

Hazen-Williams C-factors for fire protection piping

NFPA 13 / EN 12845

Friction coefficient C used in the Hazen-Williams equation for hydraulic calculations.

Reference table

Pipe material	C value (NFPA 13)	Notes
Unlined cast iron	100	Legacy systems only
Black steel (dry / pre-action)	100	Higher loss from internal corrosion
Black steel (wet)	120	Default for new wet systems
Galvanized steel	120	Same as black wet
Cement-lined cast or ductile iron	140	Underground mains
Copper	150	Limited use, residential
CPVC	150	Listed light-hazard only
Stainless steel	150	High-end and food-grade

Source: NFPA 13 (2022) Table 28.2.4.6.1.