ADDENDA

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

Energy Standard for Buildings Except Low-Rise Residential Buildings

Approved by the ASHRAE Standards Committee on January 23, 2016; by the ASHRAE Board of Directors on January 27, 2016; by the IES Board of Directors on December 31, 2015; and by the American National Standards Institute on January 28, 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.

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FOREWORD

This addendum revises the prescriptive criteria for doors in Tables 5.5-0 through 5.5-8. Proposed changes were developed using both cost-effectiveness analysis and engineering judgment. Additionally, an exception was added for doors with one row (panel) of glazing.

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 bc to 90.1-2013

Revise the Standard as follows (IP and SI Units).

5.5.3.6 Opaque Doors. All opaque doors shall have a U-factor not greater than that specified in Tables 5.5-1 through 5.5-8.

Exceptions:

1. For *conditioned spaces*, *nonswinging doors* that are horizontally hinged sectional doors with a single row of *fenestration* shall have an assembly U-factor less than or equal to 0.440 (2.498) in Climate Zones 0 through 6 and less than or equal to 0.360 (2.044) in Climate Zones 7 and 8 provided the *fenestration area* is at least 14% and no more than 25% of the total *door area.*
2. For *semiheated spaces*, *nonswinging doors* that are horizontally-hinged sectional doors with a single row of *fenestration* shall have an assembly U-factor less than or equal to 0.440 (2.498) in Climate Zones 3 through 6 and less than or equal to 0.360 (2.044) in Climate Zones 7 and 8 provided the *fenestration area* is at least 14% and no more than 25% of the total *door area.*

Revise Tables 5.5-0 through 5.5-8. as follows:

Table 5.5-0 Building Envelope Requirements for Climate Zone 0 (A,B,C)* (IP)

Opaque Elements	Nonresidential		Residential		Semiheated	
	Assembly Maximum	Insulation Min. R-Value	Assembly Maximum	Insulation Min. R-Value	Assembly Maximum	Insulation Min. R-Value
Opaque Doors						
Swinging	U-~~0.700~~ 0.370		U-~~0.500~~ 0.370		U-0.700	
Nonswinging	U-~~1.450~~ 0.310		U-~~0.500~~ 0.310		U-1.450	

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Table 5.5-0 Building Envelope Requirements for Climate Zone 0 (A,B,C)* (SI)

Opaque Elements	Nonresidential		Residential		Semiheated	
	Assembly Maximum	Insulation Min. R-Value	Assembly Maximum	Insulation Min. R-Value	Assembly Maximum	Insulation Min. R-Value
Opaque Doors						
Swinging	U-~~3.975~~ 2.101		U-~~2.839~~ 2.101		U-3.975	
Nonswinging	U-~~8.233~~ 1.760		U-~~2.839~~ 1.760		U-8.233	

Table 5.5-1 Building Envelope Requirements for Climate Zone 1 (A,B,C)* (IP)

Opaque Elements	Nonresidential		Residential		Semiheated	
	Assembly Maximum	Insulation Min. R-Value	Assembly Maximum	Insulation Min. R-Value	Assembly Maximum	Insulation Min. R-Value
Opaque Doors						
Swinging	U-~~0.700~~ 0.370		U-~~0.500~~ 0.370		U-0.700	
Nonswinging	U-~~1.450~~ 0.310		U-~~0.500~~ 0.310		U-1.450	

Table 5.5-1 Building Envelope Requirements for Climate Zone 1 (A,B,C)* (SI)

Opaque Elements	Nonresidential		Residential		Semiheated	
	Assembly Maximum	Insulation Min. R-Value	Assembly Maximum	Insulation Min. R-Value	Assembly Maximum	Insulation Min. R-Value
Opaque Doors						
Swinging	U-~~3.975~~ 2.101		U-~~2.839~~ 2.101		U-3.975	
Nonswinging	U-~~8.233~~ 1.760		U-~~2.839~~ 1.760		U-8.233	

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Table 5.5-2 Building Envelope Requirements for Climate Zone 2 (A,B)* (IP)

