



Fire Sprinklers: Design Classifications

The sprinkler system design is based on a required water flow rate (gallons per minute, GPM) and the designated coverage area (square feet, SF). This rate is denoted as GPM/SF. As hazard levels escalate from Light to Extra Hazard, the required GPM/SF ratio increases, which means more water is discharged over the area to effectively manage the potential intensity of fires.

Classification	Description
Light Hazard	Designed for areas where fire development is expected to be low. Materials are primarily non-combustible or of low combustibility. The sprinkler design density is minimal, intended to control fires without necessarily extinguishing them quickly. Not commonly found in parking structures.
Ordinary Hazard	Suitable for environments where moderate amounts of flammable or combustible materials are present. This category is divided into classifications: <ol style="list-style-type: none">Ordinary Hazard Group 1 (OH 1): Environments with less combustible materials and a lower fire load.Ordinary Hazard Group 2 (OH 2): Settings with more combustible materials and a higher fire load.
Extra Hazard	Designed for areas containing large amounts of highly reactive flammable materials. The sprinkler design density is significantly higher to suppress and potentially extinguish fires more effectively. This category is divided into two classifications: <ol style="list-style-type: none">Extra Hazard Group 1 (EH 1): Environments that involve processes using large amounts of flammable liquids, or where multiple ignition sources are present.Extra Hazard Group 2 (EH 2): Settings that involve high-load manufacturing processes, such as heavy assembly plants, or spaces utilizing highly flammable or reactive materials in substantial quantities.
FM Global Hazard Categories for Wet and Dry Pipe Systems	<p>Wet Pipe Systems: Contain water that is immediately available when the sprinkler activates. Preferred in most scenarios unless there is a risk of freezing.</p> <p>Dry Pipe Systems: Used in unheated areas where temperatures may cause water in the pipes to freeze. The systems delay water delivery until the air pressure in the pipes is sufficiently dropped, allowing the dry pipe valve to open.</p> <p>Design Specifications (up to 30 ft ceiling height):</p> <p>HC-1: 0.1 GPM/SF over 1500 SF (both wet and dry)</p> <p>HC-2: 0.2 GPM/SF over 2500 SF for wet; 0.2 GPM/SF over 3500 SF for dry</p> <p>HC-3: 0.3 GPM/SF over 2500 SF for wet; 0.3 GPM/SF over 3500 SF for dry</p>