

ANSI/ASHRAE Addenda a, b, c, and k to
ANSI/ASHRAE Standard 62.2-2007



ASHRAE ADDENDA

2008 SUPPLEMENT

Ventilation and Acceptable Indoor Air Quality in Low-Rise Residential Buildings

See Appendix for approval dates.

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 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 US and Canada).

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ISSN 1041-2336



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NOTE

When addenda, interpretations, or errata to this standard have been approved, they can be downloaded free of charge from the ASHRAE Web site at www.ashrae.org.

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FOREWORD

*This change implements interpretation IC 62.2-2004-3. The language clarifies the section and makes it easier for users to apply an ANSI consensus standard method to meet the requirements of Section 6.5. No change is made to the actual requirements, which exist to limit the transport of contaminants from garages to occupiable spaces. **Note:** Please be aware that Addendum c to ANSI/ASHRAE Standard 62.2-2007 also makes changes to Section 6.5.*

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

Addendum a to Standard 62.2-2007

Add the following to Section 6.5:

6.5 Garages. When an occupiable space adjoins a garage, the design must prevent migration of contaminants to the adjoining occupiable space. Doors between garages and occupiable spaces shall be gasketed or made substantially airtight with weather stripping. HVAC systems that include air handlers or return ducts located in garages shall have total air leakage of no more than 6% of total fan flow when measured at 0.1 in. w.c. (25 Pa), using California Title 24⁵ or equivalent. Method B of ANSI/ASTM E1554¹⁰ may be used to meet this requirement, provided that the garage door is open to the outside and that supply and return leakage results are added to obtain the total system leakage.

Add the following normative reference to Section 9:

9. REFERENCES

10. ANSI/ASTM E1554-03, Standard Test Methods for Determining External Air Leakage of Air Distribution Systems by Fan Pressurization. ASTM International, West Conshohocken, PA.

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FOREWORD

Standard 62.2 currently recognizes that it is possible to achieve equivalent indoor air quality (IAQ) through either continuous ventilation or an increased amount of ventilation provided intermittently. This addendum replaces the current requirements for calculating equivalent delivered ventilation for an intermittently operating system with more accurate factors. The impact of this addendum is to require smaller intermittent ventilation rates than the current standard for some operation schedules. One advantage of this change is to allow potential energy-saving strategies that would result in equivalent IAQ.

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

Addendum b to Standard 62.2-2007

Revise Exception to Section 4.3 as shown.

4.3 Control and Operation. The “fan on” switch on a heating or air-conditioning system shall be permitted as an operational control for systems introducing ventilation air through a duct to the return side of an HVAC system. Readily accessible override control must be provided to the occupant. Local exhaust fan switches and “fan on” switches shall be permitted as override controls. Controls, including the “fan-on” switch of a conditioning system, must be appropriately labeled.

Exception: An intermittently operating, whole-house mechanical ventilation system may be used if the ventilation rate is adjusted according to the exception to Section 4.4. The system must be designed so that it can operate automatically based on a timer. The intermittent mechanical ventilation system must operate at least one hour out of every twelve. ~~The intermittent mechanical ventilation system must operate at least once per day and must operate at least 10% of the time.~~

Revise Exception to Section 4.4 as shown.

4.4 Delivered Ventilation. The delivered ventilation rate shall be calculated as the larger of the total supply or total exhaust and shall be no less than specified in Section 4.1 during each hour of operation.

Exception: The effective ventilation rate of an intermittent system is the combination of its delivered capacity, ~~its~~ daily fractional on-time, cycle time, and the ventilation effectiveness from Table 4.2. The fan flow rate required

to achieve an effective ventilation rate that is equivalent to the continuous ventilation requirement shall be calculated from the following equation:

$$Q_f = Q_r / (\epsilon f) \tag{4.2}$$

where

- Q_f = fan flow rate during the on-cycle,
- Q_r = ventilation air requirement (from Table 4.1a or Table 4.1b),
- T_{cyc} = fan cycle time, defined as the total time for 1 on-cycle and 1 off-cycle (used in Table 4.2)
- ϵ = ventilation effectiveness (from Table 4.2), and
- f = fractional on time, defined as the on-time for one cycle divided by the cycle time.

~~If the system runs at least once every three hours, 1.0 can be used as the ventilation effectiveness. (See Appendix B for an example of this calculation.)~~

Delete the existing Table 4.2 and replace as follows.

**TABLE 4.2
Ventilation Effectiveness for Intermittent Fans**

Daily Fractional On-Time, f	Ventilation Effectiveness, ϵ
$f < 35\%$	0.33
$35\% < f < 60\%$	0.50
$60\% < f < 80\%$	0.75
$80\% < f$	1.0

**TABLE 4.2
Ventilation Effectiveness for Intermittent Fans**

Fractional On-Time, f	Cycle Time, T_{cyc} (hours)			
	0 to 6	8	12	24
0.1	1.00	0.87	0.65	*
0.2	1.00	0.90	0.76	*
0.3	1.00	0.93	0.83	*
0.4	1.00	0.95	0.88	0.46
0.5	1.00	0.96	0.92	0.68
0.6	1.00	0.98	0.95	0.81
0.7	1.00	0.99	0.97	0.90
0.8	1.00	0.99	0.99	0.96
0.9	1.00	1.00	1.00	0.99
1.0	1.00	1.00	1.00	1.00

*Condition not allowed since no amount of intermittent ventilation will provide equivalent indoor air quality.

Interpolation in Table 4.2 is not allowed. For values not listed, use the next higher value for Cycle Time or the next lower value for Fractional On-Time. The maximum allowed Cycle Time is 24 hours and the minimum allowed Fractional On-Time is 0.1.

Revise the Example in Section B4.1 of Informative Appendix B as shown.

