



Designation: E1445 – 08

## Standard Terminology Relating to Hazard Potential of Chemicals<sup>1</sup>

This standard is issued under the fixed designation E1445; 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 reappraisal. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reappraisal.

### 1. Scope

1.1 This standard is a compilation of terminology used in the area of hazard potential of chemicals. Terms that are generally understood or adequately defined in other readily available sources are not included.

1.2 Although some of these definitions are general in nature, many must be used in the context of the standards in which they appear. The pertinent standard number is given in parentheses after the definition.

1.3 In the interest of common understanding and standardization, consistent word usage is encouraged to help eliminate the major barrier to effective technical communication.

### 2. Referenced Documents

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

- E476 Test Method for Thermal Instability of Confined Condensed Phase Systems (Confinement Test) (Withdrawn 2008)<sup>3</sup>
- E487 Test Method for Constant-Temperature Stability of Chemical Materials
- E537 Test Method for The Thermal Stability of Chemicals by Differential Scanning Calorimetry
- E582 Test Method for Minimum Ignition Energy and Quenching Distance in Gaseous Mixtures
- E659 Test Method for Autoignition Temperature of Liquid Chemicals
- E680 Test Method for Drop Weight Impact Sensitivity of Solid-Phase Hazardous Materials
- E681 Test Method for Concentration Limits of Flammability of Chemicals (Vapors and Gases)

- E698 Test Method for Arrhenius Kinetic Constants for Thermally Unstable Materials Using Differential Scanning Calorimetry and the Flynn/Wall/Ozawa Method
- E771 Test Method for Spontaneous Heating Tendency of Materials (Withdrawn 2001)<sup>3</sup>
- E918 Practice for Determining Limits of Flammability of Chemicals at Elevated Temperature and Pressure
- E1226 Test Method for Explosibility of Dust Clouds
- E1231 Practice for Calculation of Hazard Potential Figures-of-Merit for Thermally Unstable Materials
- E1232 Test Method for Temperature Limit of Flammability of Chemicals
- E1491 Test Method for Minimum Autoignition Temperature of Dust Clouds
- E1515 Test Method for Minimum Explosible Concentration of Combustible Dusts
- E1981 Guide for Assessing Thermal Stability of Materials by Methods of Accelerating Rate Calorimetry
- E2012 Guide for the Preparation of a Binary Chemical Compatibility Chart
- E2019 Test Method for Minimum Ignition Energy of a Dust Cloud in Air
- E2021 Test Method for Hot-Surface Ignition Temperature of Dust Layers
- E2046 Test Method for Reaction Induction Time by Thermal Analysis

### 3. Terminology

#### 3.1 Definitions:

- adiabatic calorimeter,  $n$** —an instrument capable of making calorimetric measurements while maintaining a minimal heat loss or gain between the sample and its environment, which is verifiable by the capability to continuously measure the temperature differential between the sample and its surroundings. (E1981)
- adiabatic decomposition temperature rise,  $(T)_d, n$** —an estimation of the computed temperature which a specimen would attain if all of the enthalpy (heat) of decomposition reaction were to be absorbed by the sample itself. High values represent high hazard potential. (E1231)
- anvil,  $n$** —the smooth, hardened surface upon which the test sample or cup containing the sample rests. (E680)

<sup>1</sup> This terminology is under the jurisdiction of ASTM Committee E27 on Hazard Potential of Chemicals and is the direct responsibility of Subcommittee E27.01 on Editorial and Nomenclature.

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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.

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

**Arrhenius equation**— $k = Ze^{-E/RT}$  where k is the specific reaction rate constant in reciprocal minutes for first order, Z

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