more critical than one having no decorative. This would apply to both paragraphs (a) and (d), and any thickness panel.
12	Part 2, Ref. No. 15 25.853(a) Suggest clarifying does this include natural leather?		The policy is specific to synthetic leathers, and moreover to specific products for which there are data.

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13	<p>Part 2, Ref. No, 38 25.853(a) I assume since this is in the Part 2 category, that this means grommets do not require test ... only if there is supporting data?</p> <p>Per Appendix F Part I(a)(1)(v), grommets appear to specifically be exempt from test if they would not contribute significantly to the propagation of a fire. This may cause a conflict of requirements vs. guidance that may need further clarification. Again, as regarding adhesives, having a standard test method to qualify adhesives would preclude the issue of a bonded grommet.</p>		<p>The policy is global, whereas Appendix F contains the small parts limitation and grommets are an example. The policy does not require testing small parts that would not contribute to the propagation of a fire.</p>

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Commenter: Boeing			
1	<p>As this policy identifies many detailed aspects of a panel design and material characteristics, the use of multiple methods of compliance applied to a single component needs to be clarified.</p> <p>For example, a thermoplastic part can use both Item 23 (<i>Color of thermoplastics, elastomers and floor panels</i>) and Item 2 [<i>Thickness ranges (panels, thermoplastics, foams)</i>] to show compliance.</p> <p>This suggested change would ensure standard interpretation/implementation of Industry practice.</p>	<p>Boeing suggests that the policy specifically state that multiple methods of compliance may be used when showing compliance for a single component.</p>	<p>Some of the policy items specifically refer to the allowed changes as the exclusive change of a given parameter, so in those cases, multiple MOCs could not be combined. However, where there is not a limitation, then more than one provision could be combined. The policy statement was revised to include a discussion of the use of multiple MOCs.</p>
2	<p>The draft policy references Part 25, Appendix F, and the seats special conditions (SC) identifies compliance with Part 25, Appendix F. Clarification and the addition of unique seat features will help to create standardized understanding and implementation of the new policy across Industry.</p>	<p>Boeing requests that FAA provide clarification that this policy applies to SCs that reference Part 25, Appendix F, such as the Boeing seats SC. We also request that FAA add additional information and feature specific criteria to cover unique seats SC items.</p>	<p>The policy statement was revised to include a discussion of the applicability of the MOC to special conditions for large surfaces on seats.</p>

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3	<p>The proposed policy notes that Part 25, Appendix F, Part I, paragraph (b)(2), discusses the method of cutting a section from a panel, but not including the finished edge.</p> <p>When the finished edge provides protection from flame propagation in the installed configuration, testing a section with the finished edge would accurately assess the flammability properties of the installed configuration. When an edge protects the panel cross-section from exposure to flame, testing a sample in a Bunsen burner will provide validation of the resistance to flame propagation in the installed configuration.</p>	<p>Boeing requests that FAA consider adding a provision to allow applicants to test a section with the finished edge for evaluating the flammability properties on panel features buried within a panel.</p> <p>This allowance would be appropriate for items such as panel edge filler, embedded details, insert potting, etc.</p>	<p>The regulation is specific that the finished or protected edge should not be included in a panel test. Edge filler and other details are dealt with elsewhere in the MOC and should not be a significant issue.</p> <p>No change was made to the policy statement as a result of this comment.</p>
4	<p>The proposed policy states that Industry has often used different interpretations to define panel features under “small parts” that do not require testing. Small part criteria will help ensure standardization across Industry.</p>	<p>The FAA has not proposed any specific changes, but has recently formed a new team (through the FAA Technical Center) to develop “small part” criteria. This is a valuable effort, as long as this team coordinates with the various feature-specific Industry teams that currently exist. When considering small part criteria, it is important to consider the impact at the overall cabin level, not just at the detailed part construction.</p>	<p>The FAA work on defining an acceptable standard for “small parts” is ongoing and, while it will be coordinated with Industry, is not sufficiently mature to incorporate into this policy.</p> <p>No change was made to the policy statement as a result of this comment.</p>

