

ASHRAE/ASHE STANDARD

Ventilation of Health Care Facilities

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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.

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- 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.

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FOREWORD

This addendum makes several miscellaneous changes to the current standard: (1) it clarifies the requirements for an AII room, regarding a potential anteroom and the potential use of the AII room for patients other than those the room was designed for; (2) it clarifies the requirements for a PE room, regarding a potential anteroom; and (3) it adds design requirements for a combination AII/PE space that has been previously defined by the FGI Guidelines.

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 f to Standard 170-2008

[Revise Section 7.2.1 as shown below.]

7.2.1 Airborne Infection Isolation (AII) Rooms. Ventilation for AII rooms shall meet the following requirements whenever an infectious patient occupies the room:

- a. Each AII room shall comply with requirements of Tables 6-1, 6-2, and 7-1. AII rooms shall have a permanently installed device and/or mechanism to constantly monitor the differential air pressure between the room (when occupied by patients with a suspected airborne infectious disease) and the corridor, adjacent spaces of the room whether or not there is an anteroom, when occupied by patients with an airborne infectious disease. A local visual means shall be provided to indicate whenever negative differential pressure is not maintained.

....

- f. Differential pressure between AII rooms and adjacent spaces that ~~are not AII rooms have a different function~~ shall be a minimum of -0.01 in. wc (-2.5 Pa). Spaces such as the toilet room and the anteroom (if present) that are directly associated with the AII room and open directly into the AII room are not required to be designed with a minimum pressure difference from the AII room but are still required to maintain the pressure relationships to adjacent areas specified in Table 7-1.

....

- g. When an anteroom is provided, the pressure relationships shall be as follows: (1) the AII room shall be at a negative pressure with respect to the anteroom, and (2) the anteroom shall be at a negative pressure with respect to the corridor.

[Revise Section 7.2.2 as shown below.]

7.2.2 Protective Environment (PE) Rooms. Ventilation for PE rooms shall meet the following requirements:

....

- b. Each PE room shall comply with the requirements of Tables 6-1, 6-2, and 7-1. PE rooms shall have a permanently installed device and/or mechanism to constantly monitor the differential air pressure between the room and ~~adjacent spaces the corridor of the room~~ when occupied by patients requiring a protective environment, whether or not there is an anteroom. A local visual means shall be provided to indicate whenever positive differential pressure is not maintained.

....

- d. Differential pressure between PE rooms and any dissimilar ~~adjacent spaces~~ that are not PE rooms shall be a minimum of $+0.01$ in. wc ($+2.5$ Pa). Spaces such as the toilet room and the anteroom (if present) that are directly associated with the PE room and open directly into the PE room are not required to be designed with a minimum pressure difference from the PE room but are still required to maintain the pressure relationships to adjacent areas specified in Table 7-1.

....

- f. When an anteroom is provided, the pressure relationships shall be as follows: (1) the PE room shall be at a positive pressure with respect to the anteroom, and (2) the anteroom shall be at a positive pressure with respect to the corridor.

[Add new Section 7.2.3 as shown below.]

7.2.3 Combination Airborne Infectious Isolation/Protective Environment (AII/PE) Rooms. Ventilation for AII/PE rooms shall meet the following requirements:

- a. Supply air diffusers shall be located above the patient bed.
- b. Exhaust grilles or registers shall be located near the patient room door.
- c. The pressure relationship to adjacent areas for the required anteroom shall be one of the following:
 - The anteroom shall be at a positive pressure with respect to both the AII/PE room and the corridor or common space.
 - The anteroom shall be at a negative pressure with respect to both the AII/PE room and the corridor or common space.
- d. AII/PE rooms shall have two permanently installed devices and/or mechanisms to constantly monitor the differential air pressure. One device and/or mechanism shall monitor the pressure differential between the AII/PE room and the anteroom. The second device and/or mechanism shall monitor the pressure differential between the anteroom and the corridor or common space. For each device and/or mechanism, a local visual means shall be provided to indicate whenever differential pressure is not maintained.

2 [Revise Table 7-1 and its notes as shown below.]

TABLE 7-1 Design Parameters

Function of Space	Pressure Relationship to Adjacent Areas (n)	Minimum Outdoor ach	Minimum Total ach	All Room Air Exhausted Directly to Outdoors (j)	Air Recirculated by Means of Room Units (a)	Design RH (k), %	Design Temperature (l), °F/°C
INPATIENT NURSING							
Protective environment room (f), (n) , (t)	Positive	2	12	N/R	No	Max 60	70-75/21-24
AII room (e), (n) , (u)	Negative	2	12	Yes	No	Max 60	70-75/21-24
<u>Combination AII/PE room</u>	<u>Positive</u>	<u>2</u>	<u>12</u>	<u>Yes</u>	<u>No</u>	<u>Max 60</u>	<u>70-75/21-24</u>
All isolation anteroom (t) , (u)	N/R (e)	N/R	10	Yes	No	N/R	N/R
<u>PE anteroom (t)</u>	<u>(e)</u>	<u>N/R</u>	<u>10</u>	<u>N/R</u>	<u>No</u>	<u>N/R</u>	<u>N/R</u>
<u>Combination AII/PE anteroom</u>	<u>(e)</u>	<u>N/R</u>	<u>10</u>	<u>Yes</u>	<u>No</u>	<u>N/R</u>	<u>N/R</u>

Table 7-1 Notes:

- e. ~~Some isolation rooms may be provided with a separate anteroom, but an anteroom is not required by this standard. See Section 7.2 and its subsections for pressure-relationship requirements.~~
- f. ~~Protective environment rooms are those used for high-risk immunocompromised patients. Such rooms are positively pressurized relative to all adjoining spaces to protect the patient. This letter is not used in this table.~~
- t. The protective environment airflow design specifications protect the patient from common environmental airborne infectious microbes (i.e., Aspergillus spores). Recirculation HEPA filters shall be permitted to increase the equivalent room air exchanges; however, the outdoor air changes are still required. Constant volume airflow is required for consistent ventilation for the protected environment. ~~If the design criteria indicate that AII is necessary for protective environment patients, an anteroom should be provided. The pressure relationship to adjacent areas shall remain unchanged if the PE room is utilized as a normal patient room.~~ Rooms with reversible airflow provisions for the purpose of switching between protective environment and AII functions shall not be permitted.
- u. The AII room described in this standard shall be used for isolating the airborne spread of infectious diseases, such as measles, varicella, or tuberculosis. ~~The design of AII rooms shall include the provision for normal patient care during periods not requiring isolation precautions.~~ Supplemental recirculating devices using HEPA filters shall be permitted in the ~~patient~~ AII room to increase the equivalent room air exchanges; however, the minimum outdoor air changes of Table 7-1 are still required. AII rooms that are retrofitted from standard patient rooms from which it is impractical to exhaust directly outside may be recirculated with air from the AII room, provided that air first passes through a HEPA filter. ~~HEPA filtered exhaust air from AII rooms may mix with exhaust air that serves non AII spaces prior to being discharged directly outdoors. When the AII room is not utilized for airborne infection isolation, the pressure relationship to adjacent areas, when measured with the door closed, shall remain unchanged and the minimum total air change rate shall be 6 ach. Switching controls for Rooms with reversible airflow provisions shall not be permitted. for the purpose of switching between protective environment and AII functions shall not be permitted. See the Guidelines, in Informative Annex B: Bibliography for more information.~~

**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.

