Radiant Panel Activities

Pat Cahill
Patricia.Cahill@FAA.gov

Radiant Panel Activities

- We are constructing a new Electric Radiant Panel Test Apparatus specifically for Thermal Acoustical Insulation.
- The Air Propane Radiant Panel Test Apparatus is officially being retired.
- The Electric Radiant Panel Test Apparatus currently in use will be used for other future R&D flammability testing (i.e., wiring, ducting, etc.).

Radiant Panel Activities

(continued)

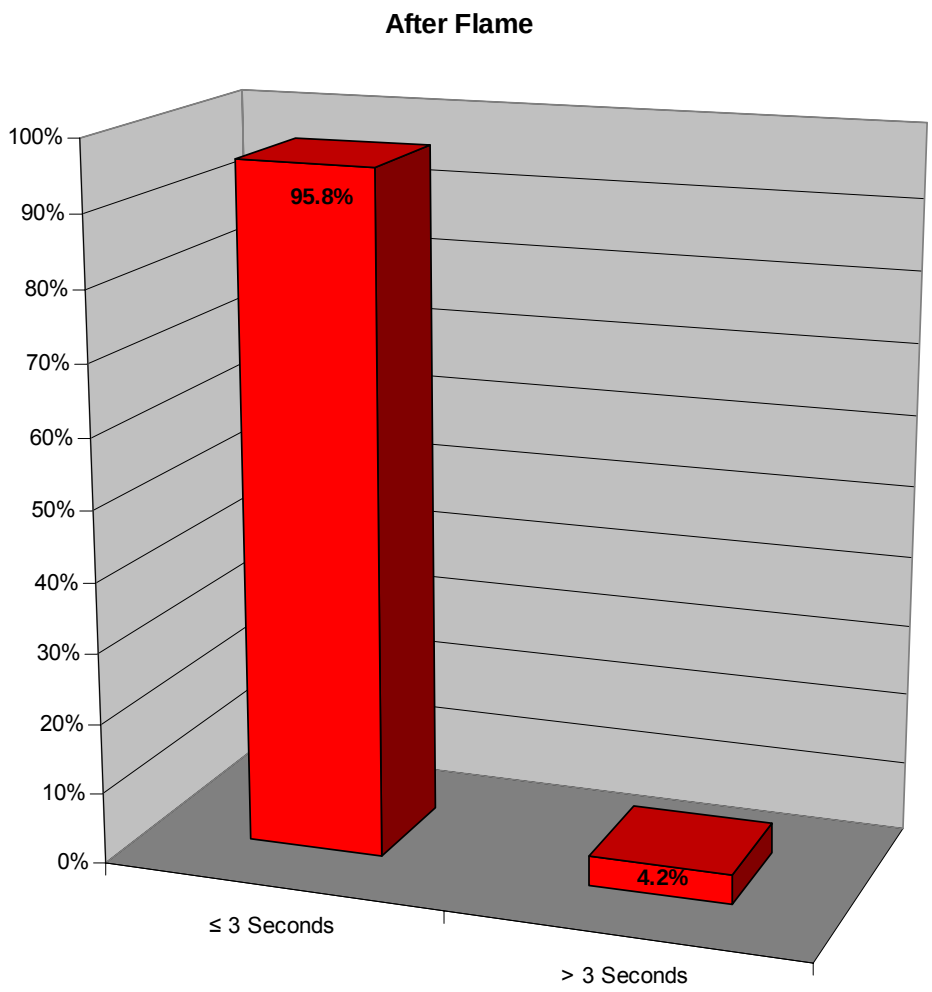
- Polymer Technologies Inc. of Newark, DE has shown to be compliant.
  - The FAA supported this task.
  - They are the most recent lab to be reviewed by the Aircraft Certification Office.
- Completed evaluation of various configurations (size and thickness) of hook and loop samples other than those proposed in the Advisory Circular.