Opaque Elements	Nonresidential		Residential		Semiheated	
	Assembly Maximum	Insulation Min. R-Value	Assembly Maximum	Insulation Min. R-Value	Assembly Maximum	Insulation Min. R-Value
Opaque Doors						
Swinging	U-~~0.700~~ 0.370		U-~~0.500~~ 0.370		U-0.700	
Nonswinging	U-~~0.500~~ 0.310		U-~~0.500~~ 0.310		U-1.450	

Table 5.5-2 Building Envelope Requirements for Climate Zone 2 (A,B)* (SI)

Opaque Elements	Nonresidential		Residential		Semiheated	
	Assembly Maximum	Insulation Min. R-Value	Assembly Maximum	Insulation Min. R-Value	Assembly Maximum	Insulation Min. R-Value
Opaque Doors						
Swinging	U-~~3.975~~ 2.101		U-~~2.839~~ 2.101		U-3.975	
Nonswinging	U-~~2.839~~ 1.760		U-~~2.839~~ 1.760		U-8.233	

Table 5.5-3 Building Envelope Requirements for Climate Zone 3 (A,B,C)* (IP)

Opaque Elements	Nonresidential		Residential		Semiheated	
	Assembly Maximum	Insulation Min. R-Value	Assembly Maximum	Insulation Min. R-Value	Assembly Maximum	Insulation Min. R-Value
Opaque Doors						
Swinging	U-~~0.700~~ 0.370		U-~~0.500~~ 0.370		U-~~0.700~~ 0.370	
Nonswinging	U-~~0.500~~ 0.310		U-~~0.500~~ 0.310		U-~~1.450~~ 0.360	

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Table 5.5-3 Building Envelope Requirements for Climate Zone 3 (A,B,C)* (SI)

Opaque Elements	Nonresidential		Residential		Semiheated	
	Assembly Maximum	Insulation Min. R-Value	Assembly Maximum	Insulation Min. R-Value	Assembly Maximum	Insulation Min. R-Value
Opaque Doors						
Swinging	U-~~3.975~~ 2.101		U-~~2.839~~ 2.101		U-~~3.975~~ 2.101	
Nonswinging	U-~~2.839~~ 1.760		U-~~2.839~~ 1.760		U-~~8.233~~ 2.044	

Table 5.5-4 Building Envelope Requirements for Climate Zone 4 (A,B,C)* (IP)

Opaque Elements	Nonresidential		Residential		Semiheated	
	Assembly Maximum	Insulation Min. R-Value	Assembly Maximum	Insulation Min. R-Value	Assembly Maximum	Insulation Min. R-Value
Opaque Doors						
Swinging	U-~~0.500~~ 0.370		U-~~0.500~~ 0.370		U-~~0.700~~ 0.370	
Nonswinging	U-~~0.500~~ 0.310		U-~~0.500~~ 0.310		U-~~1.450~~ 0.360	

Table 5.5-4 Building Envelope Requirements for Climate Zone 4 (A,B,C)* (SI)

Opaque Elements	Nonresidential		Residential		Semiheated	
	Assembly Maximum	Insulation Min. R-Value	Assembly Maximum	Insulation Min. R-Value	Assembly Maximum	Insulation Min. R-Value
Opaque Doors						
Swinging	U-~~2.839~~ 2.101		U-~~2.839~~ 2.101		U-~~3.975~~ 2.101	
Nonswinging	U-~~2.839~~ 1.760		U-~~2.839~~ 1.760		U-~~8.233~~ 2.044	

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Table 5.5-5 Building Envelope Requirements for Climate Zone 5 (A,B,C)* (IP)

	Nonresidential		Residential		Semiheated	
Opaque Elements	**Assembly Maximum**	**Insulation Min. R-Value**	**Assembly Maximum**	**Insulation Min. R-Value**	**Assembly Maximum**	**Insulation Min. R-Value**
Opaque Doors						
Swinging	U-~~0.500~~ 0.370		U-~~0.500~~ 0.370		U-~~0.700~~ 0.370	
Nonswinging	U-~~0.500~~ 0.310		U-~~0.500~~ 0.310		U-~~1.450~~ 0.360	

