ANSI/ASHRAE/IESNA Addendum *h* to
ANSI/ASHRAE/IESNA Standard 90.1-2001

ASHRAE STANDARD

Energy Standard for Buildings Except Low-Rise Residential Buildings

Approved by the ASHRAE Standards Committee on October 5, 2003; by the ASHRAE Board of Directors on January 29, 2004; and by the American National Standards Institute on February 25, 2004.

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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ANSI

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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

This proposed addendum updates the normative references to reflect the latest editions. These changes in references do affect the testing procedures for determining the building material thermal properties (R-values and thermal conductivities) and assembly U-factors of Sections A9.3.1 and A9.3.2 of Normative Appendix A. Alternative test procedure ASTM C1363 replaces the existing ASTM C236 and ASTM C976 for these properties. In addition, where credit is taken for a low-emissivity coating for skylights, the emissivity of the coating shall now be determined in accordance with NFRC 300-2001 instead of NFRC 301-1993.

Addendum *h* to 90.1-2001 (I-P and SI editions)

In Section 12, replace the existing normative references with the following updated versions:

ASTM C177-97	Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmittance Properties by Means of the Guarded-Hot-Plate Apparatus
ASTM C518-98	Standard Test Method for Steady-State Thermal Transmittance Properties by Means of the Heat Flow Meter Apparatus
ASTM C1371-98	Standard Test Method for Determination of Emittance of Materials Near Room Temperature Using Portable Emissometers
NFRC 100:2001	Procedure for Determining Fenestration Product U-Factors, (Second Edition) *Published November 2002*
NFRC 200-2001	Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence, (Second Edition) *Published November 2002*
NFRC 300-2001	Standard Test Method for Determining the Solar Optical Properties of Glazing Materials and Systems, (Second Edition) *Published November 2002*
NFRC 400-2001	Procedure for Determining Fenestration Product Air Leakage, (Second Edition) *Published November 2002*

In Section 12, add the following new normative references:

ASTM C1363-97	Standard Test Method for the Thermal Performance of Building Assemblies by Means of a Hot Box Apparatus
NFRC 101: 2001	Procedure for Determining Thermo-Physical Properties of Materials for Use in NFRC–Approved Software Programs, (First Edition) *Published November 2002*
NFRC 102-2001	Test Procedures for Measuring the Steady-State Thermal Transmittance of Fenestration Systems, (Second Edition) *Published November 2002*
NFRC 201-2001	Interim Standard Test Method for Measuring the Solar Heat Gain Coefficient of Fenestration Systems Using Calorimetry Hot Box Methods, (Second Edition) *Published November 2002*

In Section 12, delete the following normative references:

~~ASTM C976-90~~	~~Test Method for Thermal Performance of Building Assemblies by Means of a Calibrated Hot Box~~
~~NFRC 301-93~~	~~Standard Test Method for Emittance of Specular Surfaces Using Spectrometric Measurements~~

In Section 5.5.2.2, make the following changes to Exception (c):

Where credit is being taken for a low-emissivity coating, the emissivity of the coating shall be determined in accordance with NFRC ~~301~~300.

In Section A9.3.1, make the following changes to the test procedure references:

a. ASTM C177,

b. ~~ASTM C236~~ ASTM C518, or

c. ~~ASTM C518~~ ASTM C1363

~~d. ASTM C976~~

In Section A9.3.2, make the following changes to the test procedure references:

A9.3.2 Assembly U-Factors. If assembly *U-factors* are determined by testing, ~~one of~~ the ~~following~~ ASTM C1363 test procedure~~s~~ shall be used.

~~a. ASTM C236 or~~

~~b. ASTM C976~~

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.