Radiant Panel Activities

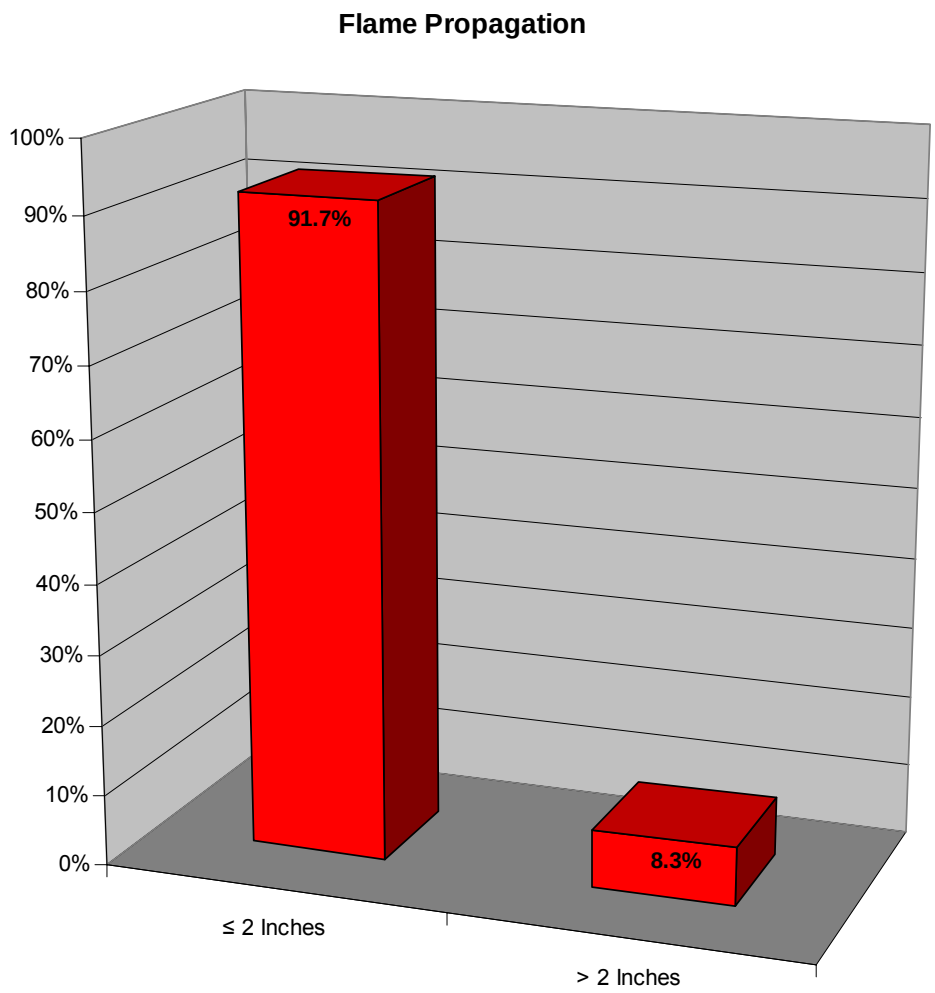
(continued)

- We are currently working with a new manufacturer of Radiant Panel Test Chambers.
  - Plans are in place to visit this manufacturer to ensure equipment is within specifications.
- Various densities of fiberglass, both belt and fluffy sides, have been retested.
  - All passed with with zero Flame Propagation and zero After Flame time.

