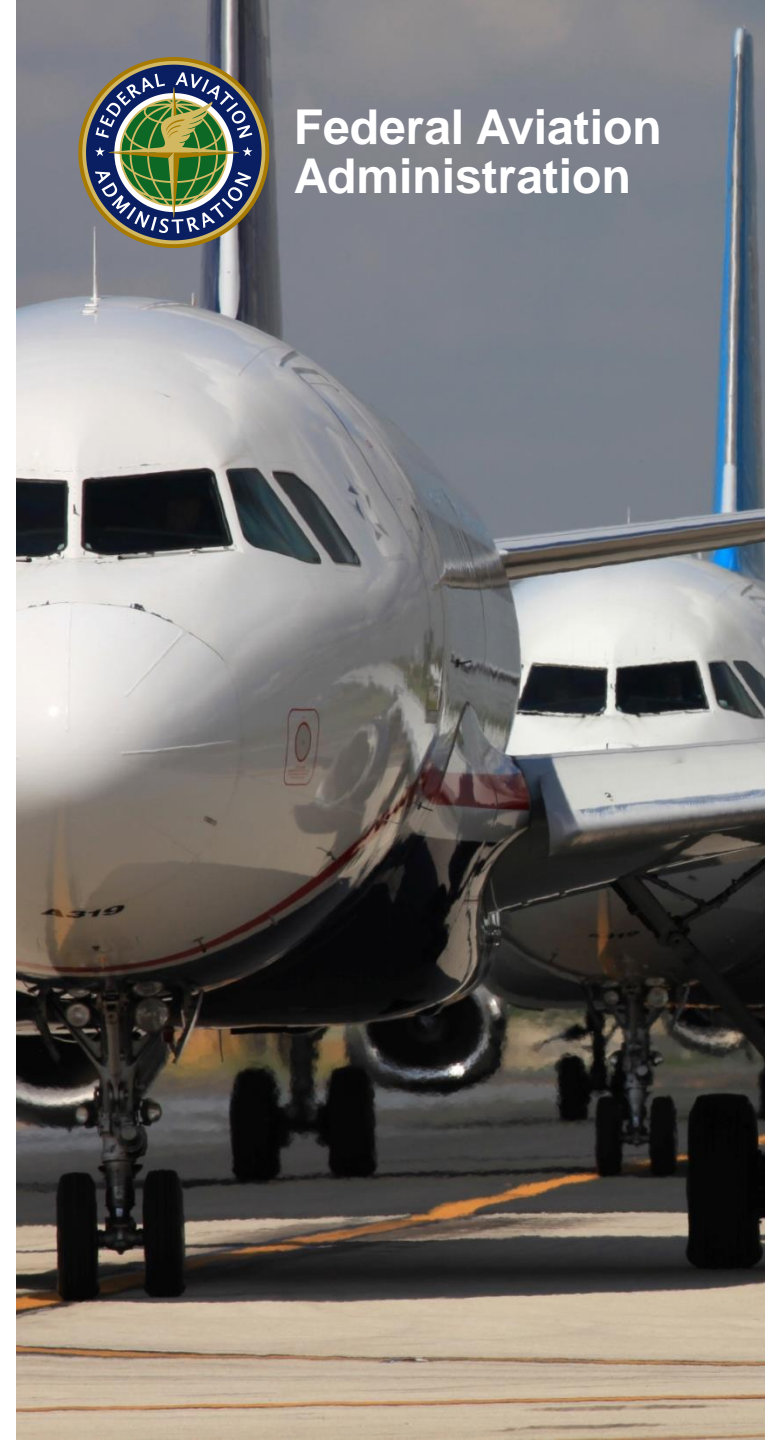


Radiant Panel Update

Presented to: International Aircraft Materials Fire
Test Working Group Meeting
By: Steven Rehn
Date: 10/19/2015



Federal Aviation
Administration



Since the June Meeting

- **Training video is complete**
- **Round Robin samples are ready to be sent out**