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5	<p>The proposed policy solicits inputs on a method for showing compliance of adhesives used to join two parts, where the adhesive can be qualified on its own. In order to achieve effective standardization across Industry, a thorough Industry review and understanding is necessary. Clearly defining the optional methods (adhesive-based or part-based) is necessary for Industry standardization.</p>	<p>Boeing proposes the following general approach:</p> <p>Consider grouping the common types of bonding into categories, such as:</p> <ol style="list-style-type: none"> 1. faying surface bonds (thin bondlines, adhesive not exposed); 2. thicker applications (e.g., DAP, edge potting, etc.); and 3. other bonding using thin bondlines, but where thicker materials are bonded together and/or adhesive is buried in the construction such that it has little exposure and flammability effect (e.g., T-joints, thicker plastics bonded to panels, mirrors, kickstrips, rubstrips, etc.). <p>These categories would be assessed as to whether the exposed adhesive presents a potential for being exposed to a flame in the installed configuration. For many of these features that do not pose a significant exposure, the applicable test requirements on the parts/components that are being bonded together will suffice to show compliance of the bonded configuration. If the FAA considers that a basic test is required on the</p>	<p>The policy statement was modified using the data available to effectively do what the comment suggests. The criteria for the various items using adhesives include considerations of the different uses and the location of the adhesive.</p>

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		<p>adhesive, basic horizontal Bunsen burner testing of the bonded configuration or a plaque of the adhesive by itself should be sufficient. Use of the foam block test will establish realistic part performance of the various types of bonding configurations, to support the requirements.</p> <p>Any approach that is developed will need additional public input to validate its viability. Considerable inputs will come from the Industry feature teams for Items #28 - 41, and Items #33/43a-f. Any approach to evaluate just the adhesive is valuable to Industry, but this should not be the only method identified, since specific applications and installation configurations may have other methods for showing compliance.</p>	

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6	<p>Implementation may not be viable on the date that the final policy is released, depending on the final proposals from the Industry teams. It is appropriate that the Industry teams discuss implementation aspects based on their proposals, which will create standard implementation dates across Industry. Requiring issue papers should be a last resort, as this diverges from Industry standardization.</p>	<p>Boeing requests that the “default” time suggested by the FAA be defined in more detail. We recommend that Industry teams address the necessary time required to implement the new policy, based on proposals developed by the Industry teams. Depending on the type of changes proposed by the Industry teams, adequate time may be required for developing materials; creating new designs; developing and validating new fabrication processes; fabricating the actual production parts; and performing certification activities. These are all necessary before the new policy can be fully implemented.</p> <p>We also recommend that the policy allow a standard approach to enable Industry-wide implementation, rather than requiring each applicant to submit an issue paper.</p>	<p>The issuance of the final policy statement was significantly delayed, beyond that originally anticipated. As such, and because much of the industry data to support the policy have been presented publicly, the policy will be in effect when issued. As noted in the policy, previously approved items can continue to be used, but new type design changes should meet the policy or be approved with another acceptable MOC. In terms of issue papers, use of the policy should not require an issue paper, as the policy itself provides the standardized MOC. Issue papers for variations or project-specific issues may still be needed.</p> <p>No changes were made to the policy statement as a result of this comment.</p>

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7	The original intent of the regulation is to address large area panels and not the local features of the panel. The Industry teams will develop feature-specific criteria for standardization across Industry.	Boeing requests that the policy address any unique size criteria for individual features. Proposals will be developed by the Industry teams as to when a feature is necessary to be covered under the original heat release size criteria and intent of the heat release regulation. Once specific criteria are defined, additional public comment will be required.	Where applicable, the policy statement was revised to include a discussion of the size of the affected components. The size criteria are taken directly from the preamble to Amendment 25-83, which went through the public comment process.