Table 5.5-5 Building Envelope Requirements for Climate Zone 5 (A,B,C)* (SI)

	Nonresidential	Residential	Semiheated
Opaque Doors			
Swinging	U-~~2.839~~ 2.101	U-~~2.839~~ 2.101	U-~~3.975~~ 2.101
Nonswinging	U-~~2.839~~ 1.760	U-~~2.839~~ 1.760	~~U-8.233~~ 2.044

Table 5.5-6 Building Envelope Requirements for Climate Zone 6 (A,B)* (IP)

	Nonresidential		Residential		Semiheated	
Opaque Elements	**Assembly Maximum**	**Insulation Min. R-Value**	**Assembly Maximum**	**Insulation Min. R-Value**	**Assembly Maximum**	**Insulation Min. R-Value**
Opaque Doors						
Swinging	U-~~0.500~~ 0.370		U-~~0.500~~ 0.370		U-~~0.700~~ 0.370	
Nonswinging	U-~~0.500~~ 0.310		U-~~0.500~~ 0.310		U-~~0.500~~ 0.360	

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Table 5.5-6 Building Envelope Requirements for Climate Zone 6 (A,B)* (SI)

Opaque Elements	Nonresidential		Residential		Semiheated	
	Assembly Maximum	Insulation Min. R-Value	Assembly Maximum	Insulation Min. R-Value	Assembly Maximum	Insulation Min. R-Value
Opaque Doors						
Swinging	U-~~2.839~~ 2.101		U-~~2.839~~ 2.101		U-~~3.975~~ 2.101	
Nonswinging	U-~~2.839~~ 1.760		U-~~2.839~~ 1.760		U-~~2.839~~ 2.044	

Table 5.5-7 Building Envelope Requirements for Climate Zone 7* (IP)

Opaque Elements	Nonresidential		Residential		Semiheated	
	Assembly Maximum	Insulation Min. R-Value	Assembly Maximum	Insulation Min. R-Value	Assembly Maximum	Insulation Min. R-Value
Opaque Doors						
Swinging	U-~~0.500~~ 0.370		U-~~0.500~~ 0.370		U-~~0.700~~ 0.370	
Nonswinging	U-~~0.500~~ 0.310		U-~~0.500~~ 0.310		U-~~0.500~~ 0.310	

Table 5.5-7 Building Envelope Requirements for Climate Zone 7* (SI)

Opaque Elements	Nonresidential		Residential		Semiheated	
	Assembly Maximum	Insulation Min. R-Value	Assembly Maximum	Insulation Min. R-Value	Assembly Maximum	Insulation Min. R-Value
Opaque Doors						
Swinging	U-~~2.839~~ 2.101		U-~~2.839~~ 2.101		U-~~3.975~~ 2.101	
Nonswinging	U-~~2.839~~ 1.760		U-~~2.839~~ 1.760		U-~~2.839~~ 1.760	

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Table 5.5-8 Building Envelope Requirements for Climate Zone 8* (IP)

Opaque Elements	Nonresidential		Residential		Semiheated	
	Assembly Maximum	Insulation Min. R-Value	Assembly Maximum	Insulation Min. R-Value	Assembly Maximum	Insulation Min. R-Value
Opaque Doors						
Swinging	U-~~0.500~~ 0.370		U-~~0.500~~ 0.370		U-~~0.500~~ 0.370	
Nonswinging	U-~~0.500~~ 0.310		U-~~0.500~~ 0.310		U-~~0.500~~ 0.310	

Table 5.5-8 Building Envelope Requirements for Climate Zone 8* (SI)

Opaque Elements	Nonresidential		Residential		Semiheated	
	Assembly Maximum	Insulation Min. R-Value	Assembly Maximum	Insulation Min. R-Value	Assembly Maximum	Insulation Min. R-Value
Opaque Doors						
Swinging	U-~~2.839~~ 2.101		U-~~2.839~~ 2.101		U-~~2.839~~ 2.101	
Nonswinging	U-~~2.839~~ 1.760		U-~~2.839~~ 1.760		U-~~2.839~~ 1.760	

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.

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