

Control / Residential / Suppression Mode Sprinklers

Automatic sprinkler protection is recommended for industrial and other buildings having combustible construction or combustible occupancies.

There are many FM Approved types of automatic sprinklers. Typical examples include: upright, pendent, flush, recessed, concealed, sidewall, dry-pendent, dry-upright, extended coverage, corrosion resistant, and rack storage.

A sprinkler operates automatically when the heat-actuated element is heated to, or above, its thermal rating.

Selection of the proper temperature rating for automatic sprinklers is important. The proper rating provides a factor of safety designed to prevent premature operation. The rating should be selected from the following table:

TEMPERATURE RATINGS OF SPRINKLERS

<i>Rating</i>	<i>Max Temperature at Sprinkler Level</i>	<i>Rated Temperature of Sprinkler</i>	<i>Frame Color</i>
Ordinary	100°F (38°C)	135° through 170°F (57° through 77°C)	Unpainted*
Intermediate	150°F (66°C)	175° through 225°F (79° through 107°C)	White
High	225°F (107°C)	250° through 300°F (121° through 149°C)	Blue
Extra High	300°F (149°C)	325° through 375°F (163° through 191°C)	Red
Very Extra High	365°F (185°C)	400° through 475°F (204° through 246°C)	Green
Ultra High	475°F (246°C)	500° through 575°F (260° through 302°C)	Orange
Ultra High	625°F (329°C)	650°F(343°C)	Orange/Tag

*Some manufacturers paint the frame arms of 135°F (57°C) sprinklers black.

Sprinklers of "very extra high" and "ultra high" ratings are primarily used for internal protection of chambers such as ovens and dryers having working temperatures above 300°F (149°C). When the sprinklers are normally heated to the working temperature of the oven or dryer, under accidental fire conditions they will operate fast enough for safe protection. However, when the sprinklers are initially at the same temperature as a cold oven or dryer, operation may be so severely retarded that the oven or dryer is virtually without internal sprinkler protection.

Specially coated sprinklers are available for use where corrosion resistance is desired and decorative coated or plated sprinklers are available for areas where improved appearance is desired. For corrosion resistance, wax is satisfactory except in extreme atmospheres. Wax has too low a melting point for higher temperature rated sprinklers, whereas a bituminous coating affords some protection. A lead coating protects against certain mild corrosive atmospheres. Wax-over-lead provides good sprinkler protection. Corrosion resistant sprinklers such as those manufactured from stainless steel or other corrosion resistant materials currently afford the best available protection. Common decorative finishes are bright brass, chrome, paint, or polyester coating. These finishes are for decorative purposes only and are not FM Approved for corrosion resistance.

Only sprinklers supplied by the listed manufacturers are FM Approved. Any change in the device after it leaves the manufacturer voids the Approval. Coated, plated and painted sprinklers rated above 165°F (74°C) have the standard temperature color code either on the frame arms or on the compression screws, except in the case of bulb type decorative coated sprinklers in which the bulb fluid color indicates the temperature rating per the following table:

<i>Temperature Rating °F (°C)</i>	<i>Bulb Color Code</i>
135° (57°)	Orange
155° (68°)	Red

175° (79°)	Yellow
200° 225° (93° , 107°)	Green
250°, 286° (121°, 141°)	Blue
325°, 360° (162°, 182°)	Mauve
400°-650° (204°-343°)	Black

When selecting a specific type of sprinkler, refer to the FM Global Property Loss Prevention Data Sheets to ensure that the sprinkler selected is capable of providing adequate fire protection for the intended occupancy. In addition, working plans of proposed layouts, showing all details with respect to location of sprinklers and piping, description of the occupancy and details of construction, should be sent to your insurance company for review before the materials are fabricated. The plans will be accepted or changes will be recommended to assure that the work will be done according to the best practice and to avoid the possibility of later requests for change

Unless otherwise noted, automatic sprinkler system components have a rated working pressure of 175 psi (12.1 bar).

In this section, the following conventions are used:

The sprinkler nominal discharge coefficient (K-factor) is expressed in US customary units of gal/min/(psi)^{1/2} .