Training Video

- **First in a series of new training videos to be made**
- **Purpose of the video is to help make the test procedure more consistent across all labs and to help new labs**
- **Video is posted on Handbook section of the FAA Fire Safety Website
<http://www.fire.tc.faa.gov/>**

Individual Chapters and Appendixes (Latest Update)

09/29/09: In an effort to provide a constant for simplifying the calibration factor calculation in FAR 25, Appendix F, a long standing error was noted in Chapter 5 (Heat Release Rate Test for Cabin Materials) of the Handbook. The constant value located in the equation (Paragraph 5.6.6) is currently 23.55 and should actually be 25.31.

Last update to the Handbook was made on 5/18/06 in accordance with Policy Letter on use of Handbook above.

Chapter	Title
Chapter 1	Vertical Bunsen Burner Test for Cabin & Cargo Compartment Materials Burn Length Determination Lab Test Form - Bunsen Burner Test
Chapter 2	45-Degree Bunsen Burner Test for Cargo Compartment Liners and Waste Stowage Compartment Material Lab Test Form - Bunsen Burner Test
Chapter 3	Horizontal Bunsen Burner Test for Cabin, Cargo Compartment, and Miscellaneous Materials Lab Test Form - Bunsen Burner Test
Chapter 4	60-Degree Bunsen Burner Test for Electric Wire Lab Test Form - Bunsen Burner Test
Chapter 5	Heat Release Rate Test for Cabin Materials Lab Test Form - OSU Heat Release Test Heat Release Rate Calibration Factor
Chapter 6	Smoke Test for Cabin Materials Lab Test Form - NBS Smoke Burner Test Report on the Smoke Chamber Furnace New Furnace
Chapter 7	Oil Burner Test for Seat Cushions Advisory Circular on Flammability Requirements for Aircraft Seat Cushions. Lab Test Form - Oil Burner Seat Cushion Test
Chapter 8	Oil Burner Test for Cargo Liners Lab Test Form - Oil Burner Cargo Liner Test
Chapter 9	Radiant Heat Testing of Evacuation Slider, Ramps, and Rafts
Chapter 10	Fire Containment Test of Waste Stowage Compartments
Chapter 11	Powerplant Hose Assemblies Test
Chapter 12	Powerplant Fire Penetration Test
Chapter 13	Test for Electrical Connectors used in Firewalls
Chapter 14	Test for Electrical Wire used in Designated Fire Zones
Chapter 15	Two Gallon per hour Oil Burner Certification Testing for Repaired Cargo Compartment Liners
Chapter 18	Recommended Procedure for the 4-Ply Horizontal Flammability Test for Aircraft Blankets Lab Test Form - Bunsen Burner Test
Chapter 19	Smoke test for Insulated Aircraft Wire
Chapter 20	Dry Arc Tracking Test Procedure
Chapter 21	Dry Arc-Propagation Resistance
Chapter 22	Cotton Swab Test for Thermal Acoustic Insulation Blankets
Chapter 23	Test Method To Determine the Flammability and Flame Propagation Characteristics of Thermal/Acoustic Insulation Materials Radiant Panel Procedures Training Video: View Online Download
Chapter 24	Test Method To Determine the Burnthrough Resistance of Thermal/Acoustic Insulation Materials
Chapter 25	Oil Burner Flammability Test for Magnesium Alloy Seat Structure
Appendix A	FAA Regulations
Appendix B	The Approval Process
Appendix C	Materials Used in Aircraft
Appendix D	Regulatory Methodology Used By Other Countries
Appendix E	Aircraft Industries Internal Test Methods and Guidelines
Appendix F Updated	Laboratories Actively Using Fire Test Procedures
Appendix G	Commercial Manufacturers of Fire Test Equipment

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Round Robin

- **Materials are ready to send out**
- **Every lab participating must fill out the dimension survey sent out earlier (only received from 12 labs so far)**
- **Will be collecting data on set point, heat flux calibration, chamber temperature along with material test data**
- **Data will be used to help refine Workbook**