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8	<p>Item 27 This proposed MoC is in conflict with specific wording in Appendix F. The intent of Item # 27 - the part installation overrides the test method applicable to the material - is intended to apply to large parts defined in Appendix F, Part 1, paragraph (a)(1)(i), made from materials called out in paragraphs (a)(1)(ii) and (a)(1)(iv).</p> <p>For example, a sidewall panel made from a thermoplastic material would have to be tested to the 60-second vertical flammability test called out in paragraph (a)(1)(i). For configurations requiring testing in accordance with paragraph (a)(1)(ii), the material test requirements defined in paragraph (a)(1)(iv) take precedent in accordance with the provision “... <i>that are constructed of materials not covered in subparagraph (iv)</i>” in (a)(1)(ii). [For example, a flex duct made from an elastomeric material would have to comply with the 15-second horizontal flammability test of paragraph (a)(1)(iv).]</p> <p>(This portion of the proposed policy would also benefit from clarification of the test requirements in cases where a textile is used for specific types of applications such as a curtain, partition, decorative item, etc.)</p>	<p>Boeing requests that FAA add clarification that the wording in Part 25, Appendix F, Part 1, paragraphs (a)(1)(ii) and (a)(1)(iv) overrides this proposed method of compliance (MoC).</p>	<p>The policy statement was revised to note the exception raised by Boeing.</p>

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9	Item 9 Clarification is needed to standardize correct interpretation across Industry. (For example, some interpretations of the proposed policy may decide that both the tested and the panel being certified need to be greater than 0.25".)	<p>Boeing requests further clarification on what type of sandwich panels this applies to, and whether there are certain types of panel constructions to which this does <u>not</u> apply. Clarification of Industry-accepted practice and specific definitions should be defined by the Industry teams.</p> <p>Additionally, another design configuration that needs clarification is whether there are any unique criteria if the panel has bonded aluminum on a face.</p>	This item (now item 10) was revised in the final policy statement to indicate that the only difference between panels is the core thickness. Otherwise, there is no restriction on the type of sandwich panel.

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10	Clarification is needed in order to achieve Industry-wide standardization. Some interpretations could be developed that do not allow any metal alloy that contains magnesium, and this would not be current Industry practice. We recommend that the FAA establish appropriate test methods for magnesium, and propose a new rule/policy, as appropriate.	<p>Boeing requests a clear definition of what constitutes a magnesium alloy, and what percentage level of magnesium content is acceptable in other metallic alloys. Some aluminum alloys contain magnesium, but are not considered a magnesium alloy. We recommend that Industry metal handbooks be used to define families of alloys that are not subject to a magnesium alloy.</p> <p>In addition, since there are no regulations that restrict magnesium, and testing has shown that a Bunsen burner test is generally not adequate to certify a magnesium part, we recommend that the FAA withdraw “<i>Bunsen burner testing</i>” as an applicable test method for magnesium.</p>	The policy statement was revised to define “magnesium alloy” as an alloy with 10% or more magnesium.
11	Item 21 Clarification is needed in order to achieve Industry-wide standardization.	Boeing requests that FAA clarify this section to indicate that non-bonded (fastener attached) edge trim is not required to be tested.	In the final policy statement item 21 was combined with other “bonded detail” items, and there are now several possible methods of compliance. If there is no adhesive, the methods will be simpler.
12	Item 22	Boeing requests that FAA clarify if there are any applications or size criteria (area, thickness, painted, or bare) where testing <u>would</u> be required, and align this with the requirements of Part 1, Item 16.	The final policy statement was revised to include a minimum thickness and the limitation of 10% magnesium content.

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13	Item 25	Boeing requests that FAA clarify if there is any further criterion related to designs where transparency is a critical feature, and whether there is a relationship to the direct-view requirements in a partition/class divider related to Amendment 90-12. Does this apply to passenger windows?	This item was not the subject of additional data submittals and the way it has been historically applied is unchanged. No changes were made to the policy statement as a result of this comment.
14	Item 26	Boeing requests that FAA include additional descriptions and criteria to allow certification test data generated by testing boards with or without copper tracing patterns to be used to certify boards with any copper tracing pattern, provided the conformal coating, laminate, and solder mask are the same.	The final policy statement was revised to reflect this comment in accordance with the data available.
15	Item 42	Boeing suggests that FAA define a standard test configuration, unless this requirement becomes unnecessary due to resolution of Part 2, Item 42.	The policy excludes standard insert patterns from testing, based on the data available, so no change to the policy statement is necessary.
16	Item 33 Our requested change would help standardize interpretation of the new policy.	Boeing requests that FAA define and include a standard test configuration for both Parts 1 and 2. Include allowance to test the edge configuration with the finished edge treatment.	The policy statement was revised to offer multiple MOCs, and describes the test configuration.

