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The following was e-mailed to '9-NPRM-CMTS@faa.gov' on 17th January 2001 at 15.53 GMT as required in the NPRM. As no confirmation of this file having been opened has been received, and a new means of submittal has been found on the FAA website today, we hereby repeat the submission for consideration.

Quote

I, Robert Ayerst, a member of the International Aircraft Working Group having attended the last two meetings representing Senior Aerospace BWT, a company situated in Great Britain manufacturing ECS Ducting and Cabin Insulation, submit on their behalf the following comments on the NPRM 'Improved Flammability Standards for Thermal/Acoustic Insulation Materials Used in Transport Category Airplanes' :

a) Proposed Flame Propagation Test.

1. Whereas Fuselage Insulation Blankets and Duct Insulation can be and often are constructed from similar or identical materials, their physical construction is normally significantly different. Blankets will normally consist of insulation encapsulated within a cover as has been described for the proposed new flame propagation test sample. This may be achieved by heat sealing or taping. Duct Insulation could take the same form, but to minimize weight normally only the outer side consists of a cover with the insulation being directly laid on the duct and secured with tape. In some instances the insulation side may have to be adhered to the duct. None of these aspects appear to have been considered in the new rule making process despite having been raised in International Aircraft Working Group Meetings.

2. Blankets are normally several inches thick and may be compressed within the encapsulating cover. Duct Insulation is seldom in excess of an inch thick, but may also be compressed to a s little as 0.25in thick. It is not clear whether the apparatus described and especially the holding frame is suitable for testing such samples. The nature of the insulation can also affect the flammability of the duct and 12-second vertical flammability is currently tested as a combined construction, and would presumably still be required.

3. Where Duct Insulation is applied to flexible ducting it is accepted practice to adhere the cover to the batting to avoid excessive insulation breakdown and slumping

(where the insulation falls to one side of the duct). It is not known whether acceptable adhesives can be developed to meet this test for covers of the normal cost level such as PVF. Should Polyimide covers be required or even the current fiberglass insulation system have to be replaced by polyimide foam with say a Hypalon coating, the cost of the insulation will be significantly adversely affected with a material cost increase of up to 700%. This is in direct conflict with the NPRM claim that the proposal would add no cost as currently available materials meet the requirement.

4. In addition to external duct insulation there are duct silencers (or mufflers) where the acoustic insulation is completely contained within the duct and no cover in the accepted sense is employed. There is no recognition of this situation in the NPRM and there can be no expectation at this stage of development that the full duct will meet or could be tested to the proposed new propagation test. Either the intention is that the 'insulation' by itself should be qualified to the test or it is more sensible to redefine more clearly the requirement as applying only to externally applied duct insulation. The latter is preferred as duct flammability requirements are already met, and only in this case is there a possibility of the quoted high potential for ignition from electrical arcing or other sources.

5. There are other instances of internal thermal insulation (e.g. within water heaters) which should be reviewed and clarified, as they also may not be related to the potential fire hazard identified as requiring improved performance.

6. The proposed flame propagation test so far has been called for in AD's to qualify Insulation Blankets to replace those with metalized Mylar covers where each individual bag construction must be tested and qualified separately. If extended to Duct Insulation the overall range of combinations with duct types, especially when size and shape are included, does not bear thinking about. Many of these would be impossible to reproduce in the test chamber and often they would be smaller than the specified sample size. Hence a continuation of the use of approved materials, or at least approved material combinations, will be essential. The wording of the proposed 25.856 would only appear to require insulation material conformance, but how does this get interpreted if the insulation is subsequently adhered to the duct?

7. a. No comparative testing or procedure has been developed for the Duct Insulation material situation according to the proposed propagation test.

   b. No round robin evaluation has been successfully carried out to demonstrate satisfactory inter-laboratory reproducibility of the test.

   c. No test regime has been defined for the fastening materials such as self-adhesive tapes, Velcro etc that may have to be incorporated into this type of application.

   d. No rule should be made before a reproducible, reliable test has been defined, demonstrated and incorporated into that rule. The alternative of any rulemaking not coming into effect until a fixed period after the full definition of a proven test is not tenable.

8. The cost of the equipment for the propagation test is excessive especially when viewed in comparison to the present applicable test or even the proposed

burnthrough test (which is only a fifth of the propagation test cost). As the requirement is for less than 2in of burn propagation there can be no justification to adopting an existing instrument designed for exposing 39.25 x 7.25 inches of carpet test specimens with an 18 x 12 in radiant panel. The principles involved should have been adapted to provide an equivalent but far less expensive equipment set up, that consumes far less materials in testing, and would sensibly allow for regular production control testing rather than irregular qualification testing. Further the testing frequency requirement to ensure consistent qualification is unknown as the test reproducibility has not been established. It is therefore impossible to estimate the cost impact of meeting the new rule. For a company with a total annual turnover of approximately $20m only a portion of which involves insulation, there could well be a significant cost impact.

9. The recently issued AD (65 FR 82898 12/29/2000) covers duct insulation not meeting the current flammability requirements that does not have to be replaced for 6 (six) years. In the light of this there seems to be no justification for introducing this new rule with a two year adoption period before due and proper test development and system testing evaluation has been carried out.

b) Proposed Burnthrough Test.

1 This test introduction as a means of increasing escape time is only effective when the fuselage is actually fitted with insulation. Any area not so protected immediately becomes the entry point for fire on fuselage burnthrough and voids the advantages desired. If the need is proven and justified this failure route is not acceptable.

2 Although problems have been identified and proposals made to improve the test performance, no round robin evaluation has been successfully carried out and published to demonstrate satisfactory inter-laboratory reproducibility of the test. No rule should be made before a reproducible, reliable test has been defined, demonstrated and incorporated into the rule. The alternative of any rulemaking not coming into effect until a fixed period after the full definition of a proven test is not tenable.

We trust these comments will be considered by the Administrator before taking action on this proposed rulemaking.

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