NFPA®

69

Standard on Explosion Prevention Systems

2019

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NFPA® 69

Standard on

Explosion Prevention Systems

2019 Edition

This edition of NFPA 69, *Standard on Explosion Prevention Systems*, was prepared by the Technical Committee on Explosion Protection Systems. It was issued by the Standards Council on November 5, 2018, with an effective date of November 25, 2018, and supersedes all previous editions.

This edition of NFPA 69 was approved as an American National Standard on November 25, 2018.

Origin and Development of NFPA 69

In 1965, an NFPA Committee was appointed to develop standards for explosion protection systems. These standards included information on inerting to prevent explosions and on venting to minimize damage from an explosion.

A tentative draft on explosion prevention systems was presented at the NFPA Annual Meeting in New York City in May 1969. This tentative document was officially adopted in May 1970. NFPA 69 was revised in 1973 and reconfirmed in 1978.

In 1982, the Committee on Explosion Protection Systems began a thorough review of NFPA 69, including the development of a chapter on the technique of deflagration pressure containment. The results of that effort became the 1986 edition.

The 1992 edition of NFPA 69 incorporated a new chapter on deflagration isolation systems. Partial amendments were made to refine definitions, improve descriptions of oxidant concentration reduction techniques, improve material on deflagration suppression, and fine-tune deflagration pressure containment material.

The 1997 edition of this standard included some reorganization and updating of the technical material to improve its usability. New material was added on enrichment to operate above the upper flammable limit as a means of explosion protection with minimum oxidant concentrations for preventing explosions. Material was added for provisions on reliability of explosion protection control systems and deflagration suppression systems for consistency with other NFPA standards.

The 2002 edition of NFPA 69 included new information on spark detection and extinguishment system design. A reorganization of the protection methods reflected a hierarchy based on the degree of explosion prevention. The limiting oxidant concentration (LOC) values for gases and vapors in Annex C were updated based on recent research. The standard was revised to reflect the requirements of the *Manual of Style for NFPA Technical Committee Documents*.

The 2008 edition incorporated a comprehensive revision to the standard that included a performance-based option in addition to the existing specification methods for explosion prevention. This revision included new requirements for detection and ignition control, suppression, and active and passive isolation. The committee also added a chapter on passive suppression using expanded metal mesh or polymer foams. A new chapter on installation, inspection, and maintenance addressed the concept of safety integrity and reliability. New definitions supporting the expanded requirements were added and existing definitions were updated to conform to the *NFPA Glossary of Terms*.

The 2014 edition was revised and updated to improve the overall clarity and use of the document. Design requirements for flow-actuated flap valves and a new annex, Deflagration Containment Calculation Method for Two Interconnected Vessels, were incorporated. The operating safety margins for oxidant concentration control were also modified in order to remove discontinuity. In addition, the use of the term *commissioning* was updated throughout the document for compatibility with the 2012 edition of NFPA 3, *Recommended Practice for Commissioning and Integrated Testing of Fire Protection and Life Safety Systems*.

In the 2019 edition, the adjustment for LOC values obtained in flammability tubes has been revised, reconfirming the change made by a Tentative Interim Amendment (TIA) to the 2014 edition. Requirements have been added to consider the concentration variation with time and location within the protected enclosure, and all foreseeable variations in operating conditions and material loadings, when using the combustible concentration reduction method of explosion prevention. A new section on safety instrumented systems (SIS) has been added with the requirement that explosion prevention system controls installed after November 5, 2021, be implemented as an SIS. New annex material has been added to provide example calculations on how to estimate the LOC for a fuel or a fuel mixture.