(This appendix 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.)

INFORMATIVE APPENDIX B— HVAC SYSTEMS

B4.1 Sizing. The mechanical whole-house systems may run continuously or intermittently. The standard requires that intermittent systems supply more ventilation air and thus they may cost more to temper the outside air that is introduced and to run the fans. The system can consist of supply, exhaust, or a balanced combination of the two. In all cases, fans consume electricity and are potentially noisy. Fans that are noisy are likely to be unacceptable to many occupants and will be dis-

abled; noise should be reduced by using quiet fans or by remote mounting of the system.

Intermittent systems require a larger flow rate than continuous systems. The flow rate is related to the fractional on-time as noted in the equation below:

$$Q_f = Q_r / (\epsilon f) \quad (B1)$$

where

- Q_f = fan flow rate,
- Q_r = ventilation air requirement (from Table 4.1a or Table 4.1b),
- ϵ = ventilation effectiveness (from Table 4.2), and
- f = fractional on-time.

Example: A fan operated ~~30~~50% of the time with cycle times of ~~twenty~~four hours (~~six~~one cycles per day) with a ventilation air requirement of 40 cfm. The ventilation effectiveness will be ~~33~~68% (0.68 from Table 4.2), and the fan flow will have to equal or exceed ~~404~~118 cfm.

$$40 \text{ cfm} / (0.~~33~~68 \times 0.~~30~~50) = ~~404~~118 \text{ cfm}$$

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FOREWORD

*Attached garages commonly contain many potential contaminant sources, ranging from the storage of chemical products to the intermittent operation of automobiles. Standard 62.2 has long recognized that preventing the transport of these contaminants into residences is important but has provided limited detail on how to prevent such transport. This addendum modifies Section 6.5 of Standard 62.2-2007 to add specific requirements on separating the garage from adjoining occupiable space, such as requirements of sealing known potential areas of air leakage at joints and penetrations. **Note:** Please be aware that Addendum a to 62.2-2007 also makes changes to Section 6.5.*

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

Addendum c to Standard 62.2-2007

Revise Section 6.5 as follows:

6.5 Garages. When an occupiable space adjoins a garage, the design must prevent migration of contaminants to the adjoining occupiable space. Air seal walls, ceilings, and floors that separate garages from occupiable space. To be considered air sealed, all joints, seams, penetrations, openings between door assemblies and their respective jambs and framing, and other sources of air leakage through wall and ceiling assemblies separating the garage from the residence and its attic area shall be caulked, gasketed, weatherstripped, wrapped, or otherwise sealed to limit air movement. Doors between garages and occupiable spaces shall be gasketed or made substantially airtight with weather stripping.

All air distribution joints in the garage shall be sealed. HVAC systems that serve occupiable space shall not be designed to supply air to, or return air from, the garage. HVAC systems that include air handlers or return ducts located in garages shall have total air leakage of no more than 6% of total fan flow when measured at 0.1 in. w.c. (25 Pa) using California Title 24⁵ or equivalent.

(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

This addendum is a response to recent studies of window opening patterns in California (which covers much of the region described in the exception to Section 4.1(a) of Standard 62.2), which show that household residents open windows much less than expected. Window opening occurs primarily in response to thermal comfort issues rather than indoor contaminants. Therefore, window opening, which is assumed to provide the ventilation required in this exception in mild climates, should not be an acceptable alternative to the ventilation requirements in this standard. Addendum k to Standard 62.2 deletes Exception 4.1(a) from the standard.

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

Addendum k to Standard 62.2-2007

Delete Exception (a) to Section 4.1 in its entirety:

4.1 Ventilation Rate

Exceptions: Whole-building mechanical systems are not required provided that at least one of the following conditions is met:

- (a) ~~the building is in zone 3B or 3C of the IECC 2004 climate map (see Figure 8.2);~~
- (a)(b) the building has no mechanical cooling and is in zone 1 or 2 of the IECC 2004 Climate Zone Map (see Figure 8.2), or
- (b)(c) the building is thermally conditioned for human occupancy for less than 876 hours per year,

and if the authority having jurisdiction determines that window operation is a locally permissible method of providing ventilation.

(This appendix 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.)

**APPENDIX
18-MONTH SUPPLEMENT
ADDENDA TO ANSI/ASHRAE STANDARD 62.2-2007**

This supplement includes Addenda a, b, c, and k to ANSI/ASHRAE Standard 62.2-2007. The following table lists each addendum and describes the way in which the standard is affected by the change. It also lists the ASHRAE and ANSI approval dates for each addendum.

Addendum	Section(s) Affected	Description of Changes*	ASHRAE Standards Committee Approval	ASHRAE BOD Approval	ANSI Approval
a	6.5 Garages; 9 References	This addendum clarifies the section and makes it easier for users to apply an ANSI consensus standard method to meet the requirements of Section 6.5. See also Addendum c below.	1/19/08	1/23/08	6/26/08
b	4.3 Control and Operation; 4.4 Delivered Ventilation; Table 4.2, Ventilation Effectiveness for Intermittent Fans; Informative Appendix B, HVAC Systems, Example in B4.1 Sizing	This addendum replaces the current requirements for calculating equivalent delivered ventilation for an intermittently operating system with more accurate factors.	1/19/08	1/23/08	6/26/08
c	6.5 Garages	This addendum modifies Section 6.5 to add specific requirements for separating the garage from adjoining occupiable space. See also Addendum a above.	1/19/08	1/23/08	6/26/08
k	4.1 Ventilation Rate	This addendum deletes Exception 4.1(a) from Standard 62.2-2007.	6/23/07	6/27/07	7/25/07

* These descriptions may not be complete and are provided for information only.

NOTE

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**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.

