FOCUS ARTICLE

NFPA 484 (2019 Revision)

Reflecting the latest research, testing, and fire experience, NFPA 484 (2019): Standard for Combustible Metals presents widely accepted safety requirements for any metal that meets the code's definition of a combustible metal. The soon-to-be-released update to the standard provides commodity specific information and requirements that supplement information contained in NFPA 652, Standard on the Fundamentals of Combustible Dust. NFPA 484 addresses the production, processing, finishing, handling, storage, use and recycling of all metals and alloys that are in a form capable of combustion or explosion.

This article will overview the various chapter changes that occurred to the 2018 version of NFPA 484 as it relates to other NFPA standards such as NFPA 652 and NFPA 70. For any additional information on these NFPA Standards' changes or how this will affect your process, please do not hesitate to contact us at 609-799-4449 or email us at process-safety-usa@dekra.com.

Overview of Substantive Changes

The 2018 edition of NFPA 484 is a complete reorganization of the document. Many of the changes were made to align the document with NFPA 652, the new Standard on the Fundamental of Combustible Dust. A new chapter, Chapter 7, was added on Dust Hazard Analysis to confrom with the dHA requirement of NFPA 652. Chapter 4, General, was added to include material on objectives and compliances options to align with 652. Chapter 4 also now includes requirements on Management of Change and Personnel Protective Equipment. New chapters were added to the document on Nanometals (Chapter 12) and Additive Manufacturing (Chapter 13), to reflect emerging technologies and issues in the metals industry, including 3D printing. Chapter 11, Powder and Dust Collection and Centralized Vacuum Systems, was completely rewritten to provide clarity for the users. Chapter 15, Legacy Metals, was created to consolidate the common requirements for aluminum, magnesium, niobium, tantalum, titanium, zirconium, and hafnium, into a single location. Note that material that is specific to one of these metals remains in the metal specific chapters.

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In addition to the above changes, the definitions in Chapter 3 were reviewed and updated to correlate with those in **NFPA 652**, the fundamentals document. Where requirements in the code are retroactive, statements were made to clearly indicate this to the user. Material was added to the scope in Chapter 1 to clarify the application of the standard to mixtures of metals and other combustible non-metal dusts. Changes were made in Chapter 8 to clarify and strengthen the requirements regarding static electricity. Changes were also made to the requirements for electrical area classification, referring to NFPA 70, but clarifying that the committee does not agree with the definition of **combustible dust** found in NFPA 70. The committee also clarified that the zone classification system is not to be used for metal dusts.

Chapter 11 Fugitive Dust Collection

Significant changes to metal dust collection requirements include the following:

- Requiring a wet-type AMS for dust collection systems that remove material from operations that generate sparks, hot material, or similar ignition sources under normal operating conditions.
- Requirements for a time delay on startup and shutdown of dust collection systems so that the system achieves and maintains the designed air velocity prior to admission of the material into the system and until material is purged from the ducting, on shutdown.
- A relaxation on the previous restriction of use of downdraft tables where combustible metal dusts are being collected. The conditions of which these downdraft tables are permitted read as follows :

  (A) Self-contained, dry-type AMS, down-draft benches, and environmental control booths (e.g., buffing, grinding, and finishing booths) with integral filter media in the wall shall be permitted where a DHA has been performed and less than 0.22 kg (0.5 lb) of dust less than 500 microns is collected and emptied each day.

  (B) Self-contained, dry-type AMS devices, down-draft benches, and environmental control booths (e.g., buffing, grinding, and finishing booths) with integral filter media in the wall shall be permitted where a DHA has been performed and less than 0.22 kg (0.5 lb) of dust less than 500 microns is collected and emptied each day.
- A requirement that all components of dust collection systems be bonded and grounded, independently of the electrical grounding system, to minimize accumulation of static electrical charge.

- Allowance of recycling of exhaust air from fixed dry type dust collectors back into buildings certain requirements are met. Recycling of exhaust air from powder collection systems is still prohibited.
- Additional requirements for portable dust collection systems including:
  - Restriction of use for only grinding, buffing or sanding operations
  - Housekeeping must be of a level that hazardous quantities of dust are not present in the area
  - Portable dry AMS with the dirty side volume greater than 8 ft.^{3} must be protected against explosion in accordance with NFPA 69
- Requirement that grinding, plasma spray and other operations generating hot metal particles have a spark arrester system upstream of the AMS.
- Additional requirements for non-water-based wet type AMSs.
- For systems pneumatically conveying metal powders, elimination of a previous requirement (NFPA 484 Section 9.2.1.6) that stated, "if the conveying gas is air, the combustible metal to air ratio throughout the conveying system shall be held below the minimum explosible concentration (MEC) of the combustible metal dust at normal operating conditions requirement".
- A requirement where cyclones are used for dry type AMS that they be constructed of conductive and nonsparking materials.

New Chapter 13 Additive Manufacturing

This chapter addresses 3D, powder bed and powder spray booth operations and will require 3D printers to be inerted.

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