

CHAPTER 9 FIRE PROTECTION SYSTEMS

SECTION [F] 909.8.1
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[F] 909.8.1 Exhaust rate. The height of the lowest horizontal surface of the accumulating smoke layer shall be maintained at least 10 feet (3048 mm) above any walking surface which forms a portion of a required egress system within the smoke zone. The required exhaust rate for the zone shall be the largest of the calculated plume mass flow rates for the possible plume configurations. Provisions shall be made for natural or mechanical supply of air from outside or adjacent smoke zones to make up for the air exhausted. Makeup airflow rates, when measured at the potential fire location, shall not exceed 200 feet per minute (60 960 mm per minute) toward the fire. The temperature of the makeup air shall be such that it does not expose temperature-sensitive fire protection systems beyond their limits.



Q: Section 909.8.1 stipulates that makeup air is required in order to exhaust air from the control space, and the makeup airflow rate is not permitted to exceed 200 feet per minute toward the fire. Is the makeup air inlet, or louver, required to be designed for the maximum allowable airflow rate of 200 feet per minute?

A: No. The 200 feet per minute restriction is intended to ensure that makeup air will not disrupt plume dynamics and cause additional entrainment, thereby increasing plume size. The velocity at makeup air inlets is not restricted nor does it have a minimum threshold. The focus is upon the air flow as it reaches the fire. The specific locations within the building that the 200 ft/min limitation is applicable will be determined as part of the engineering analysis required by Section 909.2. The analysis is building design specific and will depend on a potential fire in relation to the location of the inlets.

It should be noted that Section 909.7.2 has a similar limitation for the airflow design method.
