

Fire Behaviour Of Structural Composite Materials
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Abstract. With the increase in the use of composite materials in aircraft structural applications, it is essential to assess the fire behaviour of these materials to be convinced that the current level of fire safety is not reduced. The current fire tests used for aeronautical applications are mainly destined for cabin layout materials, cargo compartment materials and materials used in fire zone and powerplant installations. These works will permit to determine if the current aeronautical fire tests are sufficient to assess the fire behaviour of structural composite materials.

A wide range of materials will be comparatively tested according to the regulatory test methods (auto-extinguishability, smoke, toxicity, heat release), with the cone calorimeter and according to the various specific test procedures to be developed or adapted. This study will consider in-flight thermal damaging (electric arc effects ; hidden fire damaging) and post-crash fire effects on fuselage composite materials (burnthrough behaviour and environmental effects inside the cabin (smoke, toxicity, heat release)). A large part of this study will be spare both for the development of new test procedures (electric arc effects, burnthrough, hidden fire source) and for the assessment of residual property of structural and fuselage composites materials (in-flight thermal damaging).

The aims of the study, the considered test methods and procedures, and a progress report will be presented.