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POOL FIRE CHARACTERISATION BY CONE CALORIMETER ANALYSIS

Benedetta Anna De Liso, Gianmaria Pio, Ernesto Salzano

Dipartimento di Ingegneria Civile, Chimica, Ambientale e dei Materiali (DICAM), Università di Bologna,
Via Umberto Terracini 28, 40131 Bologna (Italy)

Abstract

The technique of cone calorimetry is traditionally adopted to characterize the fire performance of solid materials in the terms of mass burning rate, heat release rate, and smoke production. Recently, DiDomizio et al. (2021) have extended the use of this equipment for the analysis of liquids according to their propensities for ignition, boiling, and burning, as well as their combustion characteristics.

In this work, the pool fire of ethanol has been analyzed by using the standard procedure either without ignition for the un-burning mass evaporation rate at room temperature or for the pool fire after ignition by heat radiation (25 kW/m^2) or by spark ignition.

The results of the mass evaporation rate, mass burning rate and other essential parameters for the characterization of pool fire, among others, have been compared with several experimental tests performed at different scales (according to Hottel's diagram) and geometry.

References

DiDomizio M.J., Ibrahimli V., Weckman E.J., Testing of liquids with the cone calorimeter, Fire Safety Journal, 126 (2021) 103449.