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17	<p>Item 42 General Comment: Current test data exist to validate this requirement. Foam block testing has validated that there is no ignition and propagation on bonded inserts. Inserts are installed in a manner where only the insert is exposed, and the adhesive/potting material is not exposed, but is fully encapsulated in the panel. This information provides conclusive evidence that bonded inserts do not contribute to the spread of fire.</p>		<p>The policy excludes standard insert patterns from testing, based on the data available, so no change to the policy statement is necessary.</p>
18	<p>Item 43a Ditch and Pot joints are essentially “edge” features, just like mortise and tenon, etc. The type and amount of adhesive materials used are similar at the detail part level. Any differences in the amount of material are insignificant when considering the overall cabin installation. Recent foam block testing has indicated insignificant flame spread on these panel joint constructions. These changes provide consistency with all panel “edge” features.</p> <p>Allowing testing of the adhesive by itself will create consistency and standardization across Industry.</p>	<p>Boeing suggests that this proposed requirement be consistent with other panel “edge” features, like mortise and tenon, and tab and slot. We ask that FAA:</p> <ul style="list-style-type: none"> • allow for adhesive/potting compound used in a DAP joint to be tested by itself; and define a standard angle and base panel on which to test. 	<p>Items 43a through 43f have been combined and the final policy statement now offers multiple MOC. The standard configurations are provided.</p>
19	<p>Item 4 Boeing requests that FAA clarify that usage of this approach can be used in combination with other items, such as thickness ranges, color of decorative, and skin ply orientation, to name just a few.</p>	<p>Clarification is necessary to ensure standardization of interpretation and implementation across Industry.</p>	<p>The final policy statement was revised to include a discussion regarding combining multiple MOCs.</p>

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20	Item 5 Clarification is necessary to ensure standardization of interpretation and implementation across Industry.	Boeing requests that FAA clarify and define what is meant by “same” chemistry, including specific additives like pearl essence, water-based, acrylic-based, etc. Clarify that this color of ink method of compliance applies where inks are used in all types of decorative laminates.	The final policy statement was revised to include a list of definitions, which includes the term “same.”
21	Item 6 Clarification is needed on what kinds of panel differences are allowable under this policy item, such as panel thickness. We consider it is appropriate that other minor panel differences should be allowable when applying this MoC.		No data were submitted to support this item, so it does not appear in the final policy statement.

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Commenter: Michael Bailey			
1	<p>This is a very critical policy and so it is important that it is not being rushed through. This policy is important also in that it provides groupings of materials that must be tested and how they can be tested in the category 1 pages, eliminating interpretation of what and how to test. Before this there seems to have been some confusion by manufacturers on the specifics of what and how to test, leading to a certain lack of standardization in this key area. While the categories and testing methods in the category 2 pages are largely experimental pending supporting data, a number of them will probably be able to move to category 1 pages after a year or so of supporting data and evaluations. But the proposals in the category 2 pages must not be rushed into category 1 because safety is too important and should not be compromised for any reason. Taking time to get good, reliable results is what is necessary. The testing being done to find an adhesive to join any two aircraft parts and that can qualify on its own for fire testing is of high importance because it should simplify the category 2 processes. But again, time should be taken if it is one year or more to make certain the adhesive that is chosen will be fire safe, will</p>		<p>This is a supportive comment and no changes were made to the policy statement as a result of this comment.</p>

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	<p>perform to the highest standards in an emergency, and can be verified by tests and studies to be effective in all conditions it is likely to encounter. We need an adhesive for aircraft parts of the kind proposed in this policy, but we don't need to rush and make mistakes to get it online faster. I need to fly from time to time and safety is a very important concern. This is an important policy that should move forward.</p>		

