

A low-angle photograph of an industrial facility with large, silver, corrugated metal pipes and structures against a clear blue sky. A tall smokestack is visible on the right side, emitting a small amount of white smoke. The image is partially obscured by a green graphic element on the left side.

What You Need to Know About the New NFPA 660 Standard for Combustible Dusts and Particulate Solids

Background:

There's been a lot of buzz about upcoming changes to the National Fire Protection Association (NFPA) 660 standard for combustible dust. But there's also been a lack of clarity about what parts of the standard will change, how it will impact affected organizations, and when these changes are set to take effect. In this article, we'll clarify what is known so far about the new NFPA 660 standard and how to ensure your organization is prepared for these impending changes.

What is combustible dust?

Combustible dust is any finely divided unoxidized material (typically with a particle size of less than 500 microns), which, when dispersed in sufficient concentration, has the potential to catch fire and explode when exposed to an ignition source. Any facility that handles or generates powdered particles as part of its manufacturing operations is at risk of potential dust fire or explosion.

Fires, flash fires, and explosions caused by combustible dust impact industrial facilities worldwide, resulting in injuries and fatalities, property damage, and business interruption.

What are the existing NFPA combustible dust standards?

Safety standards for combustible dust are relatively new compared to those for other hazardous materials, such as liquids, oils, and gases. The NFPA was the first organization globally to develop comprehensive codes and standards to mitigate the specific safety hazards related to combustible dust for powder handling operations.

The current NFPA Combustible Dust Standard contains multiple standards, including an umbrella standard (NFPA 652) that provides fundamental guidance on managing combustible dust hazards regardless of industry, as well as “commodity-specific” standards that focus on specific requirements for certain materials or products within particular industries. These include:

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| NFPA 61 | Standard for the Prevention of Fires and Dust Explosions in Agricultural and Food Processing Facilities |
| NFPA 484 | Standard for Combustible Metals |
| NFPA 654 | Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids |
| NFPA 655 | Standard for Prevention of Sulfur Fires and Explosions |
| NFPA 664 | Standard for the Prevention of Fires and Explosions in Wood Processing and Woodworking Facilities |

Facility owners and operators sometimes find it challenging to adhere to these various standards at the same time, particularly when they handle various types of materials.

The goal of the new NFPA standard is to consolidate all these existing standards into one single standard. This ‘one standard to rule them all’ aims to simplify and clarify the requirements for combustible dust safety for manufacturing businesses.

What are the proposed changes included in NFPA 660?

The new standard, NFPA 660, consolidates NFPA 61, NFPA 484, NFPA 652, NFPA 654, NFPA 655, and NFPA 664 into a single standard to help simplify the process owners follow to mitigate combustible dust hazards. This consolidation aims to increase site safety and reduce some of the inherent conflicts in current versions of combustible safety standards.

The basic structure of the new NFPA 660 Standards document is as follows:

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| Chapters 1 through 10 | Covers the “fundamentals” of combustible dusts and particulate solids. Similar to what NFPA 652 presently covers, these chapters are the responsibility of the current 652 committee (with input from the other commodity-specific committees and the Correlating Committee). Chapter 10 has been newly added and covers Emergency Planning and Response |
| Chapter 11-20 | Reserved for future set of requirements |
| Chapter 21 | Covers Agricultural and Food Processing (formerly NFPA 61) |
| Chapter 22 | Covers Combustible Metals (formerly NFPA 484) |
| Chapter 23 | Covers Sulfur (formerly NFPA 655) |
| Chapter 24 | Covers Wood Processing and Woodworking Facilities (formerly NFPA 664) |
| Chapter 25 | Covers “Combustible Dusts and Particulate Solids Not Otherwise Specified” (formerly NFPA 654) |
| The remaining chapters are for the Annexes | <ul style="list-style-type: none">• Comprised of Annexes A through Z• Annex A contains the annex material formerly in the original combustible dust standards but revised and improved• The remaining annexes include explanatory information that should be considered by the user of the standard. The information provided will assist the user in determining the best solutions for addressing existing combustible dust hazards |

Who is affected by changes to the NFPA combustible dust standard?

