



Automatic Sprinklers: Part 1: Special Sprinklers

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Learning Objective: The student shall be able to explain the defining characteristics of “special sprinklers.”

For years, the three commonly used sprinkler types were standard spray pendent, upright, and sidewall.

As the growing field of fire research and fire protection technology has revealed, these “standard spray” sprinklers may not be suitable for all fire challenges or environments. In order to address these special situations, sprinkler manufacturers have developed “special sprinklers.”

According to National Fire Protection Association (NFPA) 13, *Standard on the Installation of Sprinkler Systems*, special sprinklers are those that are intended for specific hazards or construction features. They may be used in those applications where they have been evaluated and listed for performance under the following conditions:

- fire tests related to the intended hazard;
- distribution of the spray pattern with respect to wetting of floors and walls;
- distribution of the spray pattern with respect to obstructions;
- evaluation of the thermal sensitivity of the sprinkler;
- performance under horizontal or sloped ceilings;
- area of design; and
- allowable clearance to ceilings.



This attic sprinkler is one example of a “special sprinkler.”

In order to obtain a listing, special sprinklers are subject to customized independent laboratory performance tests that evaluate responsiveness, distribution, and other unique characteristics of the sprinkler to control or suppress a fire. Depending on the intended use, these tests might include variables such as the following:

- the location of the fire relative to the sprinklers (i.e., below one sprinkler, between two or between four sprinklers);
- fire conditions that encompass a variety of fire growth rates representative of anticipated conditions of use;
- tests where multiple sprinklers are expected to operate;
- adverse conditions of use (i.e., pipe shadows or other obstructions to discharge); or
- effect of a fire plume on water sprinkler discharge.

For additional information on special sprinklers, refer to NFPA 13, *Standard on the Installation of Sprinkler Systems*, Chapter 8.

