

Public Review Draft

Proposed Addendum a to Standard 189.1-2023

Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings

First Public Review (February, 2024)
(Draft Shows Proposed Changes to Current Standard)

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Foreword

This addendum to Std 189.1 changes the particulate matter removal requirement to reference MERV-13A instead of MERV-13 to acknowledge the limitations of electrostatic charged filters and in order to ensure that the minimum intended filtration performance is maintained over the installed life of the filter. This proposed change also brings better alignment between the Std. 52.2 and ISO 16890 compliance pathways. Note also that ASHRAE Std. 241 requires MERV-A ratings for air filters starting on 1/1/25 in order to take credit for the use of air filters for the control of infectious aerosols.

Particulate filtration efficiency for air filters in nonresidential HVAC systems are widely rated in the U.S. based on the minimum efficiency reporting value (MERV) as defined by ASHRAE Std. 52.2. Many particulate air filters utilize electrostatic charges to achieve high filtration efficiencies for small particle sizes in order to meet high MERV levels. Electrostatic charges can provide higher filtration efficiency in pleated filters with lower pressure drop and lower cost compared to filters that only utilize mechanical filtration. However, the MERV rating is based on initial filter performance and numerous studies have documented the significant reduction in filtration efficiency (potentially a drop of several MERV levels) in filters with electrostatic charges within several weeks of installation (SINTEF 1995, Hanley et al 1999, Lehtimaki et al 2002, Owen et al 2013). Informative Appendix J was added to Std. 52.2 in 2008 to address this issue by providing a preconditioning step that partially neutralizes the electrostatic charges prior to testing. Filters tested with the optional preconditioning are given a MERV-A rating.

ISO 16890 is the most widely used standard for rating particulate air filters in Europe and is referenced in the alternative compliance path for particulate matter removal in Std. 189.1. ISO 16890 addresses the issue of diminishing performance of charged filter media by testing two filters, one charged and one completely discharged by an isopropyl alcohol treatment, and averaging the two results, where the overall net performance is comparable to that achieved by the Std. 52.2 Appendix J methodology.

This addendum is expected to increase operating costs for a building, but the magnitude is not known. However, this addendum ensures long-term performance of filters.

[Note to Reviewers: This addendum makes proposed changes to the current standard. These changes are indicated in the text by underlining (for additions) and ~~strikethrough~~ (for deletions) except where the reviewer instructions specifically describe some other means of showing the changes. Only these changes to the current standard are open for review and comment at this time. Additional material is provided for context only and is not open for comment except as it relates to the proposed changes.]

Addendum a (1st PPR) to 189.1-2023

Modify Section 8.3.3(a) as follows

8.3.3. Filtration and Air Cleaner Requirements

a. **Particulate Matter.** The following requirements shall apply in all buildings.

1. **Wetted Surfaces.** Particulate matter filters or air cleaners having a minimum efficiency reporting value (MERV) of not less than 8 where rated in accordance with ANSI/ASHRAE Standard 52.2, or not less than Coarse 90% where rated in accordance with ISO 16890, shall be provided upstream of all cooling coils or other devices with wetted surfaces through which air is supplied to an *occupiable space*. These requirements supersede the requirements in ASHRAE Standard 62.1, Section 5.9.
2. **Particulate Matter Removal.** Particulate matter filters or air cleaners shall be provided in accordance with Standard 62.1, Sections 6.1.4.1 and 6.1.4.2, with the following modification. Such filters or air cleaners shall have a MERV-A rating of not less than 13A as rated in accordance with ASHRAE Standard 52.2, including Appendix J: Preconditioning, or not less than ePM1-50% as rated in accordance with ISO 16890.

Exception to 8.3.3.(a): In health care facilities, the particulate filter requirements of ASHRAE/ASHE Standard 170 shall apply.

Modify Section 11 as follows

11. NORMATIVE REFERENCES

Section numbers indicate where the reference occurs in this document.

Reference	Title	Section
ASHRAE 180 Technology Parkway NW Peachtree Corners, GA 30092, United States 1-404-636-8400; www.ashrae.org		
ANSI/ASHRAE Standard 52.2- 2017	Method of Testing General Ventilation Air- Cleaning Devices for Removal Efficiency by Particle Size	8.3.1.3 <u>8.3.3(a)</u>