

TABLE 5.5.1 Air Intake Minimum Separation Distance

Object	Minimum Distance, ft (m)
Class 2 air exhaust/relief outlet ^a	10 (3)
Class 3 air exhaust/relief outlet ^a	15 (5)
Class 4 air exhaust/relief outlet ^b	30 (10)
Plumbing vents terminating less than 3 ft (1 m) above the level of the outdoor air intake	10 (3)
Plumbing vents terminating at least 3 ft (1 m) above the level of the outdoor air intake	3 (1)
Vents, chimneys, and flues from combustion appliances and equipment ^c	15 (5)
Garage entry, automobile loading area, or drive-in queue ^d	15 (5)
Truck loading area or dock, bus parking/idling area ^d	25 (7.5)
Driveway, street, or parking place ^d	5 (1.5)
Thoroughfare with high traffic volume	25 (7.5)
Roof, landscaped grade, or other surface directly below intake ^{e,f}	1 (0.30)
Garbage storage/pick-up area, dumpsters	15 (5)
Cooling tower intake or basin	15 (5)
Cooling tower exhaust	25 (7.5)

a. This requirement applies to the distance from the outdoor air intakes for one ventilation system to the exhaust outlets and relief outlets for any other ventilation system.

b. Minimum distance listed does not apply to laboratory fume hood exhaust air outlets. Separation criteria for fume hood exhaust shall be in compliance with ANSI/AIHA Z9.5 ⁶. Informative Appendix J contains sources of additional information on separation criteria. These include the *ACGIH Industrial Ventilation Manual* ¹¹, *ASHRAE Handbook—HVAC Applications* ¹², *ASHRAE Laboratory Design Guide* ¹³, and NSF/ANSI 49 ¹⁴.

c. The minimum distances relative to fuel-fired appliances shall be as required by ANSI Z223.1/NFPA 54 ⁷ for fuel gas burning appliances and equipment, NFPA 31 ⁸ for oil burning appliances and equipment, and NFPA 211 ⁹ for other combustion appliances and equipment.

d. Distance measured to closest place that vehicle exhaust is likely to be located

e. The minimum separation distance shall not apply where outdoor surfaces below the air intake are sloped more than 45 degrees from horizontal or where such surfaces are less than 1 in. (30 mm) in width.

f. Where snow accumulation is expected, the surface of the snow at the expected average snow depth shall be considered to be a surface directly below an intake.

or occupiable spaces other than the space from which the exhaust air is drawn.

Exception: Exhaust ducts conveying Class 2 air and exhaust ducts conveying air from residential kitchen hoods that are sealed in accordance with SMACNA Seal Class A ².

5.3 Ventilation System Controls. Mechanical ventilation systems shall include controls in accordance with the following subsections.

5.3.1 All systems shall be provided with manual or automatic controls to maintain not less than the outdoor air intake flow (V_{ot}) required by Section 6 under all load conditions or dynamic reset conditions.

5.3.2 Systems with fans supplying variable primary air (V_{ps}), including single-zone VAV and multiple-zone recirculating VAV systems, shall be provided with one or more of the following:

- Outdoor air intake, return air dampers, or a combination of the two that modulates to maintain not less than the outdoor air intake flow (V_{ot})
- Outdoor air injection fans that modulate to maintain not less than the outdoor air intake flow (V_{ot})
- Other means of ensuring compliance with Section 5.3.1

5.4 Airstream Surfaces. All airstream surfaces in equipment and ducts in the heating, ventilating, and air-conditioning system shall be designed and constructed in accordance with the requirements of the following subsections.

5.4.1 Resistance to Mold Growth. Material surfaces shall be determined to be resistant to mold growth in accordance with a standardized test method, such as the Mold Growth and Humidity Test in UL 181 ³, ASTM C 1338 ⁴, or ASTM D3273 ⁵.

Exception: Sheet metal surfaces and metal fasteners.

Informative Note: Even with this resistance, any airstream surface that is continuously wetted is still subject to microbial growth.

5.4.2 Resistance to Erosion. Airstream surface materials shall be evaluated in accordance with the Erosion Test in UL 181 ³ and shall not break away, crack, peel, flake off, or show evidence of delamination or continued erosion under test conditions.

Exception: Sheet metal surfaces and metal fasteners.

5.5 Outdoor Air Intakes. Ventilation system outdoor intakes shall be designed in accordance with the following subsections.

5.5.1 Location. Outdoor air intakes (including openings that are required as part of a natural ventilation system) shall be located such that the shortest distance from the intake to any specific potential outdoor contaminant source shall be equal to or greater than the separation distance listed in Table 5.5.1 or the calculation method in Normative Appendix B.

Exception: Other separation distances shall be permitted, provided it can be shown analytically that an equivalent