

Water Supply Calculations For Burn Building

The minimum water supply and delivery for live fire training evolutions shall meet the criteria identified in NFPA 1142 and NFPA1403.

Burn Building (Cubic Feet):

Garage	18' x 28' x 12'	6,048 cf
1 st floor Burn room	18' x 18' x 7.5'	2,430 cf
2 nd Floor Burn room	18' x 18' x 7.5'	2,430 cf
TOTAL Cubic Feet	10,908	

Occupancy Class: 7.0

Occupancy Hazard Classification 7 shall be used for light hazard occupancies in which the quantity or combustibility of contents is expected to develop relatively light rates of spread and heat release.

Construction Class: .05

Type I (443 or 332) Construction [**Construction Classification Number 0.5**]. Type I construction shall be that type in which the structural members, including walls, columns, beams, girders, trusses, arches, floors, and roofs, are of approved noncombustible or limited-combustible materials and shall have fire resistance ratings not less than those specified in Table 6.2.2 (Table 3.1 in NFPA 220).

Exposure Hazard: 1.0

A structure shall be considered an exposure hazard if it is 100 ft (9.29 m²) or larger in area and is within 50 ft (15.24 m) of another structure. However, if a structure, regardless of size, is of occupancy hazard classification number 3 or 4, it shall be considered an exposure hazard if within 50 ft (15.24 m) of another structure.

NFPA 1142 Minimum Water Supply **2,000 gallons

Formula:

Minimum Water Supply	=	$\frac{\text{Total Volume}}{\text{Occupancy Class}}$	X	Construction class	X	Exposure Hazard
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**780 Gallons	=	$\frac{10,908}{7.0}$	X	.5	X	1.0
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****The minimum water supply required for any structure without exposure hazards shall not be less than 2000 gal (7570 L). NFPA 1142 (7.2.1)**

NFPA 1403 Minimum Water Supply 3,000 gallons

A minimum reserve of additional water in the amount of 50 percent of the fire flow demand in 4-2.12 shall be available to handle exposure protection or unforeseen situations.

<u>Total Required Water Supply</u>	<u>Delivery Rate</u>
up to 2499 gallons	250 gpm
2500 to 9999 gallons	500 gpm
10,000 to 19,999 gallons	750 gpm
20,000 or more gallons	1000 gpm
Chart take from NFPA 1203 Water Supply. Chart no longer exists in the new NFPA 1142 water supply	

FIRE FLOW: 500 gpm for 6 minutes

The needed fire ground flow to extinguish full building involvement.