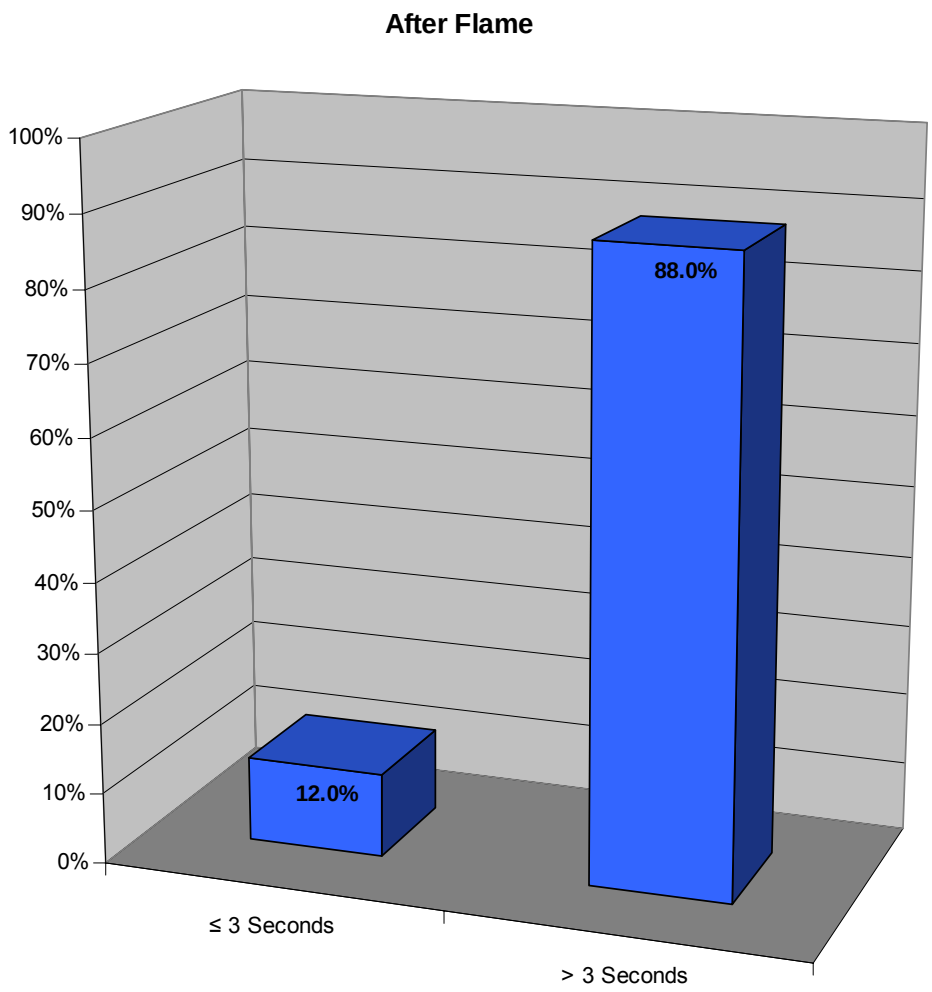
Review of Round Robin 8 Results: Polyimide Film



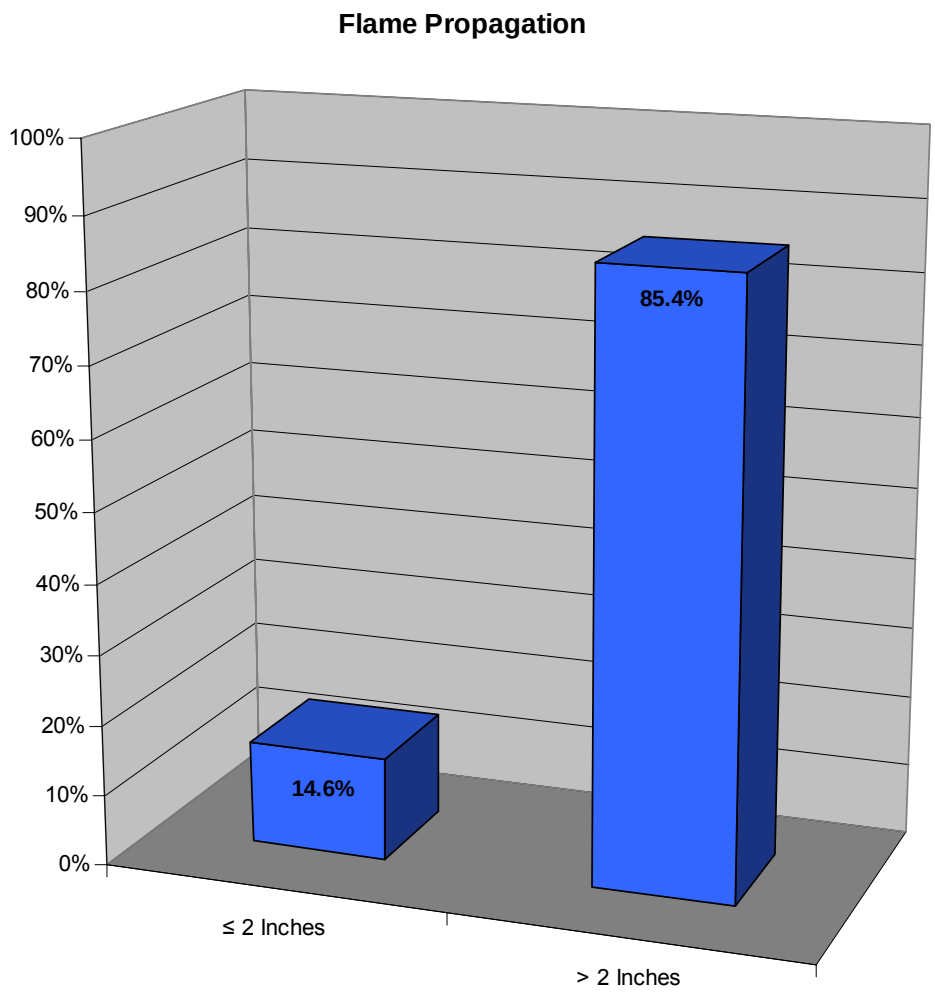
Review of Round Robin 8 Results: Polyimide Film



