



## TECHNICAL DATA

### MICROFAST® AND MicrofastHP® QUICK RESPONSE UPRIGHT AND CONVENTIONAL SPRINKLERS

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

#### 1. DESCRIPTION

Viking Microfast® and MicrofastHP® Quick Response Upright and Conventional (Old Style) Sprinklers are small, thermosensitive, glass-bulb spray sprinklers available in several different finishes, temperature ratings, and K-Factors to meet design requirements. The special Polyester and Polytetrafluoroethylene (PTFE) coatings can be used in decorative applications where colors are desired. In addition, these coatings have been investigated for installation in corrosive atmospheres and are cULus listed as corrosion resistant as indicated in Approval Chart 1. (Note: FM Global has no approval classification for PTFE and Polyester coatings as corrosion resistant.)



#### 2. LISTINGS AND APPROVALS

**cULus Listed:** Category VNIV

**FM Approved:** Classes 2002 and 2020

**NYC Approved:** Calendar Number 219-76-SA and MEA 89-92-E, Volume 16

**ABS Certified:** Certificate 04-HS407984B-PDA

**VdS Approved:** Certificates G4060054, G4060056, G4880046, G4930039, and G4980020

**LPC Approved:** Ref. No. 096e/03, TE30401, and TE30872

**CE Certified:** Standard EN 12259-1, EC-certificate of conformity 0832-CPD-2001, 0832-CPD-2003, 0786-CPD-40131, 0786-CPD-40171, and 0786-CPD-40278

**MED Certified:** Standard EN 12259-1, EC-certificate of conformity 0832-MED-1003 and 0832-MED-1008

**NOTE:** Other International approval certificates are available upon request.

Refer to Approval Chart 1 and Design Criteria on pages 51c-d for cULus Listing requirements, and refer to Approval Chart 2 and Design Criteria on page 51e for FM Approval requirements that must be followed.

#### 3. TECHNICAL DATA

##### Specifications:

Available since 1987.

Minimum Operating Pressure: 7 psi (0.5 bar)\*

**Maximum Working Pressure: Sprinklers VK315 and VK340 are rated for use with water working pressures ranging from the minimum 7 psi (0.5 bar) up to 250 psi (17 bar) for high-pressure systems. High-pressure (HP) sprinklers can be identified by locating "250" stamped on the deflector. All other Part Nos. not mentioned above are rated to a maximum 175 psi (12 bar) wwp.**

Factory tested hydrostatically to 500 psi (34.5 bar)

Testing: U.S.A. Patent No. 4,831,870

Thread size: Refer to the Approval Charts

Nominal K-Factor: Refer to the Approval Charts

Glass-bulb fluid temperature rated to -65 °F (-55 °C)

Overall Length: Refer to the Approval Charts

\*cULus Listing, FM Approval, and NFPA 13 installs require a minimum of 7 psi (0.5 bar). The minimum operating pressure for LPCB and CE Approvals ONLY is 5 psi (0.35 bar).

##### Material Standards:

Frame Casting: Brass UNS-C84400 or QM Brass for Sprinklers 12978, 06766B, 07060, and 12281. Brass UNS-C84400 for all other sprinklers.

Deflector: Brass UNS-C23000 or Copper UNS-C19500 for Sprinklers 12978, 06764B, and 12281. Copper UNS-C19500 for Sprinklers 06665B, 07060, and 14817. Brass UNS-C26000 for all other Sprinklers.

Bushing (for Sprinklers 06719B, 06717B, and 12286): Brass UNS-C36000

Bulb: Glass, nominal 3 mm diameter

Belleville Spring Sealing Assembly: Nickel Alloy, coated on both sides with PTFE Tape

Screw: Brass UNS-C36000

Viking Technical Data may be found on  
The Viking Corporation's Web site at  
<http://www.vikinggroupinc.com>.  
The Web site may include a more recent  
edition of this Technical Data Page.



