

403.3.1.3

Demand Controlled Ventilation

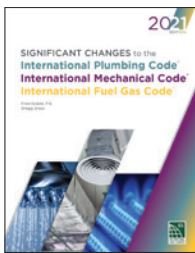
CHANGE TYPE: Modification

CHANGE SUMMARY: The change clarifies that demand control ventilation schemes cannot eliminate all ventilation in a space while that space is expected to be occupied.

2021 CODE: 403.3.1.3 System operation. The minimum flow rate of outdoor air that the ventilation system must be capable of supplying during its operation shall be permitted to be based on the rate per person indicated in Table 403.3.1.1 and the actual number of occupants present. Where demand-controlled ventilation is employed to adjust the outdoor airflow rate based on the actual number of occupants present, the minimum quantity of outdoor air shall not fall below that determined from the area outdoor airflow rate column of Table 403.3.1.1 during periods when the building is expected to be occupied.

CHANGE SIGNIFICANCE: Section 403.3.1.3 allows for demand control ventilation, which means that the ventilation rate can be adjusted up or down as the number of occupants in a space increases or decreases. The section might be misinterpreted that the ventilation rate could reduce to zero if the number of occupants was zero. However, it was never intended that the outdoor airflow rate per square foot (R_a) prescribed by Table 403.3.1.1 could be overlooked when the occupant load in a space is zero. When the occupant load is zero, the minimum required ventilation rate is determined by the rate per square foot of floor area (R_a) in the next to last column of Table 403.3.1.1 times the net occupiable floor area of the space. Assuming the table has a prescribed airflow rate based on floor area (R_a) for the space in question in the table, there will always be some ventilation being provided, even when the space has no occupants.

This excerpt is taken from *Significant Changes to the International Plumbing/Mechanical/Fuel Gas Codes, 2021 Edition.*



The Significant Changes series takes you directly to the most important changes that impact projects.

Key changes are identified then followed by in-depth discussion of how the change affects real-world application. Photos, tables and illustrations are included to further clarify application.

Available for the IBC, IRC, IFC, IECC and IPC/IMC/IFGC, the Significant Changes publications are very useful training and review tools for transitioning to a new code edition.

Demand controlled ventilation example

1000 ft² high school science classroom/laboratory

Per Table 403.3.1.1, the rate per person (R_p) is 10 cfm;

The rate per square foot (R_a) is 0.18 cfm.

Based on the occupant density from the table, 25

Per 1000 ft², the total outdoor air flow rate for occupants would be 250 cfm.

The total outdoor air flow rate based on area would be 180 cfm.

When the science lab has fewer occupants or is unoccupied, the demand controlled ventilation of 250 cfm based on persons could be reduced, perhaps to zero; however, the 180 cfm rate based on area must not be reduced during periods when the building is expected to be occupied. during period when the building is closed to occupants, the minimum ventilation required by this new provision is not applicable.