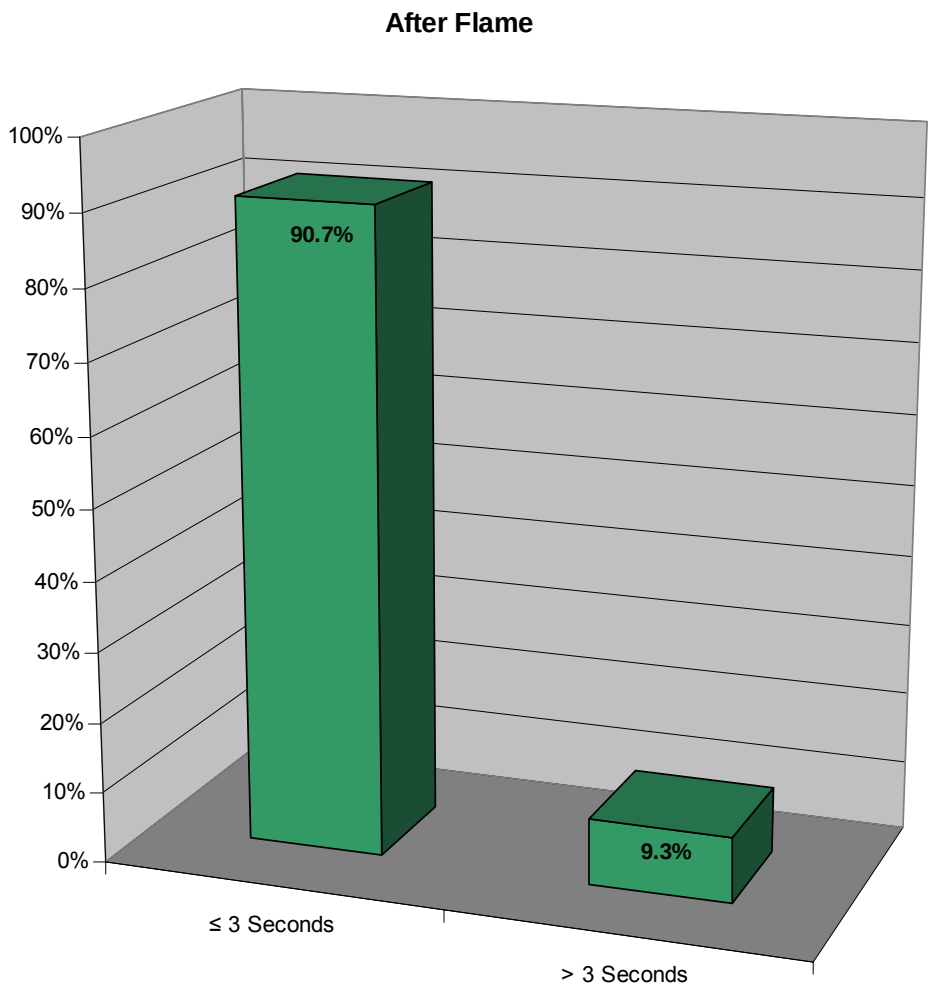
Review of Round Robin 8 Results: Polyester Film



