BSR/ASHRAE Addendum k
to ANSI/ASHRAE Standard 62.1-2022

Public Review Draft

Proposed Addendum k to Standard 62.1-2022, Ventilation and Acceptable Indoor Air Quality

First Public Review (March 2023)
(Draft shows Proposed Changes to Current Standard)

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FOREWORD

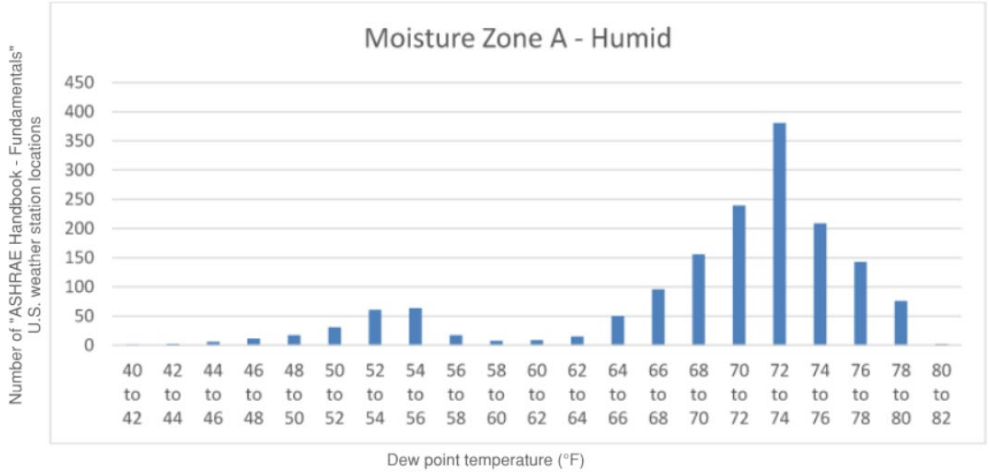
The language of Section 5.12 has been further clarified in response to several continuous maintenance proposals. The revised language utilizes ASHRAE terminology to make the requirements succinct and breaks the requirements into clearly defined components for the limit and the controls.

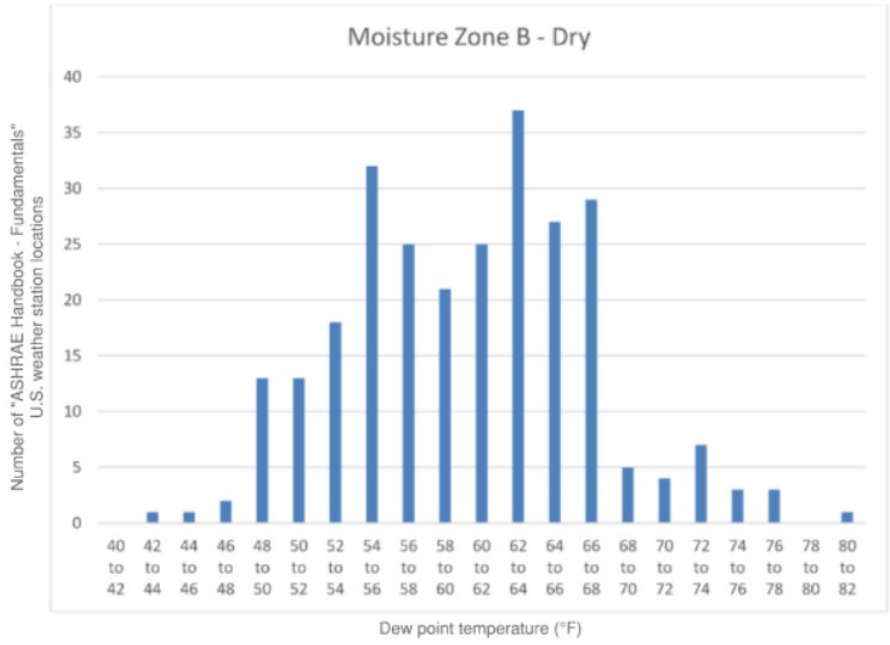
Because this section now requires humidity control in each zone, the analysis requirements became superfluous and have been removed.

