



# Standard Guide for Obtaining Data for Fire Growth Models<sup>1</sup>

This standard is issued under the fixed designation E1591; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

## 1. Scope

1.1 This guide describes data required as input for mathematical fire growth models.

1.2 Guidelines are presented on how the data can be obtained.

1.3 The emphasis in this guide is on ignition, pyrolysis and flame spread models for solid materials.

1.4 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.5 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

1.6 This fire standard cannot be used to provide quantitative measures.

## 2. Referenced Documents

### 2.1 ASTM Standards:<sup>2</sup>

- C177** Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus
- C518** Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus
- C835** Test Method for Total Hemispherical Emittance of Surfaces up to 1400°C
- C1371** Test Method for Determination of Emittance of Materials Near Room Temperature Using Portable Emisometers
- D2395** Test Methods for Specific Gravity of Wood and Wood-Based Materials
- D3417** Test Method for Enthalpies of Fusion and Crystallization of Polymers by Differential Scanning Calorimetry

(DSC) (Withdrawn 2004)<sup>3</sup>

- D5865** Test Method for Gross Calorific Value of Coal and Coke
- E176** Terminology of Fire Standards
- E408** Test Methods for Total Normal Emittance of Surfaces Using Inspection-Meter Techniques
- E472** Practice for Reporting Thermoanalytical Data (Withdrawn 1995)<sup>3</sup>
- E537** Test Method for The Thermal Stability of Chemicals by Differential Scanning Calorimetry
- E793** Test Method for Enthalpies of Fusion and Crystallization by Differential Scanning Calorimetry
- E906** Test Method for Heat and Visible Smoke Release Rates for Materials and Products Using a Thermopile Method
- E967** Test Method for Temperature Calibration of Differential Scanning Calorimeters and Differential Thermal Analyzers
- E968** Practice for Heat Flow Calibration of Differential Scanning Calorimeters
- E1321** Test Method for Determining Material Ignition and Flame Spread Properties
- E1354** Test Method for Heat and Visible Smoke Release Rates for Materials and Products Using an Oxygen Consumption Calorimeter
- E1537** Test Method for Fire Testing of Upholstered Furniture
- E1623** Test Method for Determination of Fire and Thermal Parameters of Materials, Products, and Systems Using an Intermediate Scale Calorimeter (ICAL)
- E2058** Test Methods for Measurement of Synthetic Polymer Material Flammability Using a Fire Propagation Apparatus (FPA)
- E2257** Test Method for Room Fire Test of Wall and Ceiling Materials and Assemblies

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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

## 3. Terminology

3.1 *Definitions*—For definitions of terms appearing in this guide, refer to Terminology E176.

<sup>3</sup> The last approved version of this historical standard is referenced on [www.astm.org](http://www.astm.org).