



Coffee Break Training - Fire Protection Series

Access and Water Supplies: Fire Flow Formulas: Part 20: National Fire Protection Association 1142, Standard on Water Supplies for Suburban and Rural Fire Fighting

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Learning Objective: The student will be able to describe the National Fire Protection Association (NFPA) 1142, Standard on Water Supplies for Suburban and Rural Fire Fighting water supply calculation method.

In those areas where water systems are not readily available, and fire-protection water must be retrieved from tanks, ponds, cisterns and other static sources, NFPA 1142 provides another method for determining required fire-protection water supplies for buildings.

The NFPA 1142 method uses the volumetric capacity of a specific structure to compute the “minimum water supply (MWS).” This MWS is a calculation of the total water supply needed; it is not a flow rate.

The NFPA 1142 water supply formula is:

$$WS_{\min} = (VS_{\text{tot}} \div \text{OHC}) \times \text{CC}$$

Where:

WS_{\min} = minimum water supply

VS_{tot} = total structure volume

OHC = Occupancy Hazard Classification number

CC = Construction Classification number

The total structure volume (VS_{tot}) is derived by multiplying the building’s length by its width by its height. For example, a building measuring 116 feet long by 42 feet wide by 14 feet high has a VS_{tot} value of 68,208 cubic feet.

This calculation is easiest for single-story or otherwise symmetrical buildings, but with a little extra work, the total volumes of buildings that have different sizes and shapes can be calculated by computing individual portions and adding them together.

The values for both the Occupancy Hazard Classification (OHC) and Construction Classification (CC) numbers are retrieved from tables found in NFPA 1142. Examples will be provided in subsequent Coffee Break Training items.

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>.



National Fire Protection Association (NFPA) 1142, Standard on Water Supplies for Suburban and Rural Fire Fighting provides a method for determining fire-protection water supplies where fully developed water systems do not exist.



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