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Pip Cap and Insert Assembly: Copper UNS-C11000 and Stainless Steel UNS-S30400

For PTFE Coated Sprinklers: Belleville Spring-Exposed, Screw-Nickel Plated, Pip Cap-PTFE Coated

For Polyester Coated Sprinklers: Belleville Spring-Exposed

**Ordering Information:** (Also refer to the current Viking price list.)

Order Microfast® and MicrofastHP® Quick Response Upright and Conventional Sprinklers by first adding the appropriate suffix for the sprinkler finish and then the appropriate suffix for the temperature rating to the sprinkler base part number.

Finish Suffix: Brass = A, Chrome-Enloy® = F, White Polyester = M-W, Black Polyester = M-B, and Black PTFE = N

Temperature Suffix (°F/°C): 135°/57° = A, 155°/68° = B, 175°/79° = D, 200°/93° = E, and 286°/141° = G

For example, sprinkler VK300 with a 1/2" thread, Brass finish and a 155 °F/68 °C temperature rating = Part No. 12978AB

**Available Finishes And Temperature Ratings:** Refer to Table 1.

**Accessories:** (Also refer to the "Sprinkler Accessories" section of the Viking data book.)

**Sprinkler Wrench:** Standard Wrench: Part No. 10896W/B (available since 2000)

**Sprinkler Cabinets:**

A. Six-head capacity: Part No. 01724A (available since 1971)

B. Twelve-head capacity: Part No. 01725A (available since 1971)

#### 4. INSTALLATION

Refer to appropriate NFPA Installation Standards.

#### 5. OPERATION

During fire conditions, the heat-sensitive liquid in the glass bulb expands, causing the glass to shatter, releasing the pip cap and sealing spring assembly. Water flowing through the sprinkler orifice strikes the sprinkler deflector, forming a uniform spray pattern to extinguish or control the fire.

#### 6. INSPECTIONS, TESTS AND MAINTENANCE

Refer to NFPA 25 for Inspection, Testing and Maintenance requirements.

#### 7. AVAILABILITY

The Viking Microfast® and MicrofastHP® Quick Response Upright and Conventional Sprinklers are available through a network of domestic and international distributors. See The Viking Corporation web site for the closest distributor or contact The Viking Corporation.

#### 8. GUARANTEE

For details of warranty, refer to Viking's current list price schedule or contact Viking directly.

**TABLE 1: AVAILABLE SPRINKLER TEMPERATURE RATINGS AND FINISHES**

| Sprinkler Temperature Classification | Sprinkler Nominal Temperature Rating <sup>1</sup> | Maximum Ambient Ceiling Temperature <sup>2</sup> | Bulb Color |
|--------------------------------------|---|--|------------|
| Ordinary                             | 135 °F (57 °C)                                    | 100 °F (38 °C)                                   | Orange     |
| Ordinary                             | 155 °F (68 °C)                                    | 100 °F (38 °C)                                   | Red        |
| Intermediate                         | 175 °F (79 °C)                                    | 150 °F (65 °C)                                   | Yellow     |
| Intermediate                         | 200 °F (93 °C)                                    | 150 °F (65 °C)                                   | Green      |
| High                                 | 286 °F (141 °C)                                   | 225 °F (107 °C)                                  | Blue       |

**Sprinkler Finishes:** Brass, Chrome-Enloy®, White Polyester, Black Polyester, and Black PTFE

**Corrosion-Resistant Coatings<sup>4</sup>:** White Polyester, Black Polyester, and Black PTFE

#### Footnotes

<sup>1</sup> The sprinkler temperature rating is stamped on the deflector.

<sup>2</sup> Based on NFPA-13. Other limits may apply, depending on fire loading, sprinkler location, and other requirements of the Authority Having Jurisdiction. Refer to specific installation standards.

<sup>3</sup> The corrosion-resistant coatings have passed the standard corrosion test required by the approving agencies indicated on pages 51c-e. These tests cannot and do not represent all possible corrosive environments. Prior to installation, verify through the end-user that the coatings are compatible with or suitable for the proposed environment. For automatic sprinklers, the coatings indicated are applied to the exposed exterior surfaces only. Note that the spring is exposed on sprinklers with Polyester and PTFE coatings.

