



ADDENDA

**ANSI/ASHRAE Addendum a to
ANSI/ASHRAE Standard 55-2017**

Thermal Environmental Conditions for Human Occupancy

Approved by ASHRAE on October 31, 2017, and by the American National Standards Institute on November 1, 2017.

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ISSN 1041-2336



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FOREWORD

Addendum a adds a new method for the avoidance of the draft risk at the ankle region. Currently, the standard does not provide guidance for assessing ankle draft. The new method applies to occupants with clothing insulation less than 0.7 clo and metabolic rate less than 1.3 met, complying with the entire Section 5.3.4, "Local Thermal Discomfort."

This addendum uses mandatory language. Informative Appendix I is updated to take into account the new method, which is based on work described in the following sources:

Liu, S., S. Schiavon, A. Kabanshi, and W. Nazaroff. 2016. Predicted percentage of dissatisfied with ankle draft. *Indoor Air* 27(4):852–62.

<https://doi.org/10.1111/ina.12364>

<http://www.escholarship.org/uc/item/9076254n>

Schiavon, S., D. Rim, W. Pasut, and W. Nazaroff. 2016. Sensation of draft at uncovered ankles for women exposed to displacement ventilation and underfloor air distribution systems. *Building and Environment* 96:228–36.

<http://dx.doi.org/10.1016/j.buildenv.2015.11.009>

<http://escholarship.org/uc/item/4p692575>

Note: In this addendum, changes to the current standard are indicated in the text by underlining (for additions) and ~~striking through~~ (for deletions) unless the instructions specifically mention some other means of indicating the changes.

Addendum a to Standard 55-2017

Modify Section 5.3.4 as shown.

5.3.4 Local Thermal Discomfort

5.3.4.1 Applicability. The requirements specified in this section are required to be met only when representative occupants meet both of the following criteria:

- Have clothing insulation I_{cl} less than 0.7 clo
- Are engaged in physical activity with metabolic rates below 1.3 met

For the purpose of compliance with this section, representative occupants' ankle level is 0.1 m (4 in.) above the floor, and head level is 1.1 m (43 in.) for seated occupants and 1.7 m (67 in.) for standing occupants.

Informative Note: The standard does not contain requirements for standing occupants when all the representative occupants are seated. Many standing occupants have met rates greater than 1.3 (see Section 5.2.1), and by criterion (b) above, the requirements of Section 5.3.4 do not apply to them.

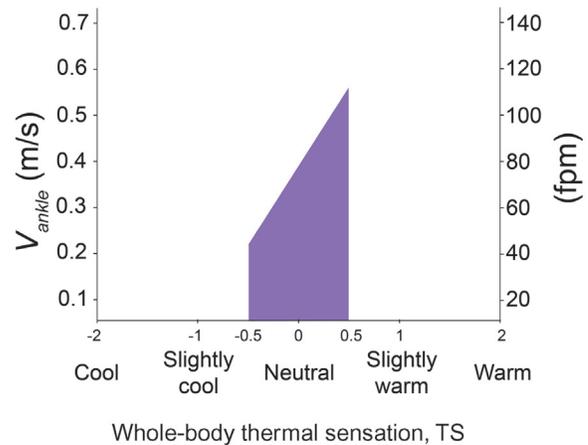


Figure 5.3.4 Air speed limits at 0.1 m (4 in.) above the floor as a function of whole body thermal sensation.

Table 5.3.4.2 Allowable Radiant Temperature Asymmetry

Radiant Temperature Asymmetry °C (°F)			
Ceiling Warmer than Floor	Ceiling Cooler than Floor	Wall Warmer than Air	Wall Cooler than Air
<9 (9.0)	<14 (25.2)	<23 (41.4)	<10 (18.0)

5.3.4.2 Radiant Temperature Asymmetry. Radiant temperature asymmetry shall not exceed the values in Table 5.3.4.2. The radiant temperature asymmetry is quantified in its definition in Section 3.

When direct-beam solar radiation falls on a representative occupant, the radiant temperature asymmetry shall include the solar contribution as follows: The short-wave mean radiant temperature $\bar{t}_{rs,w}$, as determined in Normative Appendix C, shall be multiplied by two and added to the plane radiant temperature t_{pr} for each horizontal or vertical direction in which the plane receives direct sunlight.

5.3.4.3 Ankle Air Speed. Air speed at 0.1 m (4 in.) above the floor shall be less than the value resulting from the following formula or in the shaded region of Figure 5.3.4:

$$V_{ankle} < 0.35TS + 0.39 \quad (V_{ankle} \text{ in m/s})$$

$$V_{ankle} < 70.7TS + 79.6 \quad (V_{ankle} \text{ in fpm})$$

where

V_{ankle} ≡ air speed at 0.1 m (4 in.) above the floor

TS ≡ whole-body thermal sensation; equal to PMV calculated using the input air temperature and speed averaged over two heights: 0.6 m (24 in.) and 1.1 m (43 in.) for seated occupants and 1.1 m (43 in.) and 1.7 m (67 in.) for standing occupants

Exception to 5.3.4.3: The requirement in this section does not apply when using elevated air speed in Section 5.3.3.

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