



Coffee Break Training - Fire Protection Series

Access and Water Supplies: Fire Flow Formulas: Part 19: "International Fire Code" Fire Flow Requirement Sample

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Learning Objective: The student will be able to describe an example from the "International Fire Code®" (IFC) fire flow requirements for buildings.

The IFC describes fire flow as the rate of a water supply at a pressure of 20 pounds per square inch (138 kilopascals) that is available for firefighting.

The IFC method employs a table that lists the minimum flow based on the "International Building Code®" construction type and size of the structure, or what is called the "fire flow calculation area." The fire flow calculation area is the sum of all floor area between firewalls with no openings or, in fire-resistive construction, the sum of the area of the three largest successive floors.

IFC Appendix B also allows fire flow reductions between 50 percent and 75 percent if the structure is protected by automatic sprinklers in accordance with National Fire Protection Association (NFPA) 13, Standard for the Installation of Sprinkler Systems or NFPA 13R, Standard for the Installation of Sprinkler Systems in Low-Rise Residential Occupancies.

The following table is an extract from various lines of the complete table:

Construction Type	IA/IB	IIA/IIIA	IV/V-A	IIB/IIIB	V-B	Fire Flow (gpm)	Duration (hours)
(Sq. Ft.)	128,701-145,900	72,401-82,100	46,401-52,500	33,501-37,900	20,602-23,300	4,000	4
(Sq. m)	11,957-13,556	6,726-7,627	4,310-4,877	3,112-3,521	1,914-2,164	15,141 Lpm	4

Note: The table continues with additional values.

In the illustrated example of this 36,750 square foot (3,414 square meter) noncombustible occupancy, we find noncombustible construction (IIB) along the top row of the table, read down the column to where the corresponding area falls (between 33,501-37,900 square feet, or 3,112-3,521 square meters), and determine that the required flow is 4,000 gallons per minute (gpm), or 15,141 liters per minute (Lpm), for four hours. Including sprinkler credits, the fire flow cannot be less than 1,500 gpm (5,678 Lpm).

The IFC also addresses fire flow in one- and two-family dwellings. Dwellings with fire areas less than 3,600 square feet (334 square meters) may have a fire flow of 1,000 gpm (3,785 Lpm). Dwellings with larger fire areas must use the flow information from the table. One- and two-family dwelling fire flow can be reduced by 50 percent when the building is protected by an approved sprinkler system.

For more information on fire flow, you can take the NFA Online class "Testing and Evaluation of Water Supplies for Fire Protection" (Q0218) at <http://1.usa.gov/12JypCa>.



The fire flow requirement for this two-story noncombustible Type IIB building can be obtained from a table in the "International Fire Code®" (IFC) appendix on fire flow requirements for buildings.



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