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|---|---|---|
|  | <h2 style="margin:0;">TECHNICAL DATA</h2> | <h3 style="margin:0;">MICROFAST® AND<br/>MicrofastHP® QUICK<br/>RESPONSE UPRIGHT AND<br/>CONVENTIONAL SPRINKLERS</h3> |
|---|---|---|

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|   |   |            |             |            |   |        |       |                            |
|---|---|------------|-------------|------------|---|--------|-------|----------------------------|
| <h3 style="margin:0;">Approval Chart 1 (UL)</h3> <p style="margin:0;">Microfast® and MicrofastHP® Quick Response<br/>Upright and Conventional Sprinklers<br/>Maximum 175 PSI (12 bar) WWP</p> | <table border="1" style="border-collapse: collapse;"> <tr> <td style="padding: 2px;">—</td> <td style="padding: 2px;">Temperature</td> <td rowspan="3" style="padding: 2px; vertical-align: middle;"><b>KEY</b></td> </tr> <tr> <td style="padding: 2px;">▼</td> <td style="padding: 2px;">Finish</td> </tr> <tr> <td style="padding: 2px;">A1X ←</td> <td style="padding: 2px;">Escutcheon (if applicable)</td> </tr> </table> | —          | Temperature | <b>KEY</b> | ▼ | Finish | A1X ← | Escutcheon (if applicable) |
| —   | Temperature   | <b>KEY</b> |             |            |   |        |       |                            |
| ▼   | Finish  |            |             |            |   |        |       |                            |
| A1X ←   | Escutcheon (if applicable)  |            |             |            |   |        |       |                            |

| Base Part Number <sup>1</sup>             | SIN   | Thread Size |       | Nominal K-Factor |                     | Overall Length |    | Listings and Approvals <sup>3</sup><br>(Refer also to Design Criteria on page 51d.) |                  |     |      |                  |                  |
|---|-------|-------------|-------|------------------|---------------------|----------------|----|---|------------------|-----|------|------------------|------------------|
|   |       | NPT         | BSP   | U.S.             | metric <sup>2</sup> | Inches         | mm | cULus <sup>4</sup>  | NYC <sup>8</sup> | VdS | LPCB | CE               | ⊗                |
| <b>Upright-Standard Orifice</b>           |       |             |       |                  |                     |                |    |   |                  |     |      |                  |                  |
| 12978                                     | VK300 | 1/2"        | 15 mm | 5.6              | 80.6                | 2-3/16         | 56 | A1  | See Footnote 7.  | --  | --   | --               | --               |
| 07060                                     | VK345 | --          | 15 mm | 5.6              | 80.6                | 2-3/16         | 56 | --  | --               | A2  | A2   | B2 <sup>12</sup> | B2 <sup>15</sup> |
| <b>Conventional-Standard Orifice</b>      |       |             |       |                  |                     |                |    |   |                  |     |      |                  |                  |
| 06766B                                    | VK310 | 1/2"        | 15 mm | 5.6              | 80.6                | 2-3/16         | 56 | A2  | A2               | --  | A2   | B2 <sup>12</sup> | B2 <sup>15</sup> |
| <b>Upright-Large Orifice</b>              |       |             |       |                  |                     |                |    |   |                  |     |      |                  |                  |
| 06665B                                    | VK350 | 3/4"        | --    | 8.0              | 115.2               | 2-5/16         | 59 | A1  | A1               | A2  | A2   | B2 <sup>12</sup> | --               |
| 14817                                     | VK350 | --          | 20 mm | 8.0              | 115.2               | 2-5/16         | 59 | A1  | A1               | A2  | A2   | B2 <sup>12</sup> | --               |
| 06764B                                    | VK350 | 1/2"        | 15 mm | 8.0              | 115.2               | 2-5/16         | 59 | A1  | A1               | A2  | --   | A2 <sup>13</sup> | --               |
| <b>Conventional-Large Orifice</b>         |       |             |       |                  |                     |                |    |   |                  |     |      |                  |                  |
| 06768B                                    | VK354 | 3/4"        | 20 mm | 8.0              | 115.2               | 2-5/16         | 59 | A1  | A2               | --  | A2   | B2 <sup>12</sup> | --               |
| <b>Upright-Small Orifice<sup>11</sup></b> |       |             |       |                  |                     |                |    |   |                  |     |      |                  |                  |
| 06717B <sup>11</sup>                      | VK325 | 1/2"        | 15 mm | 2.8              | 40.3                | 2-3/16         | 56 | A1  | A1               | --  | --   | --               | --               |
| 06719B <sup>11</sup>                      | VK327 | 1/2"        | 15 mm | 4.2              | 57                  | 2-3/16         | 56 | A1  | A1               | --  | --   | --               | --               |
| 06931B <sup>11</sup>                      | VK327 | --          | 10 mm | 4.2              | 57                  | 2-3/16         | 56 | --  | --               | A2  | --   | C3 <sup>14</sup> | --               |