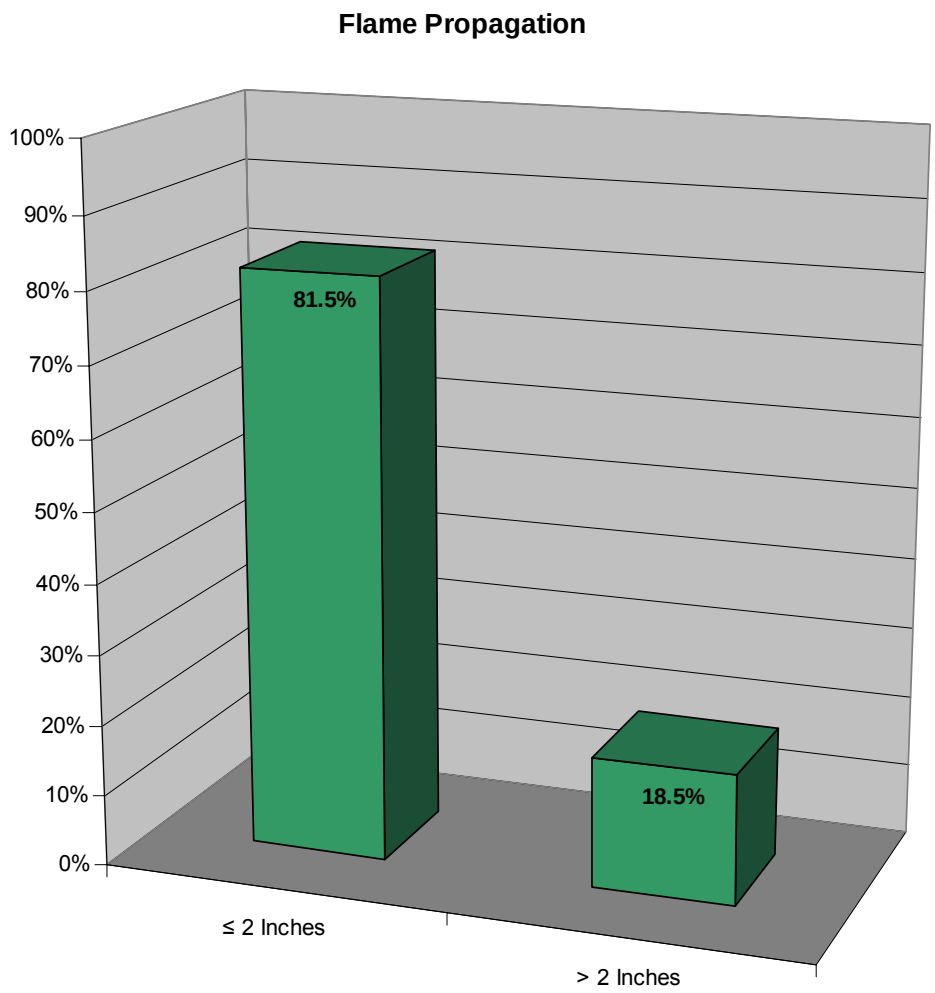
Review of Round Robin 8 Results: Polyester Film



Review of Round Robin 8 Results: Metallized Tedlar with Tape



Review of Round Robin 8 Results: Metallized Tedlar with Tape



Radiant Panel Activities

(continued)

- There are no Round Robins planned at this time.
- The data from Round Robin 8 demonstrated that participating labs are conducting their tests in a repeatable fashion.
- None of the participating labs have brought any problems to our attention.
- If the Working Group is interested in participating in another Round Robin, please contact Pat Cahill so one can be arranged.

