

# **1. PRODUCT NAME**

Viking AQUAMISER<sup>™</sup> Model B Early Suppression Fast Response (ESFR) Upright Sprinkler (K = 11.2)

 Sprinkler Base Part No. 07536A (Sprinkler Identification No. VK537†) †Sprinkler identification number provided in accordance with the 1999 edition of NFPA 13, Section 3-2.2.

## 2. MANUFACTURER

The Viking Corporation 210 N. Industrial Park Road Hastings, Michigan 49058 USA Telephone: (616) 945-9501 (877) 384-5464 Fax. (616) 945-9599 e-mail: techsvcs@vikingcorp.com

#### 3. PRODUCT DESCRIPTION

The Viking AQUAMISER<sup>™</sup> Upright ESFR Sprinkler is an upright sprinkler with a quick response fusible link. The sprinkler produces high-momentum water droplets in a hemispheric pattern through the use of a 11.2 K-factor and a special deflector. The high-momentum water droplets penetrate the fire plume of severe fires. This characteristic permits direct wetting of the burning fuel while cooling the atmosphere. The guick response fusible link, 11.2 K-factor, and special deflector provide early suppression through fast response to high challenge fires. The AQUAMISER<sup>™</sup> applies water at an early point of the fire growth to greatly reduce both fire damage and total water demand.

The Viking AQUAMISER<sup>™</sup> Upright ESFR Sprinkler is for use in storage occupancies with types of storage and commodities allowed by NFPA for storage up to 20 ft. (6,1 m) high in buildings with ceiling heights not exceeding 25 ft. (7,6 m). Refer also to the approval chart.

#### 4. TECHNICAL DATA

- Refer to the approval chart.
- Rated to 175 psi (1 207 kPa) water working pressure.
- Factory tested hydrostatically to 500 psi (3 447 kPa).
- K-factor: Nominal 11.2 U.S. (16,1 metric, for use when pressure is measured in kPa).

Deflector Diameter: 2-7/8" (73 mm) Overall Height: 3-5/8" (92,1 mm) Finish: Brass

#### SPRINKLER MATERIALS

Frame: Brass Casting UNS-C84400 Levers: Brass Casting UNS-C84400 Screw: Brass UNS-C36000 Deflector: Brass UNS-C26000 Cap: Copper UNS-C14500

# TECHNICAL DATA



Link: Eutectic Solders Seal: Teflon® Tape ACCESSORIES

Sprinkler Cabinet: Part No. 03985A Capacity: six (6) sprinklers Available since 1977.

Sprinkler Wrench: Part No. 05118CW/B (Fits 3/4 inch NPT Sprinklers) Available since 1981.

#### 5. AVAILABILITY AND SERVICE

Viking products are available through a network of domestic, Canadian, and international distributors. See the Yellow Pages of the telephone directory for a local distributor (listed under "Sprinklers-Automatic-Fire") or contact The Viking Corporation.

Viking technical data may be found on The Viking Corporation's Web site at http://www.vikingcorp.com. The Web site may include a more recent edition of this technical data page.

# 6. GUARANTEES

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

# 7. INSTALLATION

AQUAMISER<sup>™</sup> ESFR

UPRIGHT SPRINKLER (K = 11.2)

WARNING: Viking sprinklers are manufactured and tested to meet rigid requirements of the approving agency. The sprinklers are designed to be installed in accordance with recognized installation standards. Deviation from the standards or any alteration to the sprinkler after it leaves the factory including, but not limited to: painting, plating, coating or modification, may render the sprinkler inoperative and will automatically nullify the approval and any guarantee made by The Viking Corporation.

- A. Sprinklers are to be installed in accordance with the latest published standards of the National Fire Protection Association, Factory Mutual, Fire Office Committee, Assemblee Plenier, Verband der Sachversicherer or other similar organizations, and also with the provisions of governmental codes, ordinances, and standards whenever applicable.
- B. The sprinklers must be installed after the piping is in place to prevent mechanical damage. Before installing, be sure to have the appropriate sprinkler model and style, with the correct orifice size, temperature rating, and response characteristics. Apply a small amount of pipe-joint compound or tape to the male threads only, while taking care not to allow a build-up of compound in the sprinkler orifice. Install the sprinkler on the piping using the special sprinkler wrench only, while taking care not to damage the sprinkler operating parts. (Any other type of wrench may damage the unit.) DO NOT use the sprinkler deflector to start or thread the sprinkler into a fitting.
- Sprinklers must be handled with care. They must be stored in a cool, dry place in their original shipping con-

Sprinkler Temp. Classification	Nominal Temperature Rating (Fusing Point)		Highest Normal Ambient Temperature Allowed		Frame Paint Color
Ordinary	165 °F (74 °C)		100 °F (38 °C)		None
Intermediate <sup>3</sup>	220 °F (104 °Ć)		150 °F (66 °C)		White
High <sup>3</sup>	286 °F (141 °C)		225 °F (107 °Ć)		Blue
Upright	NPT Thread Size		Listings and Appr		ovals <sup>1</sup>
Deflector with Pintle	Inch	mm	UL <sup>2</sup>	C-UL	NYC <sup>4</sup>
Quick Response	3/4	20	A		А
A - 165 °F (74 °C) Quick Response					
Footnotes					

<sup>1</sup> This approval chart shows the listings and approvals available at the time of printing. Check

- <sup>1</sup> This approval chart shows the listings and approvals available at the time of printing. Check with the manufacturer for any additional approvals.
   <sup>2</sup> Currently UL Listed as an Early Suppression Fast Response Upright Sprinkler.
   <sup>3</sup> Sprinklers with temperature ratings of 220 °F (104 °C) and 286 °F (141 °C) are available for use near heat-generating equipment, but only the 165 °F (74 °C) temperature-rated sprinkler is UL Listed at the time of this writing.
   <sup>4</sup> Accepted for use, City of New York Department of Buildings, MEA 89-92-E, Vol XVI.