| <b>Maximum 250 PSI (17 bar) WWP</b>       |       |             |       |                  |                     |                |    |   |                  |     |      |    |    |
|---|-------|-------------|-------|------------------|---------------------|----------------|----|---|------------------|-----|------|----|----|
| <b>Upright-Standard Orifice</b>           |       |             |       |                  |                     |                |    |   |                  |     |      |    |    |
| Base Part Number <sup>1</sup>             | SIN   | Thread Size |       | Nominal K-Factor |                     | Overall Length |    | Listings and Approvals <sup>3</sup><br>(Refer also to Design Criteria on page 51d.) |                  |     |      |    |    |
|   |       | NPT         | BSP   | U.S.             | metric <sup>2</sup> | Inches         | mm | cULus <sup>4</sup>  | NYC <sup>9</sup> | VdS | LPCB | CE | ⊗  |
| 12281                                     | VK315 | 1/2"        | 15 mm | 5.6              | 80.6                | 2-3/16         | 56 | A1  | A1               | --  | --   | -- | -- |
| <b>Upright-Small Orifice<sup>10</sup></b> |       |             |       |                  |                     |                |    |   |                  |     |      |    |    |
| 12286 <sup>11</sup>                       | VK340 | 1/2"        | 15 mm | 2.8              | 40.3                | 2-3/16         | 56 | A1  | A1               | --  | --   | -- | -- |

|  |  |
|--|--|
| <p style="text-align: center;"><b>Approved Temperature Ratings</b></p> <p>A - 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), and 286 °F (141°C)<br/>                 B - 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), and 286 °F (141°C)<br/>                 C - 155 °F (68 °C)</p> | <p style="text-align: center;"><b>Approved Finishes</b></p> <p>1 - Brass, Chrome-Enloy®, White Polyester<sup>5,6</sup>, Black Polyester<sup>5,6</sup>, and Black PTFE<sup>5</sup><br/>                 2 - Brass, Chrome-Enloy®, White Polyester<sup>5,6</sup>, and Black Polyester<sup>5,6</sup><br/>                 3 - Brass and Chrome-Enloy®</p> |
|--|--|