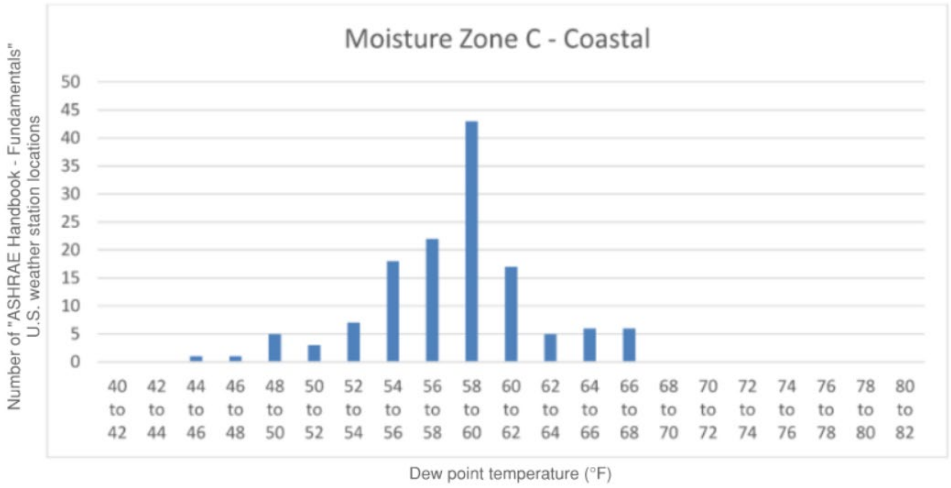
The newly added controls section stipulates that the HVAC system must be able to limit the humidity, but does not stipulate specific means, equipment, or sensors to do so.

An exception has been added to exclude buildings in zones where the local climate does not regularly exceed dew point temperatures above 68°F (20°C), and thus are unlikely to cause mold growth within building materials as a result of condensation due to cycling or intermittent cooling system operation. The 68°F (20°C) criteria excludes much of the ASHRAE "B" (dry) climate zone and all of the "C" (marine) climate zone from the humidity limit requirement. See the charts below.

Because mold growth occurs when the average surface relative humidity is high for a period of time, the humidity limit exception that includes time components has been revised. The 60-hour time component allows the cooling/dehumidification system to be disabled for a weekend. The 30-day average time component helps ensure the zones will spend more time at or below the humidity limit than above it. The 2019 ASHRAE Handbook – HVAC Applications Chapter 64 notes that a risk factor for dampness-related problems is "failing to ensure that system operation during unoccupied periods keeps the indoor dew point low enough to maintain a water activity below 0.8 in building materials and furnishings (30-day average surface relative humidity below 80% in surfaces cooled by air conditioning systems)". The same chapter recommends, "Ensure that indoor surfaces of both occupied and unoccupied spaces are not cooled to temperatures so low as to create an average surface relative humidity of over 80% lasting for more than 30 days, or surfaces cold enough to allow condensation (ASHRAE Standard 160)."







[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 k to 62.1-2022

Revise Section 5.12

5.12 Mechanically ~~and~~or ~~Indirectly~~ Evaporatively ~~Cooled Buildings~~Cooling Systems. Systems that cool by mechanical means or indirect evaporation shall be designed in accordance with the following sections:

5.12.1 Humidity Limit. ~~to limit the~~ The indoor humidity shall not exceed a ~~to a maximum~~ dew point temperature of 60°F (15°C) during both occupied and unoccupied hours in any zone. ~~whenever the outdoor air dew point is above 60°F (15°C). The dew-point limit shall not be exceeded when system~~

~~performance is analyzed with outdoor air at the dehumidification design condition (that is, design dew point and mean coincident dry-bulb temperatures) and with the space interior loads (both sensible and latent) at cooling design values and space solar loads at zero.~~

5.12.2 Controls. Devices and controls shall be provided to maintain the humidity at or below the limit defined in section 5.12.1.

Exceptions to 5.12:

1. Systems in locations where the outdoor dew point temperature is below 68°F (20°C) at the ASHRAE 2% annual dehumidification design condition.

~~1~~2. ~~Spaces~~Zones equipped with materials, assemblies, coatings, and furnishings that resist microbial growth and that are not damaged by continuously high indoor air humidity.

~~2. During overnight unoccupied periods not exceeding 12 hours, the 60°F (15°C) dew-point limit shall not apply, provided that indoor relative humidity does not exceed 65% at any time during those hours.~~

3. Indoor humidity shall be allowed to exceed the section 5.12.1 humidity limit continuously for a period of up to 60 hours provided the 30-day average humidity remains below the limit.

Informative Notes:

1. ASHRAE publishes design dehumidification conditions in the Climatic Design Information Chapter of the ASHRAE Handbook—Fundamentals.

2~~1~~. Examples of ~~spaces that are potentially~~ zones exempted by Exception ~~1~~2 ~~are~~include shower rooms, swimming pool enclosures, kitchens, spa rooms, or semi-cooled warehouse~~-spaces~~ that contain stored contents that are not damaged by continuously high indoor air humidity or microbial growth.

~~2. This requirement reduces the risk of microbial growth in buildings and their interstitial spaces, because it limits the mass of indoor water vapor that can condense or be absorbed into mechanically cooled surfaces. The dew-point limit is explicitly extended to unoccupied hours because of the extensive public record of mold growth in schools, apartments, dormitories, and public buildings that are intermittently cooled during unoccupied hours when the outdoor air dew point is above 60°F (15°C).~~