ADDENDA

ANSI/ASHRAE/IES Addendum cy to
ANSI/ASHRAE/IES Standard 90.1-2013

Energy Standard for Buildings Except Low-Rise Residential Buildings

Approved by the ASHRAE Standards Committee on August 24, 2016; by the ASHRAE Board of Directors on Septebmer 6, 2016; by the IES Board of Directors on September 26, 2016; and by the American National Standards Institute on October 7, 2016.

This addendum was approved 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 website (www.ashrae.org) or in paper form from the Senior Manager of Standards.

The latest edition of an ASHRAE Standard may be purchased on the ASHRAE website (www.ashrae.org) or from ASHRAE Customer Service, 1791 Tullie Circle, NE, Atlanta, GA 30329-2305. E-mail: orders@ashrae.org. Fax: 678-539-2129. Telephone: 404-636-8400 (worldwide), or toll free 1-800-527-4723 (for orders in US and Canada). For reprint permission, go to www.ashrae.org/permissions.

© 2016 ASHRAE ISSN 1041-2336

ASHRAE® IES Illuminating ENGINEERING SOCIETY Approved American National Standard ANSI www.ansi.org

ASHRAE Standing Standard Project Committee 90.1
Cognizant TC: 7.6, Systems Energy Utilization
SPLS Liaison: Roger Hedrick
ASHRAE Staff Liaison: Steven C. Ferguson
IES Liaison: Rita M. Harrold

Drake Erbe*, *Chair*	Harry Misuriello*	John Dunlap
Thomas Culp*, *Vice-Chair*	Frank Morrison*	Chuck Foster
Richard, Lord*, *Vice-Chair*	Frank Myers*	Sam Francis
Peter Baselici *	Ron Nickson*	John Green
Sean Beilman*	Tim Peglow*	Chad Groshart
Jeff Boldt*	Eric Richman*	David Handwork
Ernie Conrad*	Steve Rosenstock*	Stan Harbuck
Charles Cottrell*	Bob Ross*	Mike Houston
Jay Crandall*	Marty Salzburg*	Richard Hermans
Craig Drumheller*	Leonard Sciarra*	Michael Ivanovich
Jim Garrigus*	Frank Stanonik*	Hy Kaplan
Jason Glazer*	Wayne Stoppelmoor*	Neil Leslie
Krishnan Gowri*	Christian Taber*	Merle McBride
Pekka Hakkarainen*	William Talbert*	Benjamin Meyer
Susanna Hanson*	Steven Taylor*	Keith Nelson
Richard Heinisch*	Martha VanGeem*	Steve Orlowski
Ned Heminger*	McHenry Wallace*	Amy Schmidt
Dave Herron*	Jerry White*	David Shepherd
Scott Hintz*	Jeremy Williams*	Don Surrena
John Hogan*	Karim Amrane	Stephen Szoke
Jonathan Humble*	Gary Ash	Mike Tillou
Itzhak Maor*	Joseph Brooks	Doug Tucker
Chris Mathis*	Don Brundage	Richard Watson
Michael Mehl*	Brandon Damas	Jason Wilen

** Denotes voting member at time of publication.*

ASHRAE STANDARDS COMMITTEE 2016–2017

Rita M. Harrold, *Chair*
Steven J. Emmerich, *Vice-Chair*
James D. Aswegan
Niels Bidstrup
Donald M. Brundage
Waller S. Clements
Drury B. Crawley
John F. Dunlap,
James W. Earley, Jr.
Keith I. Emerson
Julie M. Ferguson
Michael W. Gallagher
Walter T. Grondzik
Vinod P. Gupta
Susanna S. Hanson
Roger L. Hedrick
Rick M. Heiden
Srinivas Katipamula
Arsen K. Melikov
R. Lee Millies, Jr.
Cyrus H. Nasseri
David Robin
Peter Simmonds
Dennis A. Stanke
Wayne H. Stoppelmoor, Jr.
Jack H. Zarour
William F. Walter, *BOD ExO*
Patricia Graef, *CO*

Stephanie C. Reiniche, *Senior Manager of Standards*

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 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.