**Footnotes**

<sup>1</sup> Base part number is shown. For complete part number, refer to Viking's current price schedule.  
<sup>2</sup> Metric K-factor measurement shown is when pressure is measured in Bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.  
<sup>3</sup> This table shows the listings and approvals available at the time of printing. Check with the manufacturer for any additional approvals.  
<sup>4</sup> Listed by Underwriters Laboratories Inc. for use in the U.S. and Canada.  
<sup>5</sup> cULus Listed as corrosion resistant.  
<sup>6</sup> Other colors are available on request with the same Listings and Approvals as the standard colors.  
<sup>7</sup> Meets New York City requirements, effective July 1, 2008.  
<sup>8</sup> Accepted for use, City of New York Board of Standards and Appeals, Calendar Number 219-76-SA.  
<sup>9</sup> Accepted for use, City of New York Department of Buildings, MEA 89-92-E, Vol. 16.  
<sup>10</sup> Listings and Approvals limited to Light Hazard Occupancies where allowed by the installation standards being applied, with hydraulically calculated wet systems only.  
**Exception:** 4.2K sprinklers may be installed on hydraulically calculated dry pipe systems where piping is corrosion resistant or internally galvanized.  
<sup>11</sup> The sprinkler orifice is bushed.  
<sup>12</sup> CE Certified, Standard EN 12259-1, EC-certificate of conformity 0832-CPD-2001 and 0832-CPD-2003.  
<sup>13</sup> CE Certified, Standard EN 12259-1, EC-certificate of conformity 0786-CPD-40278.  
<sup>14</sup> CE Certified, Standard EN 12259-1, EC-certificate of conformity 0786-CPD-40131.  
<sup>15</sup> ⊗ MED Certified, Standard EN 12259-1, EC-certificate of conformity 0832-MED-1003 and 0832-MED-1008.

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|---|-----------------------|---|
|  | <b>TECHNICAL DATA</b> | <b>MICROFAST® AND<br/>MicrofastHP® QUICK<br/>RESPONSE UPRIGHT AND<br/>CONVENTIONAL SPRINKLERS</b> |
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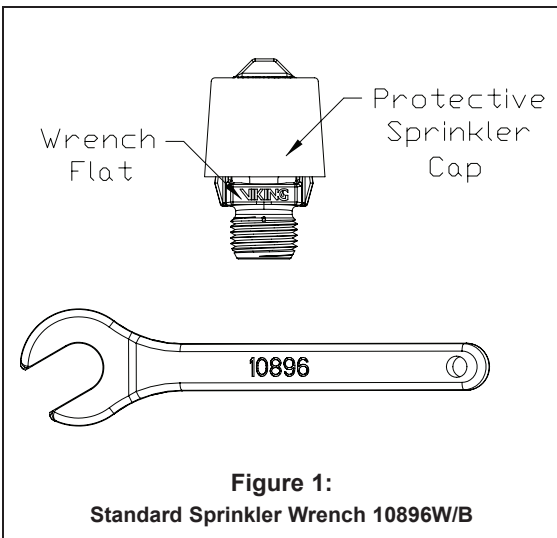
**DESIGN CRITERIA - UL**  
 (Also refer to Approval Chart 1 on page 51c)


**cULus Listing Requirements:**

Microfast® and MicrofastHP® Quick Response Upright and Conventional Sprinklers are cULus Listed as indicated in Approval Chart 1 for installation in accordance with the latest edition of NFPA 13 for standard spray sprinklers, or old style (conventional) sprinklers.

- Designed for use in Light and Ordinary Hazard occupancies (*exception: small orifice sprinklers are limited to Light Hazard where allowed by the installation standards being applied, with hydraulically calculated wet systems only.*)
- The sprinkler installation rules contained in NFPA 13 for standard spray upright sprinklers must be followed. For conventional sprinklers, refer to the installation guidelines for old style (conventional) sprinklers.

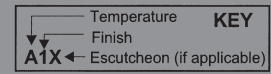
**IMPORTANT: Always refer to Bulletin Form No. F\_091699 - Care and Handling of Sprinklers. Also refer to page QR1-3 for general care, installation, and maintenance information. Viking sprinklers are to be installed in accordance with the latest edition of Viking technical data, the appropriate standards of NFPA, LPCB, APSAD, VdS or other similar organizations, and also with the provisions of governmental codes, ordinances, and standards, whenever applicable.**