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No.	Comment	Requested Change	Disposition
Commenter: Stephen Brown			
1	Can the specimen be made from similar sandwich panels from different manufacturers? e.g., Using a composite panel from manufacturer A to substantiate the same type of panel from Manufacturer B.		This is unlikely, unless the two manufacturers have the same design data, such that the flammability performance is the same. No changes were made to the policy statement as a result of this comment.
2	Does the evaluation criteria for core density variations in Part 2 reference 3 mean you can use aluminum honeycomb material to substantiate nomex honeycomb?		No. The assumption is the same material, with the only variation being the density. No changes were made to the policy statement as a result of this comment.
3	Does the resin type evaluation criterion for the Fiber reinforcement cloth in Part 2 reference 7 mean you can substantiate panels from one resin system with another resin system?		No. It is based on the resin system being consistent No changes were made to the policy statement as a result of this comment.
4	Does a specimen have to come from the same material lot as was used in the construction of the interior component?		No. However, this is an ongoing quality control concern. The type design should be sufficiently descriptive to define the part, as well as the specimen. No changes were made to the policy statement as a result of this comment.

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5	What type of data is needed to perform the evaluations? Does an applicant need the original manufactures data for the interior component and the material vendor or is it sufficient to use visual inspections and physical measurements to determine if a specimen meets the specified criteria?		<p>The general answer is that design data are necessary. However, there may be some monolithic parts/materials where the amount of data necessary is not as extensive.</p> <p>No changes were made to the policy statement as a result of this comment.</p>

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No.	Comment	Requested Change	Disposition
Commenter: CEAT			
1	<p>Part 1, item 1, § 25.853(a): In some cases, materials pass the 60-second test and fail the 12-second test. Will they be acceptable for applications which only require the 12s test?</p>		<p>While this is an observed phenomenon, the method is considered acceptable, because the 60-second test is generally regarded as more severe.</p> <p>No changes were made to the policy statement as a result of this comment.</p>
2	<p>Part 1, item 2, Is this substantiation applicable to sandwich (or multilayer) materials? On this kind of material, we used to recommend testing the thinner and the thicker. Applicable if only one component/layer varies in thickness.</p> <p>Not sure that the thinner configuration is always the more critical one. Especially when the thickness (or the ratio) of the most “combustible” material increases.</p>	<p>This substantiation should be limited to monolithic/single layer materials.</p> <p>On sandwich materials, we should test the thinner and the thicker construction or at least define thickness ranges as described on Item 2 of Part 2 (heat release & smoke test).</p>	<p>The policy statement was revised to address the issue of thickness ranges by specifying very close ranges, which can then apply to either type of panel.</p>

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3	<p>Part 1, item 13. Depending on the orientation, some textured materials can show test results that are very different. (see pictures below).</p>  <p>Different textures can show different orientation effects. Textures which can potentially show an orientation effect should not be considered as equivalent (and should be tested in various orientations).</p>		<p>While there may be some instances where the orientation of a given texture could influence the Bunsen burner test results, the general policy permitting one orientation to substantiate another is valid.</p> <p>No changes were made to the policy statement as a result of this comment.</p>
4	<p>Part 1, item 13 Are fabrics & weaved materials covered by this item?</p>		<p>The policy statement was revised to include a definition of decorative laminate that excludes textiles and woven items.</p>

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No.	Comment	Requested Change	Disposition
Commenter: Delta			
1	Only addresses OEM, but not modifications.		<p>While some of the practices might be different, the compliance requirements are the same. So, any of the MOC in the policy statement are usable for modifications as well as design variations.</p> <p>No changes were made to the policy statement as a result of this comment.</p>
2	Use consistent terms		The policy statement was revised to use consistent terminology, including a list of definitions.
3	What is easily disassembled? How do gaps between layers get addressed?		Individual items have been modified in the policy statement to describe the types of fastening and bonding that are included. No data were submitted to address gaps between layers so, to the extent that these would influence a MOC, an individual project-specific MOC may be needed.

