## NFPA 13 Actual Coverage Area of Residential Sprinklers

When utilizing residential sprinklers in systems that are designed to NFPA 13, two criteria must be checked and satisfied. The area of coverage for each sprinkler is determined either by the manufacturer's data sheet or by the criteria outlined in **NFPA 13(02), Section 8.5.2.1**, but not both. According to **13(02) 11.2.3.5.2** the minimum required discharge from each of the design sprinklers is to be the *__greater__* of the following:

- The flow rates given in the appropriate data page, *__or__*

- A minimum discharge of 0.10 gpm/sq.ft. over the actual area of coverage for each of the design sprinklers.

When determining the demand based on the <u>actual</u> area of coverage, the area of coverage given in the data sheet is not intended to be used. The <u>actual</u> area of coverage as determined by the SxL rules given in **13(02) 8.5.2.1** is used. In some cases, the SxL rules may result in flows and pressures that are more demanding than the manufacturer's data sheet flows and pressures.
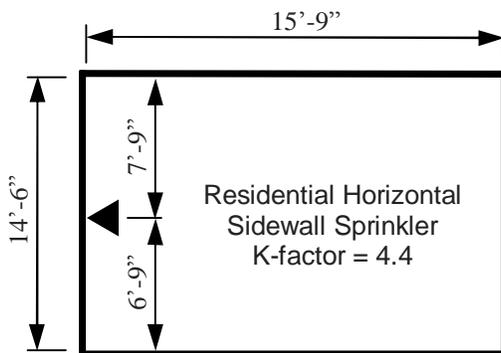


Actual coverage area: (7'-9" x 2) x 15'-9"
Actual coverage area = 244.125 sq. ft.

GPM equals actual coverage area x density.
GPM = 244.125 x 0.10 = **24.4 gpm**
PSI = (GPM / K)$^2$ = **30.7 psi**

Manufacturer's Data Sheet for 16 x 16 max. spacing =
**16.0 gpm / 13.3 psi**

The more demanding of the two (24.4 gpm @ 30.7 psi) is to be used in the hydraulic calculations for the sprinkler system.

It is important to note that **NFPA 13(02), Section 8.6.2.1.2** allows the actual area of coverage for each sprinkler in a small room (as defined in **Section 3.3.20**) to be the area of the room divided by the number of sprinklers in the room. However, **Section 11.2.3.5.2** does not allow determining the actual area of coverage by this method when utilizing residential sprinklers.