



Standard Test Method for Temperature Limit of Flammability of Chemicals¹

This standard is issued under the fixed designation E1232; 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 (ϵ) indicates an editorial change since the last revision or reapproval.

INTRODUCTION

The temperature limit of flammability test measures the minimum temperature at which liquid (or solid) chemicals evolve sufficient vapors to form a flammable mixture with air under equilibrium conditions. This temperature is applicable for assessing flammability in large process vessels and similar equipment ([Appendix X1](#) and [Appendix X2](#)).

1. Scope

1.1 This test method covers the determination of the minimum temperature at which vapors in equilibrium with a liquid (or solid) chemical will be sufficiently concentrated to form flammable mixtures in air at atmospheric pressure. This test method is written specifically for determination of the temperature limit of flammability of systems using air as the source of oxidant and diluent. It may also be used for other oxidant/diluent combinations, including air plus diluent mixtures; however, no oxidant/diluent combination stronger than air should be used. Also, no unstable chemical capable of explosive decomposition reactions should be tested (see [8.3](#)).

1.2 This test method is designed and written to be run at local ambient pressure and is limited to a maximum initial pressure of 1 atm abs. It may also be used for reduced pressures with the practical lower pressure limit being approximately 13.3 kPa (100 mm Hg). The maximum practical operating temperature of this equipment is approximately 150°C (302°F) ([Note A1.2](#)).

1.3 The values stated in SI units are to be regarded as standard. The values given in parentheses are mathematical conversions to inch-pound units are provided for information only and are not considered standard.

1.4 This standard should be used to measure and describe the properties of materials, products, or assemblies in response to heat and flame under controlled laboratory conditions, and should not be used to describe or appraise the fire hazard or fire risk of materials, products, or assemblies under actual fire conditions. However, results of this test may be used as

elements of a fire risk assessment which takes into account all of the factors which are pertinent to an assessment of the fire hazard of a particular end use.

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. Specific safety precautions are given in Section 8.

2. Referenced Documents

2.1 ASTM Standards:²

- [D3278](#) Test Methods for Flash Point of Liquids by Small Scale Closed-Cup Apparatus
- [D3828](#) Test Methods for Flash Point by Small Scale Closed Cup Tester
- [D3941](#) Test Method for Flash Point by the Equilibrium Method With a Closed-Cup Apparatus
- [E220](#) Test Method for Calibration of Thermocouples By Comparison Techniques
- [E230](#) Specification and Temperature-Electromotive Force (EMF) Tables for Standardized Thermocouples
- [E502](#) Test Method for Selection and Use of ASTM Standards for the Determination of Flash Point of Chemicals by Closed Cup Methods
- [E537](#) Test Method for The Thermal Stability of Chemicals by Differential Scanning Calorimetry
- [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

¹ This test method is under the jurisdiction of ASTM Committee [E27](#) on Hazard Potential of Chemicals and is the direct responsibility of Subcommittee [E27.04](#) on Flammability and Ignitability of Chemicals.

Current edition approved Oct. 1, 2013. Published November 2013. Originally approved in 1991. Last previous edition approved in 2007 as E1232 – 07. DOI: 10.1520/E1232-07R13.

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.