DISCLAIMER

ASHRAE uses its best efforts to promulgate Standards and Guidelines for the benefit of the public in light of available information and accepted industry practices. However, ASHRAE does not guarantee, certify, or assure the safety or performance of any products, components, or systems tested, installed, or operated in accordance with ASHRAE's Standards or Guidelines or that any tests conducted under its Standards or Guidelines will be nonhazardous or free from risk.

ASHRAE INDUSTRIAL ADVERTISING POLICY ON STANDARDS

ASHRAE Standards and Guidelines are established to assist industry and the public by offering a uniform method of testing for rating purposes, by suggesting safe practices in designing and installing equipment, by providing proper definitions of this equipment, and by providing other information that may serve to guide the industry. The creation of ASHRAE Standards and Guidelines is determined by the need for them, and conformance to them is completely voluntary.

In referring to this Standard or Guideline and in marking of equipment and in advertising, no claim shall be made, either stated or implied, that the product has been approved by ASHRAE.

© ASHRAE (www.ashrae.org). For personal use only. Additional reproduction, distribution, or transmission in either print or digital form is not permitted without ASHRAE's prior written permission.

(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

Indoor pool dehumidifiers (IPD) were introduced over 40 years ago and are now used in many buildings covered by ASHRAE Standard 90.1. However, the current Standard 90.1 has no minimum energy efficiency requirements for this equipment. Through AHRI, manufacturers of IPD developed Standard 910 (I-P) to establish common rating conditions for these products. In addition, AHRI is currently developing a certification program and will soon publish certified ratings on its directory of certified products.

This proposal establishes for the first time a product class for IPD. The intent is to recognize the technology in Standard 90.1 by requiring minimum energy efficiency standards. Moisture removal efficiency (MRE) is proposed for a full range of product classes at standard rating conditions listed in AHRI Standard 910 (I-P). These levels will be subject to further review and evaluation once a third-party certification is established and more data are available.

Note: In this addendum, changes to the current standard are indicated in the text by underlining (for additions) and ~~strikethrough~~ (for deletions) unless the instructions specifically mention some other means of indicating the changes.

Addendum cy to 90.1-2013

Add definitions as follows (I-P and SI):

indoor pool dehumidifier: a type of air-cooled or water-cooled electrically operated vapor compression refrigeration system, factory assembled as a single package or split system, which includes an indoor cooling/dehumidifying coil, an air reheat coil, compressor(s), and an air moving device. It may also include a refrigerant heat recovery unit, an auxiliary refrigerant condenser, an economizer, and an air-to-air heat recovery device. It shall provide the function of dehumidification, air circulation, and air reheating and may include the function of air-cooling, air-cleaning, pool water heating, and air-to-air heat recovery.

moisture removal efficiency (MRE): a ratio of the moisture removal capacity in lb (kg) of moisture/h to the power input values in kW at any given set of standard rating conditions expressed in lb (kg) of moisture/kWh.

Add a new item "n" to Section 6.4.1.1 (I-P and SI):

6.4.1.1 Minimum Equipment Efficiencies—Listed Equipment—Standard Rating and Operating Conditions. Equipment shown in Tables 6.8.1-1 through 6.8.1-14 shall have a minimum performance at the specified rating conditions when tested in accordance with the specified test procedure. Where multiple rating conditions or performance requirements are provided, the equipment shall satisfy all stated requirements unless otherwise exempted by footnotes in the table. Equipment covered under the Federal Energy Policy Act of 1992 (EPACT) shall have no minimum efficiency requirements for operation at minimum capacity or other than standard rating conditions. Equipment

used to provide water heating functions as part of a combination system shall satisfy all stated requirements for the appropriate space heating or cooling category.
Tables are as follows:

