



**GUIDELINE**

**ASHRAE Guideline 24-2015**  
(Supersedes ASHRAE Guideline 24-2008)

# **Ventilation and Indoor Air Quality in Low-Rise Residential Buildings**

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**NOTE**

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## FOREWORD

*In 2003, ASHRAE published Standard 62.2, Ventilation and Acceptable Indoor Air Quality in Low-Rise Residential Buildings, the first stand-alone ventilation and indoor air quality (IAQ) standard specifically written for low-rise residential buildings. Although Standard 62.2 provides far more detailed residential ventilation requirements than were contained in the previous versions of Standard 62, the 62.2 project committee felt that the new standard by itself did not adequately address the need to provide information on achieving better IAQ in low-rise residential buildings. In writing Guideline 24, the committee was able to address IAQ and ventilation issues where consensus could not be achieved in Standard 62.2 and to provide explanatory and educational material that would be inappropriate in a document intended for code adoption.*

*While the title of Guideline 24—Ventilation and Acceptable Indoor Air Quality in Low-Rise Residential Buildings—is nearly identical to that of Standard 62.2, this guideline’s purpose and scope contain many significant differences with Standard 62.2. The purpose of the standard is limited to defining the roles of and minimum requirements for mechanical and natural ventilation systems and the building envelope intended to provide acceptable IAQ in low-rise residential buildings. While these roles and requirements are written with the intent of providing acceptable IAQ in low-rise residential buildings, the much broader purpose of this guideline is to provide information on achieving better IAQ in all types of dwelling units.*

*The scope of this guideline is also broader than that of Standard 62.2. Both scopes specify that the documents apply to residential buildings three stories or fewer in height above grade, including manufactured and modular houses. However, Standard 62.2’s scope specifically excludes unvented combustion space heaters and provides a list of reasons that may prevent acceptable IAQ from being achieved, despite meeting all of the minimum requirements. Given its broader scope addressing topics not included in the standard, Guideline 24 goes beyond Standard 62.2’s baseline objective of acceptable IAQ in providing information aimed at helping to achieve better IAQ.*

*Thus, in addition to providing informative background material on residential IAQ, this guideline addresses important residential IAQ issues that were not addressed in Standard 62.2 due to a lack of consensus or other reasons. Some of these issues were addressed in prepublication draft versions of Standard 62.2 and include carbon monoxide (CO) alarms, air distribution, better air filtration, and unvented combustion appliances. This guideline also provides useful*

*information on topics such as verification of ventilation equipment performance and operations and maintenance, which, though important, are not easily addressed in a standard intended for code adoption.*

## 1. PURPOSE

**1.1** This guideline provides information on achieving indoor air quality (IAQ) that may go beyond minimum requirements, i.e., better IAQ.

**1.2** This guideline provides information relevant to ventilation and IAQ with regard to envelope and system design, material selection, commissioning and installation, and operation and maintenance.

## 2. SCOPE

This guideline primarily applies to ventilation and IAQ for human occupancy in residential buildings three stories or fewer in height above grade, including manufactured and modular houses.

## 3. DEFINITIONS

When the following terms are used in this guideline, the definitions provided in this section apply.

**acceptable indoor air quality:** air toward which a substantial majority of occupants express no dissatisfaction with respect to odor and sensory irritation and in which there are not likely to be contaminants at concentrations that are known to pose a health risk.

**air cleaning:** the use of equipment that removes particulate, microbial, or gaseous contaminants (including odors) from air.

**air, exhaust:** air discharged from any space to the outside by an exhaust system.

**air, indoor:** air in an occupiable space.

**air, outdoor:** air from outside the building that is taken into a ventilation system or that enters a space through infiltration or natural ventilation openings.

**air, transfer:** air that is moved from one occupiable space to another, usually through doorways or grilles.

**air, ventilation:** outdoor air that is delivered to a space to dilute airborne contaminants.

**air change rate:** airflow in volume units per hour divided by the volume of the space on which the air change rate is based in identical units (normally expressed in air changes per hour [ach]).

**balanced system:** one or more fans that supply outdoor air and exhaust building air at essentially equal rates.

**bathroom:** any room containing a bathtub, a shower, a spa, or a similar source of moisture.

**better IAQ:** air that not only meets the definition of “acceptable indoor air quality,” but also is expected to have reduced levels of contaminants of concern recommended by the selected cognizant authority.

**breathing zone:** the region within an occupied space between planes 3 and 72 in. (75 and 1800 mm) above the floor and