ANSI/ASHRAE Addendum *x* to
ANSI/ASHRAE Standard 62-2001

ASHRAE® STANDARD

Ventilation for Acceptable Indoor Air Quality

Approved by the ASHRAE Standards Committee on June 28, 2003; by the ASHRAE Board of Directors on July 3, 2003; and by the American National Standards Institute on November 19, 2003.

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. The change submittal form, instructions, and deadlines may be obtained in electronic form from the ASHRAE web site, *http://www.ashrae.org*, or in paper form from the Manager of Standards. The latest edition of an ASHRAE Standard and printed copies of a public review draft may be purchased from ASHRAE Customer Service, 1791 Tullie Circle, NE, Atlanta, GA 30329-2305. E-mail: *orders@ashrae.org*. Fax: 404-321-5478. Telephone: 404-636-8400 (worldwide), or toll free 1-800-527-4723 (for orders in U.S. and Canada).

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SPECIAL NOTE

This American National Standard (ANS) is a national voluntary consensus standard developed under the auspices of the American Society of Heating, Refrigerating and Air-Conditioning Engineers (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 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,
d. permission to reprint portions of the Standard.

(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.)

Foreword to Addendum 62x

This addendum clarifies and adds requirements related to indoor humidity and the building envelope as they relate to potential indoor air quality problems. Among other changes, it revises the humidity control requirements currently described in Section 5.10 by modifying the upper relative humidity limit and eliminating the lower limit. A lower humidity limit is no longer included because the data supporting such a limit are very limited and not entirely consistent. An upper relative humidity limit is now a design requirement (not simply a recommendation as in the current standard) for mechanical systems with dehumidifying devices and controls since high indoor relative humidity in conditioned spaces has been associated with conditions that can lead to microbial growth. Building pressurization requirements to minimize the infiltration of moist outdoor air (which can cause condensation on building surfaces during cooling operation) have also been added. In addition, the issue of condensation on cold interior surfaces and contaminant transport from attached parking garages is addressed.

Addendum 62x

Revise Section 5.4 of ASHRAE 62-2001 by deleting the last sentence related to radon. [The rest of Section 5.4 is being addressed by addendum 62aa and is not altered by this addendum.]

5.4 …~~Where soils contain high concentrations of radon, ventilation practices that place crawlspaces, basements, or underground ductwork below atmospheric pressure will tend to increase radon concentrations in buildings and should be avoided (see Appendix B).~~

Replace Section 5.10 with the following:

5.10 Dehumidification Systems. Mechanical air-conditioning systems with dehumidification capability shall be designed to comply with the following.

5.10.1 Relative Humidity. Occupied space relative humidity shall be designed to be limited to 65% or less at either of the two following design conditions:

1. at the peak outdoor dew-point design conditions and at the peak indoor design latent load or
2. at the lowest space sensible heat ratio expected to occur and the concurrent (simultaneous) outdoor condition.

Note: The outdoor air dry bulb, solar load, and space sensible heat ratio may be significantly different at outdoor dew-point design conditions than when calculated at outdoor dry-bulb design conditions.

5.10.2 Exfiltration. For a building, the design minimum outdoor air intake shall be greater than the design maximum exhaust airflow when the mechanical air-conditioning systems are dehumidifying. **Note:** Although individual zones within the building may be neutral or negative, such as some laboratory and industrial spaces, the requirement is for the building as a whole to limit excessive infiltration of high dew point outdoor air.

Revise Section 5.11 by deleting one sentence referring to relative humidity in ducts. [Note that this sentence was previously removed by addendum 62t, which was approved for publication in 2002. Its deletion is retained here since this change was also part of the public review draft.]

5.11 …~~If the relative humidity in occupied spaces and low velocity ducts and plenums exceeds 70%, fungal contaminant (for example, mold, mildew, etc.) can occur…~~

Add a new Section 5.x as follows. [The final numbering of this section depends upon the outcome of other proposed addenda.]