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No.	Comment	Requested Change	Disposition
Commenter: Magnesium Elektron			
1	<p>Item 16. Unfinished metal parts do not require testing. Bunsen burner testing does not apply to magnesium or magnesium alloy containing parts, finished or unfinished. Alternative testing for magnesium or magnesium alloy parts is being considered and may be required.</p> <p>Item 17: Powder coated metal parts do not require testing. Bunsen burner testing does not apply to powder coated magnesium or magnesium alloy containing parts. Alternative testing for magnesium or magnesium alloy parts is being considered and may be required.</p>		<p>We agree with the commenter. The policy statement was revised to specify the quantity of magnesium that constitutes a “magnesium alloy.” However, test methods to address magnesium are not finalized and are not included here as they are beyond the scope of this policy.</p>
2	<p>Item 16. The feature/construction description is Aluminum/steel/titanium parts. And yet a comment is made on magnesium. I would think that there are also applications of brass, zinc, tin and other metals, albeit minor. I don’t believe the scope of this specification is entirely structural applications, so shouldn’t the feature/construction just be “metal parts?”</p>		<p>The purpose of the caveat for magnesium to address potentially flammable metals, of which brass, zinc, and tin are not. The policy has been revised to specify magnesium quantity and also added notes to refer to any case where a metal is known to be flammable.</p>

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No.	Comment	Requested Change	Disposition
3	Item 20. Limitation – Bunsen burner testing does not apply to detail constructed of magnesium or magnesium alloys. Alternative testing for magnesium or magnesium alloy details is being considered and may be required.		The policy statement was modified to specify the quantity of magnesium that constitutes a “magnesium alloy.” However, test methods to address magnesium are not finalized and are not included here as they are beyond the scope of this policy statement.

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No.	Comment	Requested Change	Disposition
Commenter: Schneller			
1	Clarify what is permissible as MOC; policy seems to indicate applicant can pick and choose.		Each item in the policy statement essentially stands on its own, so an applicant may or may not need to use all of them. However, to the extent that an item is covered by the policy, deviation from the policy statement would require specific approval.
2	Define terms used in the policy (e.g., decorative, laminate, paint/ink).		We agree with this comment and have included definitions in Attachment 3 to the policy statement.
3	Items would be better understood with illustrations.	Add illustrations and figures where possible.	We agree with this comment and have included figures where possible.
4	Part 2, item 4 how does cell shape get addressed for OSU?		The policy statement was revised to address core size by testing with the largest and smallest cells.
5	Part 2, item 23 presumes there actually is a critical color.		The policy statement was revised to address color and place limitations on the extent to which one color can substantiate another color.
6	Should also address aftermarket.		As noted, the policy applies equally to both new certification projects and modifications to already certificated airplanes.
7	What is easily disassembled? How do gaps between layers get addressed?		Individual items were revised in the policy statement to describe the types of fastening and bonding that are included. No data were submitted to address gaps between layers so, to the extent that these would influence a MOC, an individual project-specific MOC may be needed.

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8	It is common Industry practice to use edge primer/adhesives when applying decorative laminates to a refurbished panel. Schneller believes this limited use on certain edges meets the intent of “small parts, that would not contribute significantly to the propagation of a fire,” and therefore separate flammability substantiation above the basic panel construction.		The FAA agrees that, if the use of these supplemental adhesives on edges meets the intent of the “small parts” provision, then that approach could be taken. However, since the use of such supplemental adhesives is highly specific, and based on the recommendation of the decorative laminate supplier, a generic criterion is not appropriate. No change was made to the policy statement.

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No.	Comment	Requested Change	Disposition
Commenter: Weber			
1	Regarding adhesive testing various methods are currently used in Industry and in the past we have tested adhesives separately by placing them on inert backings. Would this leave adhesives out of oil burner testing?		Where adhesive is involved, the policy statement was revised to permit multiple MOC. The MOC specifies how the test coupon would be fabricated. The policy does not address oil burner testing, so there is no impact to that method.
2	Both Section 1 and 2 Tables indicate means of compliance for various items where one piece of test data can qualify less critical parts or configurations of the same/similar material.	Please clarify the placement of these MoCs being in Section 1 or 2 when they both require test data to substantiate the parts.	The policy statement was revised to only address those items for which data are available to support a MOC, so there is only one table of MOCs in the final policy statement.
3	How does this policy apply to technical standard orders? Certain articles, installed with compartmental furniture or shells, are especially affected by rationales found in this policy.		The use of this policy statement to meet the minimum performance standards of a Technical Standard Order (TSO) depends on whether the TSO makes reference to 14 CFR requirements—in which case the policy is valid, or contains the requirements directly—in which case the applicant may need to obtain the concurrence of the overseeing Aircraft Certification Office in advance.
4	Weber recommends a 9 month time frame for implementation of the policy to adequately allow for adjustment to any affected practices.		The issuance of the final policy statement has been significantly delayed beyond that originally anticipated. As such, and because much of the industry data to support the policy have been presented publicly, the policy will be in effect when issued. As noted in the policy statement, previously approved items can continue to be used, but new type design changes should meet the policy or be approved with another acceptable