Seat Round Robin

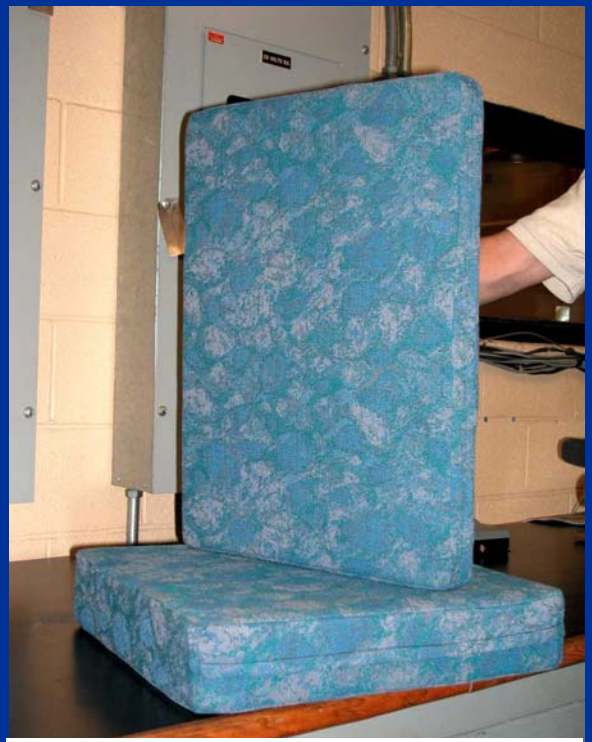
Pat Cahill
Patricia.Cahill@FAA.gov

Review of Aircraft Seats
World Wide Round Robin Testing

- Currently, 8 labs in the United States have oil burners set up for seat testing:
  - Boeing Seattle
  - Accufleet
  - Starr Aircraft Products
  - Custom Products
  - Flame Out
  - Skandia
  - Govmark Labs
  - Chestnut Ridge

Review of Aircraft Seats
World Wide Round Robin Testing

Test Samples



Fire Hardened Foam 1

Fire Blocking Layer

Fire Hardened Foam 2

Review of Aircraft Seats
World Wide Round Robin Testing

- Testing is complete in the US
- Testing is complete at Bodycote Ortech Inc. in Canada.
  - Data is currently unavailable as testing was completed within the past week.
  - This data will be combined with that collected from US labs and will be available on our website.
- Plans are still evolving for testing outside North America.

Aircraft Electrical Wiring

Pat Cahill
Patricia.Cahill@FAA.gov

Aircraft Wiring

- The following wire types were subjected to Radiant Panel Testing:

Wire Description:	Afterflame	Flame Spread
Plenum rated cable-60ºC. "loaded vinyl jacket" 4 twisted pair (primaries) FEP insulated 24 AWG 15 wires bundled	NO	NO
Riser cable-60ºC. Hybrid PVC 4 twisted pair (primaries) not FEP 24 AWG 15 wires bundled	NO	NO
Aircraft wire – polyimide-200ºC. MIL-W-81381/11/20-N FEP coated 20 AWG 30 wires bundled	NO	NO
Aircraft wire – X-linked ETFE-200ºC MIL-W-22759/20/9 20 AWG 20 wires bundled	NO	NO
Aircraft wire – PVC nylon-105ºC MIL-W-5086-20-1 20 AWG 20 wires bundled	> 7 min. extinguished fire	YES
Aircraft wire – ETFE- 150ºC MIL-W-22759/18 20 AWG 20 wires bundled	NO	NO
Aircraft wire – TKT -150ºC 20 AWG 20 wires bundled	NO	NO

Aircraft Wiring

- All small gauges were evaluated at the heat flux and flame application time as specified for thermal acoustical insulation.
- Preheat and longer flame application times were evaluated.
- No repeatability was found for the Riser cable which passed the 60 degree flammability test, but was a major flame spreader during intermediate scale testing.
- Difficult to work with small gauge wire.
- We have ordered larger gauge wire, 6 AWG, of the following types:
  - BMS-1360 150/175/260 Degrees C (hybrid construction)
  - M 22759/34 – Cross-Linked ETFE
  - M 22759/41 – Cross-Linked ETFE
  - M 22759/16 – Straight ETFE
- Both bundled and side-by-side testing will be performed at various flame application and preheat times.