

Concerns with Baseline Fire Barrier Recommendations of FAA AC 20-135

FAA AC 20-135 states “Fireproof” is defined as “The capability of a material or component to withstand, as well as or better than steel, a 2000°F (±150°F) for 15 minutes minimum, while still fulfilling its design purpose.” Further, paragraph 6.d of the same document states...

“(6) The following minimum thickness materials are considered acceptable for use in firewalls or shrouds for non-structural/non load-carrying applications, without being subjected to additional fire tests:

- (i) Stainless steel sheet, .015 inch thick.
- (ii) Mild steel sheet protected against corrosion, .018 inch thick.
- (iii) Titanium sheet, .016 inch thick.
- (iv) Monel metal sheet, .018 inch thick
- (v) Steel or copper base alloy firewall fittings/fasteners.”

The interpretation of this being that if these materials make up a firewall, the flame will not penetrate and the fire will remain contained away from the rest of the aircraft.

When some of these standard fire barrier materials were tested against the fire challenge represented by the FAA’s Next Generation Burner, the resultant backside (or non-fire side) temperatures far exceed the autoignition temperature of turbine engine fuel well before 15 minutes of exposure. The consequence of this is, if there is a flammable mixture on the non-fire side of the barrier, even though the firewall itself may stay intact, ignition outside the containment area is possible, allowing the fire to spread beyond the firewall to the rest of the aircraft. Even if there is no flammable material on the non-fire side of the firewall, thermal damage to aircraft structure and systems outside the firewall is a significant potential.