DEVELOPMENT OF A NEW FLAMMABILITY TEST FOR MAGNESIUM ALLOYS USED IN AIRCRAFT SEAT STRUCTURE

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A laboratory-scale flammability test for magnesium alloys was developed for seat structural components. The test method was based on the findings of realistic full-scale tests conducted previously. The intent was to expose an appropriately-sized test sample to the flames of an oil-fired burner for a period of time that allowed the test sample to melt, as testing indicated the magnesium alloys would not ignite until melting had occurred. Numerous test sample shapes, sizes, and exposure levels were trialed in an effort to replicate the outcome of the full-scale tests, namely, the amount of time required to melt and ignite a sample, and the approximate amount of time required for the sample to self-extinguish. The final configuration utilized a 0.25-inch thick by 1.5-inch wide by 20-inch long horizontally-oriented bar test sample that was exposed to the oil burner for a period of 4 minutes. A passing sample was not permitted to ignite prior to 2 minutes, and must also self-extinguish within 3 minutes of the burner being turned off (7 minutes from the start of the test). In addition, the sample must not lose more than 10% of its initial weight.