

**INTERPRETATION IC 55-2004-3 OF
ANSI/ASHRAE STANDARD 55-2004
THERMAL ENVIRONMENTAL CONDITIONS FOR HUMAN OCCUPANCY**

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Request from: Laura Petrillo (lpetrillo@ahrinet.org), Air-Conditioning, Heating, and Refrigeration Institute, 2111 Wilson Boulevard, Suite 500, Arlington, VA 22201 submitted on behalf of AHRI's Humidifiers Product Section, the past Chair of TC 2.1, Dr. Eric W. Adams (eric.adams@carrier.utc.com), and the current Vice-Chair of TC 2.1, Mark Jackson (mark.jackson@LennoxInd.com).

Reference: This request for interpretation refers to the requirements in ANSI/ASHRAE Standard 55-2004, Section 5.2.2, relating to a lower humidity limit for thermal comfort.

Background: ASHRAE Technical Committee 2.1 (TC 2.1) has sponsored research that shows that people can be thermally neutral at very low levels of humidity. It is our understanding that the "lower" humidity bound in Standard 55 was removed as a result. In paragraph 2 of Section 5.2.2 of Standard 55 (2004 version) "There are no established lower humidity limits for thermal comfort; consequently, this standard does not specify a minimum humidity level. However, non-thermal comfort factors such as skin drying, irritation of mucus membranes, dryness of the eyes, and static electricity generation, may place limits on the acceptability of very low humidity environments."

We believe this paragraph to be contradictory to Section 1 of Standard 55 (Purpose), which states: "The purpose of this standard is to specify the combination of indoor thermal environmental factors and personal factors that will produce thermal environmental conditions acceptable to a majority of the occupants within the space." The purpose does not limit the acceptability criteria to thermal comfort.

Interpretation: We interpret the purpose of Standard 55 to mean the standard should specify the thermal environmental conditions for all types of acceptability reasons, such as static electricity, skin dryness, eye and nose dryness, etc. (not just thermal).

Question: Is the interpretation correct?

Answer: No, the interpretation is not correct.

Comments:

1. Factors referred to in the standard are thermal factors; that is they concern themselves exclusively with occupant perceptions of heating and cooling comfort. Other environmental conditions (static electricity) and physiological responses (skin drying, irritation of mucous membranes, dryness of the eyes) potentially attributable in part to the thermal conditions fall outside the purpose and scope of the standard.
2. Supporting text and commentary

- a. Section 2.1 states, “*The environmental factors addressed in this standard are temperature, thermal radiation, humidity, and air speed; the personal factors are those of activity and clothing.*”
 - i. Based on section 2.1, the purpose (section 1) is served when the standard is used to, “... *specify the combinations of indoor thermal environmental factors and personal factors that will produce thermal environmental conditions acceptable to a majority of the occupants within the space.*”
- b. Section 2.4 states, “*This standard does not address such nonthermal environmental factors as air quality, acoustics, and illumination or other physical, chemical, or biological space contaminants that may affect comfort or health.*”
- c. Section 3. Definitions states, “***environment thermal***: *the characteristics of the environment that affect a person's heat loss*”
 - i. Equations and theory contained in the subsequent body of the standard are based on heat loss and the resulting effect on thermal comfort.