

NFPA® 253

Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source

2023 Edition



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An International Codes and Standards Organization

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NFPA® 253

Standard Method of

Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source

2023 Edition

This edition of NFPA 253, *Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source*, was prepared by the Technical Committee on Fire Tests. It was issued by the Standards Council on April 28, 2022, with an effective date of May 18, 2022, and supersedes all previous editions.

This edition of NFPA 253 was approved as an American National Standard on May 18, 2022.

Origin and Development of NFPA 253

Experience suggests that during the early stages of a fire, floor covering systems seldom act as a fire-spread medium. However, in a few fires involving multiple-occupancy buildings, the floor covering materials in corridors were primarily responsible for fire spread over a considerable distance. Those situations caused grave concern and pointed to the need for a realistic test to evaluate the flame spread of floor covering systems.

The inception of the flooring radiant panel test was at the Armstrong Cork Company in 1966. In 1972, conceptualization of critical radiant flux (W/cm^2 at extinguishment) as a measure of flame spread hazard was underway at the National Bureau of Standards (NBS). It was determined in the course of NBS work on model corridor fire tests that the radiant energy levels incident on the floor covering had a considerable influence on whether or not flaming combustion would propagate. Accordingly, it was natural to apply the critical radiant flux concept, and, in 1973, the NBS prepared a draft of the flooring radiant panel test.

In 1975, the Technical Committee on Fire Tests began its evaluation of the proposed test methods, which culminated in the adoption of the test as an official NFPA standard in May 1978. The standard was revised in 1984 and 1990.

The 1995 edition included significant improvements based on work conducted by the National Institute of Standards and Technology (NIST) and the carpet industry. Those findings improved the overall application of the standard and provided measured improvement in test precision. Other changes included a new pilot burner and reduction of the variation in the airflow through the chamber, which reduced the variability of data. Revisions also were made to eliminate “permissive” language. The revisions created closer harmony with ASTM E648, *Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source*.

The 2000 edition was a reconfirmation of the 1995 edition.

The 2006 edition included a complete editorial rewrite for compliance with the *Manual of Style for NFPA Technical Committee Documents*. Further organizational and editorial changes were made to clarify the requirements of the test method. Provisions regarding safety precautions were moved to the annexes, and additional details were provided on simulating a concrete floor during the test.

The 2011 edition was revised to create uniformity with other fire test standards. Provisions for laminate floor mounting were added to Chapter 5.

In 2015, revisions were made to provide clarity on airflow rates and updated examples of test apparatuses.

The 2019 edition was revised to reference the latest test methods and to address modern materials used for simulated concrete flooring.