a. Table 6.8.1-1—Electrically Operated Unitary Air Conditioners and Condensing Units—Minimum Efficiency Requirements
b. Table 6.8.1-2—Electrically Operated Unitary and Applied Heat Pumps—Minimum Efficiency Requirements
c. Table 6.8.1-3—Water-Chilling Packages—Efficiency Requirements (see Section 6.4.1.2 for water-cooled centrifugal water-chilling packages that are designed to operate at nonstandard conditions.)
d. Table 6.8.1-4—Electrically Operated Packaged Terminal Air Conditioners, Packaged Terminal Heat Pumps, Single-Package Vertical Air Conditioners, Single-Package Vertical Heat Pumps, Room Air Conditioners, and Room Air Conditioner Heat Pumps—Minimum Efficiency Requirements
e. Table 6.8.1-5—Warm-Air Furnaces, Warm-Air Furnaces/Air-Conditioning Units, Warm-Air Duct Furnaces, and Unit Heaters
f. Table 6.8.1-6—Gas- and Oil-Fired Boilers—Minimum Efficiency Requirements
g. Table 6.8.1-7—Performance Requirements for Heat Rejection Equipment
h. Table 6.8.1-8—Heat Transfer Equipment
i. Table 6.8.1-9—Electrically Operated Variable-Refrigerant-Flow Air Conditioners
j. —Minimum Efficiency Requirements Table 6.8.1-10—Electrically Operated Variable-Refrigerant-Flow Air-to-Air and Applied Heat Pumps—Minimum Efficiency Requirements
k. Table 6.8.1-11—Air Conditioners and Condensing Units Serving Computer Rooms
l. Table 6.8.1-12—Commercial Refrigerators and Freezers
m. Table 6.8.1-13—Commercial Refrigeration
n. Table 6.8.1-14—Indoor Pool Dehumidifiers

Add new Table 6.8.1-14:

TABLE 6.8.1-14 Vapor Compression Based Indoor Pool Dehumidifiers – Minimum Efficiency Requirements (IP Units)

Equipment Type	Subcategory or Rating Condition	Minimum Efficiency	Test Procedure
Single Package Indoor[a] (With or Without Economizer)	Rating Conditions: A, B, or C	3.5 MRE	AHRI 910 (I-P)
Single Package Indoor Water-Cooled (With or Without Economizer)	Rating Conditions: A, B, or C	3.5 MRE	
Single Package Indoor Air-Cooled (With or Without Economizer)	Rating Conditions: A, B, or C	3.5 MRE	
Split System Indoor Air-Cooled (With or Without Economizer)	Rating Conditions: A, B, or C	3.5 MRE	

© ASHRAE (www.ashrae.org). For personal use only. Additional reproduction, distribution, or transmission in either print or digital form is not permitted without ASHRAE's prior written permission.

a. Units without air-cooled condenser.

TABLE 6.8.1-14 Vapor Compression Based Indoor Pool Dehumidifiers – Minimum Efficiency Requirements (SI Units)

Equipment Type	Subcategory or Rating Condition	Minimum Efficiency	Test Procedure
Single Package Indoor[a] (With or Without Economizer)	Rating Conditions: A, B, or C	1.6 MRE	AHRI 911 (SI)
Single Package Indoor Water-Cooled (With or Without Economizer)	Rating Conditions: A, B, or C	1.6 MRE	
Single Package Indoor Air-Cooled (With or Without Economizer)	Rating Conditions: A, B, or C	1.6 MRE	
Split System Indoor Air-Cooled (With or Without Economizer)	Rating Conditions: A, B, or C	1.6 MRE	

a. Units without air-cooled condenser.

Add the following normative reference to Section 12 under Air Conditioning, Heating and Refrigeration Institute (AHRI) (I-P and SI):

AHRI Standard 910 (I-P)-2014 Performance Rating of Indoor Pool Dehumidifiers

AHRI Standard 911 (SI)-2014 Performance Rating of Indoor Pool Dehumidifiers

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.

ASHRAE · 1791 Tullie Circle NE · Atlanta, GA 30329 · www.ashrae.org

7/16