Following is a cross reference of standard US vs. Metric K-factors for FM Approved sprinklers

<i>Nominal K-factor [gal/min (psi)^{1/2}]</i>	<i>Metric K-factor [l/min (bar)^{1/2}]</i>
2.8	40
5.6	80
8.0	115
11.2	160
14.0	200
16.8	240
19.6	280
22.4	325
25.2	365

Residential sprinklers are Approved in non-standard K-factors as follows:

<i>Nominal K-factor [gpm/(psi)^{1/2}]</i>	<i>Metric K-factor [lpm/(bar)^{1/2}]</i>
3.8	55
5.8	84
6.9	99

Sprinkler response categories are abbreviated as follows:

SR	Standard Response
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QR	Quick Response
FR	Suppression Mode Fast Response

Heat responsive elements are identified as either **Fusible** or, in the case of bulb type elements, with the nominal bulb diameter in millimeters (e.g., 2.5 mm, 3 mm, etc.)

Nominal thread sizes are expressed using American National Standard Taper Pipe Threads (NPT). Sprinklers intended for sale outside the United States shall have threads which are in compliance with other national or international standards as permitted at the sole discretion of FM Approvals.

Sprinkler finishes are identified as follows:

<i>Finish</i>	<i>Description</i>
Brass	Unfinished, Plain Brass or Bronze
Chrome	Chrome Plated
Black Plated	Black Plated
Bright Brass	Bright Brass Plated
Zinc	Zinc Plated
NICOTEF	Nickel-Teflon Coated
Lead	Lead Coated (for extra corrosion protection in some atmospheres)
Wax	Wax Coated (for extra corrosion protection in some atmospheres)
Wax Over Lead	Wax Over Lead Coated (for extra corrosion protection in some atmospheres)
Wax Over Polyester	Wax Over Polyester Coated (for extra corrosion protection in some atmospheres)
Polyester	Polyester Coated (any color)
Painted	Painted (any color)

Sprinkler nominal temperature ratings are expressed in degrees Fahrenheit (°F) followed by the equivalent in degrees Celsius (°C).

K14.0 (K200 metric) Suppression Mode (ESFR)

Suppression mode (formerly called Early Suppression-Fast Response or "ESFR") sprinklers with a nominal discharge coefficient of 14.0 gal/min/(psi)^{1/2} are designed to be used against severe fire challenges in occupancies where fire suppression is possible. They are not intended for use in occupancies where fires cannot be suppressed with water (e.g., low flash point flammable liquids, oxidizing chemicals, etc.). The expression "suppression" relates to sprinkler system performance whereby the first few sprinklers to operate provide sufficient water to the fire to reduce it promptly to an acceptable level, if not extinguish it. The effectiveness of suppression mode sprinklers depends on the combination of fast response and the quality and efficiency of the sprinkler discharge. Intermediate temperature-rated suppression mode sprinklers with a nominal discharge coefficient of 14.0 gal/min/(psi) are limited for use near localized heat sources.

Consult the FM Global Property Loss Prevention Data Sheets concerning suppression mode sprinklers prior to designing and installing automatic fire protection systems utilizing this type of sprinkler. The FM Global Property Loss Prevention Data Sheets shall be strictly adhered to when designing and installing automatic fire protection systems utilizing these sprinklers.

K14.0 (K200 metric) ESFR Pendent (Class 2008)

VK500

Company Name:	The Viking Corporation
Company Address:	210 N Industrial Park Dr, Hastings, Michigan 49058, USA
Company Website:	http://vikingcorp.com
New/Updated Product Listing:	No
Class of Work:	2008-AS, Suppress Md (nom K=14.0)
Listing Country:	United States of America

Sprinkler Category:	Suppression Mode
K:	14.0
Type:	Pendent
Response:	ESFR - Early Suppression Fast Response
Element:	Fusible
NPT (in.):	3/4
Finish:	Brass
Temp. Rating (°F):	165, 205
Temp. Rating (°C):	74, 96
Certification Type:	FM Approved