INTERPRETATION IC 55-2010-1 OF
ANSI/ASHRAE STANDARD 55-2010
THERMAL ENVIRONMENTAL CONDITIONS FOR HUMAN OCCUPANCY

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Reference: This request for interpretation refers to requirements in ANSI/ASHRAE Standard 55-2010, Section 5.1 (Page 4) relating to humidity and related steady state conditions.

Background: According to Section 5.1 "There are six primary factors that must be addressed when defining conditions for human comfort." One of those factors is shown as item "6. Humidity."

The Standard goes on to state that "all six of these factors may vary with time. However this Standard only addresses thermal comfort in a steady state (with some limited specifications for temperature variations with time in Section 5.2.5)."

Under Section 5.4 (Page 12) "Description of thermal Environmental Variables." It states "Humidity…" "It is spatially and temporally averaged in the same manner as air temperature."

The Standard sets an upper recommended humidity limit of 0.012 humidity ratio with no recommended lower humidity limits shown in Figure 5.2.1.1 "Acceptable range of operative temperature and humidity for spaces that meet the criteria specified in Section 5.2.1.1" (Page 5). The humidity limit is boxed by operative temperatures on these charts. "Steady State" is not found as a defined term in the standard.

Interpretation: The humidity, like the temperature must be in a "steady state" with some limited variations for the temperature much like is discussed with the temperature in Section 5.2.5 of the Standard. The humidity ratio should not be considered to be dynamic in the ranges of the comfort "envelope" even if they stay within the limits as defined by the envelope of parameters shown in Figure 5.2.1.1.

In other words, the humidity ratio would not be expected to change much if any under "steady state" conditions in a 15 minute period. Cyclic variation over a time period such as 15 minutes is not anticipated by ASHRAE Standard 55-2010 as being a "steady state".

Question: Is the interpretation correct?

Answer: No, Standard 55 has no requirements for the rate of change of humidity. Thus there is no requirement for humidity to be in steady state. It is permitted to assume a single value for humidity that is averaged spatially and temporally as described in Section 5.4. For clarification, the upper humidity limit of 0.012 humidity ratio only applies to the graphical method in 55-2010.