STANDARD

ANSI/ASHRAE Standard 62.1-2022
(Supersedes ANSI/ASHRAE Standard 62.1-2019)
Includes ANSI/ASHRAE addenda listed in Appendix Q

Ventilation and Acceptable Indoor Air Quality

See Appendix Q for approval dates by ASHRAE and the American National Standards Institute.

This Standard is under continuous maintenance by a Standing Standard Project Committee (SSPC) for which the Standards Committee has established a documented program for regular publication of addenda or revisions, including procedures for timely, documented, consensus action on requests for change to any part of the Standard. Instructions for how to submit a change can be found on the ASHRAE® website (www.ashrae.org/continuous-maintenance).

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SPECIAL NOTE

This American National Standard (ANS) is a national voluntary consensus Standard developed under the auspices of ASHRAE. *Consensus* is defined by the American National Standards Institute (ANSI), of which ASHRAE is a member and which has approved this Standard as an ANS, as "substantial agreement reached by directly and materially affected interest categories. This signifies the concurrence of more than a simple majority, but not necessarily unanimity. Consensus requires that all views and objections be considered, and that an effort be made toward their resolution." Compliance with this Standard is voluntary until and unless a legal jurisdiction makes compliance mandatory through legislation.

ASHRAE obtains consensus through participation of its national and international members, associated societies, and public review.

ASHRAE Standards are prepared by a Project Committee appointed specifically for the purpose of writing the Standard. The Project Committee Chair and Vice-Chair must be members of ASHRAE; while other committee members may or may not be ASHRAE members, all must be technically qualified in the subject area of the Standard. Every effort is made to balance the concerned interests on all Project Committees.

The Senior Manager of Standards of ASHRAE should be contacted for

a. interpretation of the contents of this Standard,
b. participation in the next review of the Standard,
c. offering constructive criticism for improving the Standard, or
d. permission to reprint portions of the Standard.

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NOTE

Approved addenda, errata, or interpretations for this standard can be downloaded free of charge from the ASHRAE website at www.ashrae.org/technology.

(This foreword is not part of this standard. It is merely informative and does not contain requirements necessary for conformance to the standard. It has not been processed according to the ANSI requirements for a standard and may contain material that has not been subject to public review or a consensus process. Unresolved objectors on informative material are not offered the right to appeal at ASHRAE or ANSI.)

FOREWORD

ASHRAE Standard 62.1 specifies minimum ventilation rates and other measures intended to provide indoor air quality (IAQ) that is acceptable to human occupants and that minimizes adverse health effects. Since its original publication, Standard 62.1 has been revised and enhanced in ways that make it more than an air treatment and ventilation standard. To signify that indoor air quality goes beyond minimum ventilation requirements—and in recognition of those aspects of building systems (equipment, filtration, controls, and) that contribute to acceptable IAQ—the title of the standard has been updated to "Ventilation ***and*** *ptable Indoor Air Quality."*

Standard 62.1 is uniquely qualified to address ventilation and acceptable IAQ in the built environment and will enable stakeholders to make a conscientious effort to improve the indoor environment while maintaining a minimum standard for ventilation. The addenda that make up the 2022 edition of the standard represent years of research, statistical evidence, and improved building systems and technologies inherent to acceptable IAQ. Notable changes are as follows (for a full list, refer to Informative Appendix Q):

- *Reorganized Section 5, "Systems and Equipment," to reflect the path of airflow and better illustrate how buildings, systems, and equipment are related—essentially the tertiary purpose of the standard*
- *Continued focus on IAQ, including improvements to the IAQ Procedure, setting maximum dew-point temperatures in mechanically cooled buildings and required exhaust air separation distances*
- *Owner acknowledgment of ANSI/ASHRAE Standard 188*
- *Relocated outpatient/ambulatory surgery and support care spaces in the scope of ASHRAE/ASHE Standard 170 to a new normative appendix and will continue to provide requirements for ventilation for these occupancies when appropriate and approved by an authority having jurisdiction*
- *Updates to definitions; clarification for air density adjustments; and removal of some items related to transient occupancies that are now under the scope of Standard 62.2*

Standard 62.1 continues to provide procedures and methods for the minimum requirements of ventilation, indoor air quality, and operation to engineers, design professionals, owners, and jurisdictional authorities where model codes have been adopted. Additionally, local jurisdictions have the opportunity to evaluate and adopt the entire standard for the benefit of commercial building occupants.

