Shaping Tomorrow's Built Environment Today

Standard 55
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 majority of occupants within a space.

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.

While buildings codes generally consider only air temperature, Standard 55 elevates thermal satisfaction by considering all the factors contributing to thermal comfort. The Standard uses a combination of ten (10) comfort factors; four general, four local and two personal.

This is the only standard in North America focused primarily on thermal comfort in residences and dwelling units.

Scope
- Addresses the general environmental factors of temperature, thermal radiation, direct solar radiation, humidity, and air speed.
- Addresses the local environmental factors of floor temperature, radiant asymmetry, temperature stratification and draft.
- Addresses the personal factors of activity and clothing.
- Criteria in this standard are intended to be applied together since comfort in the indoor environment is complex and responds to the interaction of all of the factors that are addressed.
- Specifies thermal environmental conditions acceptable for healthy adults in indoor spaces designed for human occupancy for at least 15 minutes

- Excludes non-thermal environmental factors such as air quality, acoustics, and illumination or other physical, chemical, or biological space contaminants that may affect comfort or health.
- The standard shall not be used to override any safety, health, or critical process requirements.

Government Use of Standard 55

Referenced by the National Institute for Occupational Safety and Health (NIOSH)
https://www.cdc.gov/niosh/topics/indoorenv/temperature.html

Additional Benefits/Facts

- Improvements to the building envelope may help improve thermal comfort and reduce energy use.
- Buildings designed with thermal comfort in mind tend to have more windows and daylighting and better indoor environmental quality.
- Thermal discomfort issues (being too hot or too cold) are primary complaints from home owners and the primary driver for increases in heating and cooling utility bills.
- Thermal comfort considerations are often a greater priority for home improvements than is energy reduction.
- Standard 55 and thermal comfort are critical considerations in Passive House, Active House, Well Standard and Living Building Challenge.
- Standard 55 is referenced in ASHRAE Standards and Guidelines that address IAQ (Standard 62.2 and Guideline 10), energy (Standard 90.2) and sustainability (the IGCC powered by Standard 189.1).