

Standard 55-2020



ANSI/ASHRAE Standard 55-2020, *Thermal Environmental conditions for Human Occupancy*

Purpose

Specifies the combinations of indoor thermal environmental factors and personal factors that will produce acceptable thermal environmental conditions to a substantial majority (80%) of occupants within a space. The standard shall not be used to override any safety, health, or critical process requirements.

Significance

Compliance with Standard 55 reduces the probability of thermal discomfort by promoting strategic combinations of enclosure (envelope) design with mechanical design and interior systems. It is intended for use in design, operation, and commissioning of buildings and other occupied spaces.

While buildings codes generally consider only air temperature, Standard 55 elevates thermal satisfaction by considering all the factors contributing to thermal comfort.

Scope

This standard addresses six general environmental and personal factors: temperature, thermal radiation, humidity, air speed, personal clothing, and metabolic rate corresponding to specific activities. It specifies thermal environmental conditions acceptable for healthy adults in indoor spaces designed for human occupancy for at least 15 minutes. This standard does NOT cover nonthermal environmental factors such as air quality, acoustics, illumination or other physical, chemical, or biological space contaminants.

Highlights

- ✓ Standard 55 was first published in 1966 and is updated using ASHRAE's continuous maintenance procedures.
- ✓ Referenced by the National Institute for Occupational Safety and Health.¹
- ✓ Improvements to the building envelope may help improve thermal comfort and reduce energy use.
- ✓ Buildings designed with thermal comfort in mind tend to have better indoor environmental quality.
- ✓ Thermal discomfort issues (being too hot or too cold) are a driving factor behind occupant workplace dissatisfaction.
- ✓ Thermal comfort considerations are often a greater priority for home improvements than energy reduction.
- ✓ Standard 55 and thermal comfort are critical considerations in LEED, Passive House, Active House, Well Standard and Living Building Challenge.
- ✓ Standard 55 is referenced in ASHRAE Standards and Guidelines that address IAQ (Standards 62.1 and 62.2, and Guideline 10), energy (Standards 90.1 and 90.2) and sustainability (2021 IGCC and ASHRAE Standard 189.1).

Changes and Improvements from Standard 55-2017

- ✓ Removes *Graphical Comfort Zone Method* for calculating thermal comfort conditions, and instead refers to examples using *Analytical Comfort Zone Method* and *Elevated Air Speed Comfort Zone Method*.
- ✓ Expanded the applicability of the adaptive model used for naturally conditioned spaces to also include mechanical cooling system installed.
- ✓ Added a new method for avoiding draft risk at the ankle region.

¹Center for Disease Control and Prevention: The National Institute for Occupational Safety and Health. February 25, 2022. Indoor Environmental Quality. <https://www.cdc.gov/niosh/topics/indoorenv/hvac.html> .