



Standard Test Method for Determining Fire Resistance of Perimeter Fire Barriers Using Intermediate-Scale, Multi-story Test Apparatus¹

This standard is issued under the fixed designation E2307; 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.

^{ε1} NOTE—The title and address for Reference GA-600 were updated editorially in November 2016.

INTRODUCTION

A perimeter fire barrier is the perimeter joint protection that provides fire resistance to prevent passage of fire from floor to floor within the building at the opening between the exterior wall assembly and the floor assembly. A perimeter fire barrier is a unique building construction detail not addressed by other fire test methods.

Among its other functions, a perimeter fire barrier impedes the vertical spread of fire from the floor of origin to the floor(s) above, at the building's exterior perimeter and accommodates various movements such as those induced by thermal differentials, seismicity, and wind loads.

This test method describes criteria and test methods used to determine the fire resistance of perimeter fire barriers when subjected to standard fire exposure conditions using the intermediate-scale, multistory test apparatus (ISMA). The use of the multi-story test apparatus and this test method are intended to simulate a possible fire exposure on a perimeter fire barrier.

1. Scope

1.1 This test method measures the performance of the perimeter fire barrier and its ability to maintain a seal to prevent fire spread during the deflection and deformation of the exterior wall assembly and floor assembly during the fire test, while resisting fire exposure from an interior compartment fire as well as from the flame plume emitted from the window burner below. The end point of the fire-resistance test is the period of time elapsing before the first condition of compliance is reached as the perimeter fire barrier is subjected to a time-temperature fire exposure.

1.2 The fire exposure conditions used are those specified by this test method for the first 30 min of exposure and then conform to the Test Methods E119 time-temperature curve for the remainder of the test in the test room.

1.3 This test method specifies the heating conditions, methods of test, and criteria for evaluation of the ability of a perimeter fire barrier to maintain the fire resistance where a floor and exterior wall assembly are juxtaposed to a perimeter joint.

1.4 Test results establish the performance of perimeter fire barriers during the fire-exposure period and shall not be construed as having determined the suitability of perimeter fire barriers for use after that exposure.

1.5 This test method does not provide quantitative information about the perimeter fire barrier relative to the rate of leakage of smoke or gases or both. While it requires that such phenomena be noted and reported when describing the general behavior of perimeter fire barrier during the fire-resistance test, such phenomena are not part of the conditions of compliance.

1.6 Potentially important factors and fire characteristics not addressed by this test method include, but are not limited to:

1.6.1 The performance of the perimeter fire barrier constructed with components other than those tested, and

1.6.2 The cyclic movement capabilities of perimeter fire barriers other than the cycling conditions tested.

1.7 This test method is used to measure and describe the response of materials, products or assemblies to heat and flame under controlled conditions but does not by itself incorporate all factors required for the fire-hazard or fire-risk assessment of the materials, products, or assemblies under actual fire conditions.

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

¹ This test method is under the jurisdiction of ASTM Committee E05 on Fire Standards and is the direct responsibility of Subcommittee E05.11 on Fire Resistance.

Current edition approved Oct. 1, 2015. Published November 2015. Originally approved in 2004. Last previous edition approved in 2015 as E2307-15a. DOI: 10.1520/E2307-15BE01.