5.x Building Envelope and Interior Surfaces. The building envelope and interior surfaces within the building envelope shall be designed in accordance with the following.

5.x.1 Building Envelope. The building envelope, including roofs, walls, fenestration systems, and foundations, shall comply with the following:

1. A weather barrier or other means shall be provided to prevent liquid water penetration into the envelope. **Exception**: When the envelope is engineered to allow incidental water penetration to occur without resulting in damage to the envelope construction.
2. An appropriately placed vapor retarder or other means shall be provided to limit water vapor diffusion to prevent condensation on cold surfaces within the envelope. **Exception**: When the envelope is engineered to manage incidental condensation without resulting in damage to the envelope construction.
3. Exterior joints, seams, or penetrations in the building envelope that are pathways for air leakage shall be caulked, gasketed, weather-stripped, provided with continuous air barrier, or otherwise sealed to limit infiltration through the envelope to reduce uncontrolled entry of outdoor air moisture and pollutants.

Note: Where soils contain high concentrations of radon or other soil gas contaminants, the local authority having jurisdiction may have additional requirements, such as depressurization.

5.x.2 Condensation on Interior Surfaces. Pipes, ducts, and other surfaces within the building whose surface temperatures are expected to fall below the surrounding dew-point temperature shall be insulated. The insulation system thermal resistance and material characteristics shall be sufficient to prevent condensation from forming on the exposed surface and within the insulating material.

Exceptions:

- Where condensate will wet only surfaces that can be managed to prevent or control mold growth.
- Where local practice has demonstrated that condensation does not result in mold growth.

Add a new Section 5.y as follows. [The final numbering of this section depends upon the outcome of other proposed addenda.]

5.y Buildings with Attached Parking Garages. In order to limit the entry of vehicular exhaust into occupiable spaces, buildings with attached parking garages shall:

1. maintain the garage pressure at or below the pressure of the adjacent occupiable spaces; or
2. use a vestibule to provide an airlock between the garage and the adjacent occupiable spaces; or
3. otherwise be designed to minimize migration of air from the attached parking garage into the adjacent occupiable spaces of the building.

Delete the following reference from Section 9. [The text containing this reference is in the existing Section 5.10, which is deleted from the standard by this addendum.]

~~[10] Sterling, E.M., A. Arundel, T.D. Sterling. 1985 "Criteria for human exposure to humidity in occupied buildings." *ASHRAE Transactions*, Vol. 91, Part 1B, pp. 611-622.~~

POLICY STATEMENT DEFINING ASHRAE'S CONCERN FOR THE ENVIRONMENTAL IMPACT OF ITS ACTIVITIES

ASHRAE is concerned with the impact of its members' activities on both the indoor and outdoor environment. ASHRAE's members will strive to minimize any possible deleterious effect on the indoor and outdoor environment of the systems and components in their responsibility while maximizing the beneficial effects these systems provide, consistent with accepted standards and the practical state of the art.

ASHRAE's short-range goal is to ensure that the systems and components within its scope do not impact the indoor and outdoor environment to a greater extent than specified by the standards and guidelines as established by itself and other responsible bodies.

As an ongoing goal, ASHRAE will, through its Standards Committee and extensive technical committee structure, continue to generate up-to-date standards and guidelines where appropriate and adopt, recommend, and promote those new and revised standards developed by other responsible organizations.

Through its *Handbook*, appropriate chapters will contain up-to-date standards and design considerations as the material is systematically revised.

ASHRAE will take the lead with respect to dissemination of environmental information of its primary interest and will seek out and disseminate information from other responsible organizations that is pertinent, as guides to updating standards and guidelines.

The effects of the design and selection of equipment and systems will be considered within the scope of the system's intended use and expected misuse. The disposal of hazardous materials, if any, will also be considered.

ASHRAE's primary concern for environmental impact will be at the site where equipment within ASHRAE's scope operates. However, energy source selection and the possible environmental impact due to the energy source and energy transportation will be considered where possible. Recommendations concerning energy source selection should be made by its members.