BSR/ASHRAE Addendum e
to ANSI/ASHRAE Standard 62.1-2019

Public Review Draft

Proposed Addendum e to Standard 62.1-2019, Ventilation and Acceptable Indoor Air Quality

Second Public Review (June 2022)
(Draft shows Proposed Changes to Current Standard)

This draft has been recommended for public review by the responsible project committee. To submit a comment on this proposed standard, go to the ASHRAE website at www.ashrae.org/standards-research--technology/public-review-drafts and access the online comment database. The draft is subject to modification until it is approved for publication by the Board of Directors and ANSI. Until this time, the current edition of the standard (as modified by any published addenda on the ASHRAE website) remains in effect. The current edition of any standard may be purchased from the ASHRAE Online Store at www.ashrae.org/bookstore or by calling 404-636-8400 or 1-800-727-4723 (for orders in the U.S. or Canada).

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FOREWORD

Mold and microbial growth in buildings has been a persistent problem and health concern in all parts of the world. In 2019, the ASHRAE Board of Directors approved a major change to ASHRAE Standard 62.1 to reduce the risks of mold and moisture accumulation in mechanically cooled buildings. Section 5.10 of ASHRAE Standard 62.1-2019 now instructs designers of ventilation systems to provide equipment and controls that limit the indoor air dew point to a maximum of 60°F (15°C) during both occupied and unoccupied mode operation.

However, the dampness and mold problem sometimes also occurs in buildings cooled by direct evaporation into the supply air. At present, Std 62.1 does not address these risks. And the recent ASHRAE publication titled; Damp Buildings, Human Health and HVAC Design makes it clear that damp buildings remain a concern for human health. (ASHRAE March 2020 – ISBN: 978-1-947192-48-5)

In light of that concern, the 62.1 committee is considering the most appropriate way for designers to limit humidity in buildings and spaces served by direct evaporative cooling equipment.

A large proportion of evap-cooled buildings are industrial facilities and warehouses. These are rarely (if ever) overcooled. Condensation is less of a concern for buildings that have relatively warm indoor surfaces. That said, it must be admitted that if uncontrolled, some configurations of direct evaporative equipment can and sometimes do over-saturate the indoor air, leading to moisture absorption, accumulation and building dampness.

However, evaporative cooling saves energy and provides appropriate thermal comfort at higher, more economical indoor air temperatures in hundreds of thousands of buildings all over the world. So while excessive dampness remains a concern, the energy-saving and comfort benefits of direct evap cooling should not be limited by a low dew point that applies to buildings held at cooler temperatures by mechanical cooling. Surface temperatures of materials inside evap cooled-buildings are typically quite warm compared to those in mechanically-cooled buildings, so the risk of persistent dampness is lower. Therefore, limiting the indoor RH rather than the dew point would be a more energy-appropriate strategy.

Revisions made in this second publication public review are to align the structure with a continuous maintenance proposals on Section 5.10, including more details on the requirements for clarity. An exception for data centers has been added in response to a public comment on the first publication public review.

[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 e to 62.1-2019

Insert new Section 5.11. Existing sections are to be renumbered accordingly.

5.11 Direct Evaporatively Cooled Buildings. Systems that include cooling by direct evaporation into the supply air shall be designed in accordance with the following sections:

5.11.1 Humidity Limits. Air in each HVAC zone shall be limited to a maximum relative humidity of 65% whenever evaporative cooling equipment is operating.

5.11.2 Analysis. The designer shall calculate the relative humidity in the HVAC zone at the outdoor cooling design condition. The HVAC zone design condition and resulting relative humidity and temperature shall be included in the design documents to confirm that the design complies with the humidity limit defined in section 5.11.1.

5.11.3 Controls. The design shall include at least one humidity sensor in each HVAC zone served by direct evaporative cooling equipment. Devices and controls shall be provided to maintain relative humidity of air in each HVAC zone at or below the limit defined in section 5.11.1.

Exceptions to 5.11:

1. HVAC zones equipped with materials, assemblies, coatings, furnishings, and contents that resist microbial growth and that are not damaged by continuously high indoor air humidity.

2. Data centers, telephone closets, server rooms, and similar HVAC zones in mixed use buildings.

Informative Notes:

1. Examples of HVAC zones exempted by exception 1 include shower rooms, swimming pool enclosures, kitchens, spa rooms, or semi-cooled warehouses that contain stored contents that are not damaged by continuously high indoor air humidity or microbial growth.

2. Examples of HVAC zones potentially exempted by exception 2 are those with installed equipment or machinery that generates a continuous sensible cooling load that is high enough to reduce relative humidity to less than 65% when calculated using the surface temperatures of walls, floor and ceiling, rather than when calculated using the temperature of air in the HVAC zone. Surfaces that remain relatively warm are at relatively low risk for either condensation or moisture accumulation large enough to support health-relevant dampness and microbial growth.