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			<p>MOC.</p> <p>In terms of issue papers, use of the policy should not require an issue paper, as the policy itself provides the standardized MOC. Issue papers for variations or project specific issues may still be needed.</p>
5	<p>Item 1 Please clarify--is the 60-second test an alternative to the 12-second test? Would this policy allow all horizontal testing to be replaced with vertical Bunsen burner testing?</p>	<p>Make it clear whether all vertical testing will substantiate horizontal tests.</p>	<p>The policy statement is clear in this regard. The 60-second test is considered more severe than a 12-second test, and the vertical test is more severe than the horizontal test.</p> <p>No change was made to the policy statement in response to this comment.</p>
6	<p>Item 1 There is no guidance on what is called "specific determination" for panels between 1sq. ft. to 2 sq. ft.</p>	<p>Please clarify the size evaluation and its impact on heat release applications. If an item is less than 1 sq. ft. and is not used in a multi piece construction, or paneled, or found in a high concentration in an area, must it be considered at all?</p> <p>Must the said part also be included in the total 1.5 sq. ft. exemption or can it completely be disregarded ?</p>	<p>The policy statement was revised to add a discussion from Amendment 25-83 to help make this clearer. However, there will still be instances where the installation will have to be addressed on a case-by-case basis.</p>
7	<p>Item 27 The example of the carpet being installed on the sidewall needing to meet 60-second demonstrates an issue with the ambiguity of the term "side wall." If a seat structure/panel borders the side of the aircraft interior is it considered part of the</p>		<p>These questions go beyond the intent of the policy and are highly installation-specific. No clear, generally applicable guidance is available to address the issues raised.</p> <p>No change was made to the policy statement as a</p>

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	sidewall and subject to the installation requirements? To what level are assemblies tested? That is, how many components constitute a qualifiable assembly? How do we determine which items should be qualified individually and which as assemblies?		result of this comment.
8	Item 9 Are both sides tested or does testing one face only qualify the assembly?		The policy makes it clear that each face requires substantiation. No change was made to the policy statement as a result of this comment.
9	Item 9 This appears to conflict with Item 2 on page 8 that thinner articles are used to qualify thicker.		There is no conflict, because as noted above, each face does require substantiation No change was made to the policy statement as a result of this comment.
10	Item 15 If test data for 25.853 (d) is required for each color of synthetic leather/suede than why is it found on part 1 classification that does not require additional data? Is there evidence that color variation does have an effect on Heat Release, but potentially not on vertical burn? Why do the MOCs differ? For § 25.853 (a) compliance, if the MOC to qualify all colors of one leather/suede sample is in Part 2 and requires additional data to support the rationale, then are there any methods that are currently acceptable		The policy statement was revised in light of data available to limit the MOC to certain synthetic leathers. The data show differences between Bunsen burner performance and heat release performance.

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	without data that can be added to part 1?		
11	Item 15 Though page 3 states that “any detailed items not listed with not be the subject of general guidance,” if there is sufficient understanding of mfg processes and material properties for synthetic dress materials, can a statement also be made for natural leathers an fabrics?	Please provide a similar MOC for natural leathers and fabrics (coverings).	No data were available for natural leathers, so there is no change to the policy statement.
12	Item 16 Is the heat release testing only required for metals that contain magnesium or magnesium alloys? Should all metal panels over two square feet be tested for heat release and smoke density? Why are metallics addressed at all for § 25.853(d) since the Special Conditions have clearly delineated that only non-metallics are considered?		The policy statement was revised to be more specific about the types of metallic parts that might require substantiation. The seat special conditions address the specific designs proposed, none of which have involved flammable metals. Should such designs be proposed, they would be covered by a special condition as well.
13	Item 17 Is the heat release testing for powder coating only required when the powder coat is applied to metals that contain magnesium or magnesium alloys? Which substrates require testing for powder coat colors?		As noted in the policy statement, if heat release testing is required, each color requires substantiation, regardless of the metal. No change was made to the policy statement as a result of this comment.
14	Item 18 Is the policy to test the panel with a decorative laminate on a metal skin applicable only when panel consist of non-metallics as well as metallic skin?		No data were available for this item, so it does not appear in the final policy statement.

