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ADDENDA

ANSI/ASHRAE Addendum j to
ANSI/ASHRAE Standard 62.1-2022

Ventilation and Acceptable Indoor Air Quality

Approved by the ASHRAE Standards Committee on March 27, 2024, and by the American National Standards Institute on April 22, 2024.

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. Instructions for how to submit a change can be found on the ASHRAE® website (www.ashrae.org/continuous-maintenance).

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FOREWORD

The underlying principles of dilution are rooted in mass balance, and the rates in the standard are reported in standard CFM, as indicated by Section 6.2.1.1.3. The standard presently allows the designer to adjust for actual air density, but a survey of actual design practice indicates that this correction is rarely if ever applied to the ventilation rates. Therefore, the rates have been adjusted for actual air density, which is primarily driven by the elevation of the outdoor air intake. Adjustments for temperature and humidity play a much less significant role in density, so the designer is generally permitted to neglect these considerations, although it should be noted that areas of extreme temperature and humidity could consider these effects, which may reduce the elevation adjustments for regions with extremely cold temperatures or regions with extremely high humidity. The committee recognizes that this change will increase required ventilation rates in most areas.

Informative 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 j to Standard 62.1-2022

Delete Section 6.2.1.1.3 as shown and renumber the remaining sections accordingly.

~~**6.2.1.1.3 Air Density.** Volumetric airflow rates are based on dry air density of 0.075 lb_{da}/ft^3 (1.2 kg_{da}/m^3) at a barometric pressure of 1 atm (101.3 kPa) and an air temperature of 70°F (21°C). Rates shall be permitted to be adjusted for actual density.~~

Add Section 6.2.1.3 and renumber the remaining sections accordingly.

6.2.1.3 Air Density Correction Factor. The air density correction factor (E_ρ) shall be determined in accordance with Table 6-5 or Normative Appendix D. Outdoor air intake elevation above sea level shall be measured to the center of the louver.

Informative Note: Where multiple louvers or systems are present the designer may utilize the elevation of the highest louver in lieu of the elevation at each louver.

Table 6-5 Air Density Correction Factor

Outdoor Air Intake Elevation above Sea Level, ft	Outdoor Air Intake Elevation above Sea Level, m	E_ρ
≤515	≤158	1.00
515 to 1855	158 to 566	1.05
1855 to 3120	566 to 951	1.10
3120 to 4320	951 to 1317	1.15
4320 to 5460	1317 to 1664	1.20
5460 to 6540	1664 to 1994	1.25
6540 to 7575	1994 to 2309	1.30
7575 to 8560	2309 to 2609	1.35
8560 to 9505	2609 to 2897	1.40
9505 to 10410	2897 to 3173	1.45
10410 to 11275	3173 to 3437	1.50
>11275	>3437	Use Normative Appendix D

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Modify existing Section 6.2.1.3 as shown.

6.2.1.~~3~~4 Zone Outdoor Airflow. The zone outdoor airflow (V_{oz}) provided to the ventilation zone by the supply air distribution system shall be determined in accordance with Equation 6-2.

$$V_{oz} = V_{bz}/E_z \times E_\rho \quad (6\text{-}2)$$

Add new Normative Appendix D as shown and renumber appendices accordingly.

(This is a normative appendix and is part of the standard.)

NORMATIVE APPENDIX D
AIR DENSITY CORRECTION FACTOR

This appendix presents an alternative procedure for determining the air density correction factor (E_ρ). This analytical method can be used instead of Table 6-5. The volumetric airflow rates in this standard are based on a dry-air density of 0.075 lb/ft^3 (1.2 kg/m^3) at a barometric pressure of 1 atm (101.3 kPa) and an air temperature of 70°F (21°C).

D1. AIR DENSITY CORRECTION FACTOR

The air density correction factor (E_ρ) shall be calculated in accordance with Sections D1.1 through D1.5.

D1.1 Design Condition. The air density correction factor (E_ρ) shall be calculated at the design condition with the lowest coincident air density.

D1.2 Elevation Adjustment. The elevation adjustment factor (C_Z) shall be calculated in accordance with Equation D-1a (I-P) or D-1b (SI).

$$C_Z = 1/(1 - Z \times 6.8754 \times 10^6)^{5.2559} \quad (D\text{-}1a)$$

$$C_Z = 1/(1 - Z \times 2.25577 \times 10^5)^{5.2559} \quad (D\text{-}1b)$$

where

Z = outdoor air intake elevation above sea level, ft (m)

D1.3 Temperature Adjustment. The temperature adjustment factor (C_T) shall be calculated in accordance with Equation D-2a (I-P) or D-2b (SI).

$$C_T = (T + 459.67)/529.67 \quad (D\text{-}2a)$$

$$C_T = (T + 273.15)/294.15 \quad (D\text{-}2b)$$

where

T = outdoor air temperature at design condition, °F (°C)

D1.3.1 The temperature adjustment factor (C_T) may be taken as 1.0 where the outdoor air temperature at design conditions is less than 104°F (40°C).

D1.4 Moisture Adjustment. The moisture adjustment factor shall be calculated in accordance with Equation D-3.

$$C_W = (1 + W)/(1 + 1.6078 \times W) \quad (D\text{-}3)$$

where

W = humidity ratio at design conditions, lb moisture per lb dry air (kg moisture per kg dry air)

D1.4.1 The moisture adjustment factor may be taken as 1.0 where the outdoor air humidity ratio at design conditions is less than 0.024 lb_w/lb_{da} (0.024 kg_w/kg_{da}).

D1.5 Air Density Correction. The air density correction factor (E_ρ) shall be calculated in accordance with Equation D-4.

$$E_\rho = C_Z \times C_T \times C_W \quad (D\text{-}4)$$

D2. ALTERNATIVE CALCULATION METHODS

The use of other calculation methods, including computer simulation, to determine the air density correction factor shall be permitted.

D2.1 Design Condition. The air density shall be calculated at the design condition with the lowest coincident air density.

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D2.2 Calculation Parameters. The calculation method shall include elevation above sea level, design air temperature, and design moisture content as factors contributing to the air density.

D2.2.1 Pressurized Outdoor Air Intakes. Where outdoor air is supplied to the ventilation system under pressure and the pressure is maintained at all times that the ventilation system is operating, the air density calculation may include the static pressure at the ventilation system outdoor air intake.

D2.3 Air Density Correction. The air density correction factor (E_ρ) shall be calculated in accordance with Equation D-5a (I-P) or D-5b (SI).

$$E_\rho = 0.075 / \rho \quad \text{(D-5a)}$$

$$E_\rho = 1.2 / \rho \quad \text{(D-5b)}$$

where

ρ = minimum outdoor air density at design conditions, lb_{da}/ft^3 (kg_{da}/m^3)

D2.3.1 The air density correction factor (E_ρ) may be taken as 1.0 where the air density at design conditions is greater than 0.072 lb_{da}/ft^3 (1.1 kg_{da}/m^3).

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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.

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4/24