This standard is updated on a regular basis using ASHRAE's continuous maintenance procedures. Addenda are publicly reviewed, approved by ASHRAE and ANSI, and posted on the ASHRAE website. Change proposals can be submitted online at www.ashrae.org/continuous-maintenance. The project committee for Standard 62.1 takes formal action on all change proposals received.

1. PURPOSE

1.1 The purpose of this standard is to specify minimum ventilation rates and other measures intended to provide indoor air quality (IAQ) that is acceptable to human occupants and that minimizes adverse health effects.

1.2 This standard is intended for regulatory application to new buildings, additions to existing buildings, and those changes to existing buildings that are identified in the body of the standard.

1.3 This standard is intended to be used to guide the improvement of IAQ in existing buildings.

2. SCOPE

2.1 This standard applies to spaces intended for human occupancy within buildings except those within dwelling units in residential occupancies in which occupants are nontransient.

2.2 This standard defines requirements for ventilation and air-cleaning system design, installation, commissioning, and operations and maintenance.

2.3 In addition to ventilation, this standard contains requirements related to certain contaminants and contaminant sources, including outdoor air, construction processes, moisture, and biological growth.

2.4 This standard does not prescribe specific ventilation rate requirements for the following:

a. Spaces that contain smoking or that do not meet the requirements in the standard for separation from spaces that contain smoking

b. Patient care areas not listed in this standard
c. Laboratories with hazardous materials

3. DEFINITIONS

3.1 Terminology (See Figure 3-1)

acceptable indoor air quality (IAQ): air in which there are no known contaminants at harmful concentrations as determined by cognizant authorities, and with which a substantial majority (80% or more) of the people exposed do not express dissatisfaction.

air:

ambient air: air surrounding a building; the source of outdoor air brought into a building.

cool air: air whose temperature is less than the average space temperature.

exhaust air: air removed from a space and discharged to outside the building by means of mechanical or natural ventilation systems.

indoor air: air in an enclosed occupiable space.

makeup air: any combination of outdoor and transfer air intended to replace exhaust air and exfiltration.

outdoor air: ambient air and ambient air that enters a building through a ventilation system, through intentional openings for natural ventilation, or by infiltration.

primary air: air supplied to the ventilation zone prior to mixing with any locally recirculated air.

recirculated air: air removed from a space, or treated within the space, that is reused as supply air.

return air: air removed from a space to be recirculated or exhausted.

supply air: air delivered by mechanical or natural ventilation to a space and composed of any combination of outdoor air, recirculated air, or transfer air.

transfer air: air moved from one indoor space to another.

ventilation air: that portion of supply air that is outdoor air plus any recirculated air that has been treated for the purpose of maintaining acceptable IAQ.

warm air: air whose temperature is greater than the average space temperature.

air-cleaning system: a device or combination of devices applied to reduce the concentration of airborne contaminants such as microorganisms, dusts, fumes, respirable particles, other particulate matter, gases, vapors, or any combination thereof.

air conditioning: process of treating air to meet the requirements of a conditioned space by controlling its temperature, humidity, cleanliness, and distribution.

breathing zone: region within an occupied space between planes 3 and 72 in. (75 and 1800 mm) above the floor and more than 2 ft (600 mm) from the walls or fixed air-conditioning equipment.

ceiling return: air removed from the space more than 4.5 ft (1.4 m) above the floor.

ceiling supply: air supplied to the space more than 4.5 ft (1.4 m) above the floor.

classroom: a space for instruction in which the instructor regularly occupies and stores supplies in the space.

lecture classroom: a space for instruction in which all occupants are interim and no supplies are stored in the space.

cognizant authority: an agency or organization that has the expertise and jurisdiction to establish and regulate concentration limits for airborne contaminants, or an agency or organization that is recognized as authoritative and has the scope and expertise to establish guidelines, limit values, or concentrations levels for airborne contaminants.

concentration: quantity of one constituent dispersed in a defined amount of another.

conditioned space: that part of a building that is heated or cooled or both for the comfort of occupants.

contaminant: an unwanted airborne constituent with the potential to reduce acceptability of the air.

contaminant mixture: two or more contaminants that target the same organ system.

demand controlled ventilation (DCV): any means by which the breathing zone outdoor airflow (V_{bz}) can be varied to the occupied space or spaces based on the actual or estimated number of occupants, ventilation requirements of the occupied zone, or both.

design compounds (DCs): chemical compounds found in the indoor environment that have the potential to reduce acceptability of the air and are considered in designing to the IAQ Procedure (IAQP).