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15	Item 21 Why would not all metallics be excluded since they have been shown to not contribute to the propagation of a fire?		<p>There is potential for any finish to dominate the flammability behavior of a very thin metal. The policy simply does not exclude such thin metal parts, but an applicant could still argue that tests are not required.</p> <p>No change was made to the policy statement as a result of this comment.</p>
16	Item 24 Why do we have conflicting thickness range qualification between § 25.853(a) (where any burn property differences are not addressed) and § 25.853(d) (where burn property differences are closely controlled)?		<p>These two items have been combined in the policy statement, so they are now consistent.</p>
17	Item 26 Those wiring boards that can be shown to not contribute to the propagation of a fire should not require testing.	Please clarify whether circuit boards of “all sizes” require testing.	<p>The provision for “small parts that would not contribute significantly to the propagation of a fire” does not exclude wiring boards. The MOC applies when the wiring boards cannot meet those criteria.</p>
18	Item 28 Does this apply to individual details or the sum of all like details? For example, if more than two square feet of hook and loop tape is used on a seat, does it require smoke density and heat release testing? Does this include bonded details that contain metallics? Why are metallics addressed at all for § 25.853(d) since the Special Conditions have clearly delineated that only non-metallics are considered?		<p>In the final policy statement this item was revised and combined with other items, to make some of these distinctions clear.</p>

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19	Item 33, 43a and 43d	Is 12-second being replaced with 60-second vertical burn test?	No. The policy statement was revised to specify when each test applies.
20	Item 2 Since this item is in the Part 2 group that “require supporting data” does this suggest that supporting data is required to establish these thickness ranges? If not, and only one piece of data within a thickness range is sufficient, how does this differ than the Part 1 method for § 25.853(a) compliance of thickness ranges?		Supporting data for thickness ranges was made available and the policy statement was revised accordingly.
21	Item 7 Does this apply to any cloth of the described composition regardless of use? i.e., fireblocking or composite materials?		No data were made available for this item, so it does not appear in the final policy statement.
22	Item 15 Does this apply to all manufacturers or is each manufacturer qualified separately?	This should apply for similar manufacturing processes only.	As noted above, the data available only apply to certain manufacturers. Other manufacturers would need to supply their own data. No change was made to the policy statement as a result of this comment.
23	Item 23	Please clarify definition of integrally colored. Does this exclude plastics that are processed using neutral resins and colored dyes?	The intent is to distinguish a topically colored thermoplastic from one with uniform color throughout its thickness. No change was made to the policy statement as a result of this comment.

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24	Item 28	Can any part be qualified individually and excluded from testing as an assembly? At what levels must parts be tested as an assembly?	The policy statement was revised to combine item 28 with several other items, and offer multiple MOCs. The MOCs provide the details of which parts need testing and how.
25	Item 28	This suggests that bonded details may be tested without adhesive. While the FAA is investigating alternate testing methods, this suggests we may test bonded details without their adhesives as long as we can establish with testing that adhesives have no impact on bonded details.	In the final policy statement items 28, 29, 30, 31, 32, 34, 35, 37, 38, 39, 40, 41 were combined into new item 21, which permits multiple MOCs all of which involve the adhesive. This change to the policy statement is supported by data.
26	Hook and loop tape in Section 2 for both §§ 25.853(a) and 25.853(d) refer to bonded details MOCs.	Hook and loop tape is not always bonded to surfaces. Please clarify.	As noted, this item was combined with others, and only applies when the hook and loop is bonded.