



20 FPS CHART

(Maximum Flow in gallons per minute **NOT** to exceed a Velocity of 20 feet per second)

	Sch. 40 Black Steel		CPVC*		Sch. 10 Black Steel		Threadable light-wall (XL/BLT)		Dyna-Flow		D.I.C.L.		C900 PC150	
	Internal Diameter in inches	Max Flow	Internal Diameter in inches	Max Flow	Internal Diameter in inches	Max Flow	Internal Diameter in inches	Max Flow	Internal Diameter in inches	Max Flow	Internal Diameter in inches	Max Flow	Internal Diameter in inches	Max Flow
1/2	0.622	18	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺
3/4	0.824	33	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺
1	1.049	53	☺	☺	☺	☺	1.104	59	1.191	69	☺	☺	☺	☺
1 1/4	1.380	93	☺	☺	1.442	101	1.452	103	1.536	115	☺	☺	☺	☺
1 1/2	1.610	127	☺	☺	1.598	125	1.682	138	1.728	146	☺	☺	☺	☺
2	2.067	209	☺	☺	2.003	196	2.157	228	2.203	237	☺	☺	☺	☺
2 1/2	2.469	298	☺	☺	2.423	287	2.635	340	2.703	358	☺	☺	☺	☺
3	3.068	461	☺	☺	2.950	426	3.26	520	3.314	538	3.33	543	☺	☺
4	4.026	793	☺	☺	4.26	888	☺	☺	4.31	912	4.15	843	4.27	893
6	6.065	1802	☺	☺	6.357	1980	☺	☺	☺	☺	6.27	1926	6.13	1841
8	7.981	3120	☺	☺	8.329	3398	☺	☺	☺	☺	8.38	3440	8.40	3767
10	10.020	4919	☺	☺	☺	☺	☺	☺	☺	☺	10.39	5288	9.87	4773

V=Velocity in feet/second

Q=Flow in gallons/minute

D= actual inside diameter of pipe in Inches

$$V = \frac{Q/60}{0.0408 * D^2}$$

The 1994 handbook for NFPA 13 does not stipulate a maximum limit on velocities, however, it does state: "Twenty feet per second (ft/s) maximum velocities may result in more conservative designs." At velocities beyond this, the Hazen-Williams formula is not as conservative as other methods for certain pipe types, such as Darcy-Weisbach. Even though NFPA does not specify a value, other agencies, such as Factory Mutual and Wausau, both use 20 ft/s and some governmental agencies, such as Naval Facilities, use 32 ft/s.

NFPA recognizes three steel pipe standards: A-795, A-53, and A-135 for overhead sprinklers.

All three have similar requirements regarding steel type, physical test, and acceptable tolerances for production. One difference is that A-53 requires each piece of pipe to be "hydro" tested where as A- 795 and A-135 allow a Non-Destructive Electric test (eddy current) to check the weld seam integrity for any defects. Also, NFPA-13 requires the entire sprinkler system to be hydro-tested after installation and final approval is given.

Another type known as "light-wall threadable" offers exceptional hydraulics in a threadable branch line pipe (i.e.: BLT/XL). Most light-wall threadable pipe (except Dyna-Thread are required by UL-to have threads checked with a ring gauge for conformity with ANSI B1.20.1, and hanger spacing is limited to 12'. Consult NFPA-13 or manufacturer for details.

* BlazeMaster® Pipe Dimensions SDR 13.5 (ASTM F 442)