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| Approval Chart 2 (FM)  |       |             |       |                  |                     |                |  |   |
|--|-------|-------------|-------|------------------|---------------------|----------------|--|---|
| Microfast® Quick Response Upright Sprinklers<br>Maximum 175 PSI (12 bar) WWP   |       |             |       |                  |                     |                |  |   |
| Base Part Number <sup>1</sup>  | SIN   | Thread Size |       | Nominal K-Factor |                     | Overall Length |  | FM Approvals <sup>3</sup><br>(Refer also to Design Criteria below.) |
|  |       | NPT         | BSP   | U.S.             | metric <sup>2</sup> | Inches         | mm   |   |
| <b>Standard Orifice</b>  |       |             |       |                  |                     |                |  |   |
| 12978  | VK300 | 1/2"        | 15 mm | 5.6              | 80.6                | 2-3/16         | 56   | A2  |
| 07060  | VK345 | --          | 15 mm | 5.6              | 80.6                | 2-3/16         | 56   | A2  |
| <b>Large Orifice</b>   |       |             |       |                  |                     |                |  |   |
| 06665B   | VK350 | 3/4"        | --    | 8.0              | 115.2               | 2-5/16         | 59   | A2  |
| 14817  | VK350 | --          | 20 mm | 8.0              | 115.2               | 2-5/16         | 59   | A2  |
| 06764B   | VK350 | 1/2"        | 15 mm | 8.0              | 115.2               | 2-5/16         | 59   | A2  |
| <b>Small Orifice<sup>4</sup></b>   |       |             |       |                  |                     |                |  |   |
| 06717B <sup>6</sup>  | VK325 | 1/2"        | 15 mm | 2.8              | 40.3                | 2-3/16         | 56   | A1  |
| <b>Approved Temperature Ratings</b>  |       |             |       |                  |                     |                | <b>Approved Finishes</b>   |   |
| A - 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), and 286 °F (141 °C)  |       |             |       |                  |                     |                | 1 - Brass and Chrome-Enloy®<br>2 - Brass, Chrome-Enloy®, White Polyester <sup>5</sup> , and Black Polyester <sup>5</sup> |   |
| <b>Footnotes</b>   |       |             |       |                  |                     |                |  |   |
| <sup>1</sup> Base part number is shown. For complete part number, refer to Viking's current price schedule.<br><sup>2</sup> Metric K-factor measurement shown is when pressure is measured in Bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.<br><sup>3</sup> This table shows the FM Approvals available at the time of printing. Check with the manufacturer for any additional approvals.<br><sup>4</sup> FM Approved as quick response <b>Non-Storage</b> pendent sprinklers. For specific application and installation requirements, reference the latest applicable FM Loss Prevention Data Sheets (including Data Sheet 2-0).<br><sup>5</sup> Other colors are available on request with the same Approvals as the standard colors.<br><sup>6</sup> The sprinkler orifice is bushed. |       |             |       |                  |                     |                |  |   |



### DESIGN CRITERIA - FM

(Also refer to Approval Chart 2 above.)

**FM Approval Requirements:**  
 The sprinklers indicated in Approval Chart 2 are FM Approved as quick response **Non-Storage** upright sprinklers as indicated in the FM Approval Guide. For specific application and installation requirements, reference the latest applicable FM Loss Prevention Data Sheets (including Data Sheet 2-0). FM Global Loss Prevention Data Sheets contain guidelines relating to, but not limited to: minimum water supply requirements, hydraulic design, ceiling slope and obstructions, minimum and maximum allowable spacing, and deflector distance below the ceiling.  
**NOTE: The FM installation guidelines may differ from cULus and/or NFPA criteria.**

**IMPORTANT: Always refer to Bulletin Form No. F\_091699 - Care and Handling of Sprinklers. Also refer to page QR1-3 for general care, installation, and maintenance information. Viking sprinklers are to be installed in accordance with the latest edition of Viking technical data, the appropriate standards of NFPA, FM Global, LPCB, APSAD, VdS or other similar organizations, and also with the provisions of governmental codes, ordinances, and standards, whenever applicable.**

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