

## U.S. Fire Administration / National Fire Academy

*Coffee Break Training***Topic: Flexible Sprinkler Branch Lines**

**Learning objective:** The student shall be able to identify the friction loss equivalent value for flexible hose sprinkler assemblies.

Does this picture illustrate a plumber's practical joke or a silver snake in the ceiling? Neither; it is one of several manufacturers' solutions to installing sprinkler pipes in tight spaces.

Using a flexible, stainless steel-reinforced hose to carry water from a branch line to the sprinkler, this configuration enables architects, sprinkler designers, and fitters to locate sprinklers specifically where they are wanted without having to make numerous pipe connections with elbows or tees.

When these devices are proposed, the plan review and code official must take care to ensure their influence on the sprinkler system hydraulic calculations is considered. The following table represents one manufacturer's friction loss characteristics:

Outlet Size	Flexible Sprinkler Assembly Length		Equivalent Length of 1-inch (254 mm) Schedule 40 pipe	
	Feet	Meter	Feet	Meter
1/2-inch (127 mm)	2	0.6	17	5.1
	3	0.9	22	6.6
	4	1.2	24	7.3
	5	1.5	25	7.5
	6	1.8	28	8.4
3/4-inch (191 mm)	2	0.6	9	2.7
	3	0.9	16	4.8
	4	1.2	21	6.4
	5	1.5	22	6.6
	6	1.8	25	7.5



The number of bends may be limited by the manufacturer, and minimum bend radius must be 3 inches (7.62 cm). Once installed, these sprinkler drops should be pneumatically and/or hydrostatically tested in accordance with regular sprinkler system test procedures. The maximum rated pressure for these items is 175 psi (1205 kPa).

For additional information, refer to NFPA 13, *Standard for the Installation of Sprinkler Systems*, Chapters 6 and 9.