

Experimental Measurements of Full-scale Fire Growth for Fire Model Validation

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A series of full-scale flame spread experiments was conducted to assess the impact of material composition on flammability response. In each test, two parallel panels, each with dimensions 2.45 m tall and 0.3 m wide, were spaced 0.3 m apart to support one of 18 unique materials with a wide range of chemical compositions and burning behaviors (charring, sooting, deformation, and ignitability). Samples were ignited at their base (60kW burner) allowing for upward flame spread. Measurement data collected in these experiments include: flame-to-surface heat flux, heat release rate, species yields, total mass loss, and visual recordings. Collectively, these measurements quantify the burning behavior during full-scale fire. Final datasets will be archived in a comprehensive, searchable, and freely-available database, which can be used for validation of CFD flame spread simulations. This presentation provides a summary of the methodology by which these full-scale experiments were performed, how the measurement data was collected, and how this data was analyzed and processed for end-users.