These changes will most significantly impact organizations that handle materials that produce combustible dust, including facilities that manufacture food, metal, wood, and plastic.

Individuals and teams working in Environmental Health and Safety (EHS), and Process Safety roles at facilities that have powder handling operations, will want to ensure they’re up to date on changes introduced in NFPA 660.

The changes will become enforceable by law in the United States after adoption by a regulatory authority, and manufacturers in the U.S. will be legally required to ensure they comply with NFPA 660. In Canada, the NFPA Combustible Dust Standards are referenced in the National Fire Code of Canada (NFC) as good engineering practice standards for building and equipment design to adequately mitigate combustible dust hazards.

Outside of North America, these standards are considered consensus standards, also called Recognized and Generally Accepted Good Engineering Practices (RAGAGEP).

When will NFPA 660 come into effect?

NFPA 660 became effective on December 6, 2024 and is available for access on NFPA's website.

How can I ensure my organization remains compliant with the NFPA 660 standard?

Most facility owners or operators don't need to completely revamp their current combustible dust safety procedures from the ground up but focus only on the updated requirements. The facility operators will still need to perform a Dust Hazard Analysis (DHA) and revalidate every five years.

DEKRA Process Safety is well-versed in the codes, standards, and recommended practices for combustible dust. We support clients through our comprehensive service offerings on combustible dust, including **Dust Hazard Analysis (DHA)**, **Hazardous Area Classification (HAC)**, Mechanical Equipment Ignition Risk Assessment (MEIRA), Electrical Equipment Review (EER), **Fire & Building Code Compliance**, and **development of a complete Combustible Dust Program or individual Management Systems**. Our **Strategic Guide to Characterization and Understanding Handling Dusts and Powders Safely** helps leaders understand how their organizations can safely manage the risks created by combustible dusts and powders.

Our goal is to support your organization as it navigates dust hazards and risk mitigation and recommend safe, pragmatic, and cost-effective solutions. This includes early identification of materials for flammability testing, specification of a Basis of Safety, validation of the effectiveness of risk mitigation solutions implemented, and periodically revalidating your DHA.



To find out more,
get in touch with a
DEKRA team member today.

 **Contact Us**

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Website: www.dekra.us/process-safety

DEKRA Process Safety

The breadth and depth of expertise in process safety makes us globally recognized specialists and trusted advisors. We help our clients to understand and evaluate their risks, and work together to develop pragmatic solutions. Our value-adding and practical approach integrates specialist process safety management, engineering and testing. We seek to educate and grow client competence to provide sustainable performance improvement. Partnering with our clients, we combine technical expertise with a passion for life preservation, harm reduction and asset protection. As a part of the world's leading expert organization DEKRA, we are the global partner for a safe world.

Specialist Consulting (Technical/Engineering)

- Code & Compliance Management
- Dust, gas, and vapor flash fire and explosion hazards
- Electrostatic hazards, problems, and applications
- Reactive chemical, self-heating, and thermal instability hazards
- Hazardous area classification
- Mechanical equipment ignition risk assessment
- Transport & classification of dangerous goods

Process Safety Information/Data (Laboratory Testing)

- Flammability/combustibility properties of dusts, gases, vapors, mists, and hybrid atmospheres
- Chemical reaction hazards and chemical process optimization (reaction and adiabatic calorimetry RC1, ARC, VSP, Dewar)
- Thermal instability (DSC, DTA, and powder specific tests)
- Energetic materials, explosives, propellants, pyrotechnics to DOT, UN, etc., protocols
- Regulatory testing: REACH, UN, CLP, ADR, OSHA, DOT
- Electrostatic testing for powders, liquids, process equipment, liners, shoes, FIBCs

Process Safety Management (PSM) Programs

- Design and creation of relevant PSM programs
- Support the implementation, monitoring, and sustainability of PSM programs
- Audit existing PSM programs, comparing with best practices around the world
- Correct and improve deficient programs

We have offices throughout North America, Europe, and Asia.

For more information, visit www.dekra.us/process-safety

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