Parameter	Handbook Dimension (inches)	Workbook Dimension (inches)	Your Dimension
Chamber (Internal Dimensions)			
Chamber length	55	55 ± 1	
Chamber width (front to back)	19.5	20 ± 1	
Chamber height (above sliding platform)	28 - 30	29 ± 1	
Window length	52	48 ± 4	
Window height	12	9 ± 3	
Chimney (Internal Dimensions)			
Chimney height	13	13 ± 0.25	
Chimney width	4.5	4.25 ± 0.25	
Chimney depth (front to back)	15.5625	15.75 ± 0.5	
Chimney Location			
Center point of chimney from left exterior wall	opposite end of radiant panel	4.75 ± 0.25	
Chimney Position (front to back)	-	centerline ± 0.25	
Sliding Platform (External Dimensions)			
Drawer length (not including slides or flanges that are outside the area where material is placed)	43.75	50.5 ± 0.125	
Drawer width	13.1875	13.5 ± 0.125	
Drawer height	≥ 2	2 - 6	
Drawer heat shield length	41.5	minimum of 44	
Drawer heat shield height	8.25	tall enough so air gap < 1"	
Zero Position (from the inside right edge of drawer)	-	4.375 ± 0.25	
Zero Position (front to back)	-	centerline ± 0.25	
Air gap width on right side of drawer	-	-	
Air gap width on left side of drawer	-	-	
Air gap width behind the drawer	-	-	
Radiant Panel Position			
Panel height above zero position	7.5	7.5 ± 0.125	
Panel Position (left to right)	-	zero position is 0.25" below 2nd emitter strip seam (see figure RPI-4)	
Panel Position (front to back)	-	centerline with sliding platform ± 0.25	
Panel Angle	30°	30 ± 1°	
Pilot Burner Position	already very specific and unchanged relative to zero position		-
Thermocouple			
Horizontal Position	11.5" from right chamber wall	0.5" below the fourth emitter strip seam (see figure RPI-4)	
Front to back Position	11" from back wall	centerline with radiant panel ± 0.25"	
Vertical Position	2" below radiant panel	2 ± 0.125" below radiant panel	

TEST DATA SHEET

Flammability and Flame Propagation Characteristics of Thermal/Acoustic Insulation Materials

Customer:				Date/Time: / /			
Test Facility:				Test Conductor(s):			
Preconditioning: 24 hours minimum at 70 ± 5 °F (21 ± 2 °C) and $55 \pm 10\%$ Relative Humidity							
Begin Date/Time: / /				End Date/Time: / /			
Heat Flux Gauge Serial Number:				Heat Flux Gauge Calibration Slope: W/cm²/mV			
Heat Flux Calibration at Zero Position:							
Initial:		(BTU/ft ² *sec or W/cm ²)		Set Point (optional):		(°F or °C)	
Stabilization Time (30 to 90 minutes):				minutes		System Recheck: (BTU/ft ² *sec or W/cm ²)	
Lab Ambient Temperature (optional):				(°F or °C)		Lab Relative Humidity (optional): %	
Chamber Temperature at calibration (start-up) (optional): (°F or °C)							
Material Description: Fully Identify and Describe the Test Specimen							
Specimen	Sample Width (Inches)	Sample Length (Inches)	Sample Thickness (Inches)	Ignition Time (15 or 30 seconds)	After-Flame Time (≤ 3 Seconds)	Flame Propagation Length (≤ 2 Inches)	Pass if: ≤ 3 Seconds and ≤ 2 Inches
1				15 or 30			Pass / Fail
2				15 or 30			Pass / Fail
3				15 or 30			Pass / Fail
4				15 or 30			Pass / Fail
5				15 or 30			Pass / Fail
Remarks: Shrinkage, melting, glowing, swelling, flashing, char, etc.							

Questions?

