$$f = 0.2083 \times \left(\frac{100}{C}\right)^{1.852} \times \frac{Q^{1.852}}{d_i^{4.8655}}$$

Where:

f = friction head loss in feet of water per 100 feet of pipe
C = constant for inside pipe roughness (C = 150 for extruded smooth wall thermoplastic pipe)
Q = flow in U.S. gallons per minute
d_i = inside diameter of pipe in inches

The value of C = 150 for thermoplastic pipe is based on engineering measurements made with new and used thermoplastic pipe in several laboratories. Thus, the value of C = 150 has a conservative bias. Using C = 150, the equation reduces to

$$f = 0.09830 \frac{Q^{1.852}}{d_i^{4.8655}}$$

Water velocities in feet per second V may be calculated as follows:

$$V = 0.408709 \frac{Q}{d_i^{2}}$$

TYPICAL VALUES OF THE HAZEN-WILLIAMS COEFFICIENT

Pipe Material	C
Very to Highly Smooth Pipes (all metals)	130-140
Smooth Wood	120
Smooth Masonry	120
Vitrified Clay	110
Cast Iron (old)	100
Iron (worn/pitted)	60-80
Polyvinyl Chloride (PVC)	150
Brick	100