Table 1

Replaces page 117 a-c, dated July 7, 1997. (added Sprinkler Identification Numbers).



tainer. Never install sprinklers that have been dropped or damaged in any way. (Such sprinklers should be destroyed immediately.)

- D. Use only the special sprinkler wrench and immediately replace any damaged units.
- E. Wet-pipe systems must be provided with adequate heat.
- F. After installation, the entire sprinkler system must be tested in accordance with recognized installation standards. The test is applied after sprinkler installation to ensure that no damage has occurred to the sprinkler during shipping and installation, and to make sure the unit has been properly tightened. If a thread leak occurs, normally the unit must be removed, new pipe-joint compound or tape applied, and then reinstalled. This is due to the fact that when the joint seal is damaged, the sealing compound or tape is washed out of the joint.
- G. System design must be based on ESFR design guidelines described in the appropriate NFPA pamphlets and in this technical data sheet. All requirements of recognized sprinkler system design standards apply to systems utilizing Viking AQUAMISER™ ESFŘ Upright Sprinklers. No reduction in water supplies or design area can be taken unless allowed by the standard or the Authority Having Jurisdiction.

# **TECHNICAL DATA**

### 8. MAINTENANCE

**NOTICE:** The owner is responsible for maintaining the fire protection system and devices in proper operating condition. For minimum maintenance and inspection requirements, refer to the National Fire Protection Association's pamphlet that describes care and maintenance of sprinkler systems. In addition, the Authority Having Jurisdiction may have additional maintenance, testing, and inspection requirements that must be followed.

- A. The sprinklers must be inspected on a regular basis for corrosion, mechanical damage, obstructions, paint, etc. The frequency of inspections may vary due to corrosive at mosphere, water supplies, and activity around the device.
- B. Sprinklers that have been painted or mechanically damaged must be replaced immediately. Sprinklers showing signs of corrosion shall be tested and/or replaced immediately as required. ESFR sprinklers that are 20 years old shall be tested and/or replaced as required. Sprinklers that have operated cannot be reassembled or reused, but must be replaced. When replacing sprinklers, use only new sprinklers.

C. The sprinkler discharge pattern is critical for proper fire protection. Therefore, nothing should be hung from, attached to, or otherwise obstruct the discharge pattern. All obstructions must be immediately reAQUAMISER<sup>™</sup> ESFR UPRIGHT SPRINKLER (K = 11.2)

moved or, if necessary, additional sprinklers installed.

- D. When replacing existing sprinklers, the system must be removed from service. Refer to the appropriate system description and/or valve instructions. Prior to removing the system from service, notify all authorities having jurisdiction. Consideration should be given to employment of a fire patrol in the affected area.
  - Remove the system from service, drain all water, and relieve all
     pressure on the piping.
  - 2. Using the special sprinkler wrench, remove the old sprinkler and install the new unit. Care must be taken to ensure that the replacement sprinkler is the proper model and style, with the correct orifice size, temperature rating, and response characteristics. A fully stocked spare sprinkler cabinet should be provided for this purpose.
  - 3. Place the system back in service and secure all valves. Check the replaced sprinklers and repair all leaks.
- E. Sprinkler systems that have been subject to a fire must be returned to service as soon as possible. The entire system must be inspected for damage and repaired or replaced as necessary. Sprinklers that have been exposed to corrosive products of combustion, but have not operated, should be replaced. Refer to the Authority Having Jurisdiction for minimum replacement requirements.

# November 1, 2000 Sprinkler 117 c NIKING® TECHNICAL DATA AQUAMISER™ ESFR UPRIGHT SPRINKLER (K = 11.2)



## VIKING AQUAMISER™ UPRIGHT ESFR SPRINKLER DESIGN GUIDELINES\*

\* UL Listing requires ESFR sprinklers to be installed according to NFPA 13 and other applicable NFPA Standards. Information provided below is for reference only.

**Type of Storage:** Single-, double-, and multiple-row and portable rack storage and solid-piled or palletized storage.

**Commodity:** Cartoned unexpanded plastics, Class I through Class IV commodities, cartoned polyurethane foamed-in-place packaging.

Maximum Storage Height: 20 ft. (6,1 m). Maintain a minimum of 36" (914 mm) between the deflector and top of storage.

Maximum Building Height: 25 ft. (7,6 m).

Roof Construction: Smooth ceiling, bar joist, panel, beam and girder. Maximum roof slope: 2 in./ft. (166 mm/m).

**System Type:** Hydraulically calculated wet-pipe systems only.

Sprinkler Data: K-Factor: 11.2 U.S. (16,1 Metric) Thread Size: 3/4" (20 mm) NPT

**Temperature Rating:** 165 °F (74 °C), except where higher temperature rated sprinklers are required by NFPA 13 due to proximity to heat-generating equipment.

Hydraulic Design: Design area to be the most remote twelve sprinklers, flowing four sprinklers on each of three branch lines.

Minimum Operating Pressure: 50 psi (345 kPa).

Sprinkler Spacing: 80 to 100 ft.<sup>2</sup> (7,4 to 9,3 m<sup>2</sup>) spacing. Minimum 8 ft. (2,4 m), and maximum 12 ft. (3,7 m) between sprinklers or branch lines.

#### Sprinkler Location:

Centerline of thermal fusible element must be 4" to 6" (102 mm to 152 mm) below the ceiling. Locate the deflector at least 7" (178 mm) above the top of the sprinkler pipe using a minimum of 3/4" (20 mm) sprigs.\*\*

Maintain a minimum of 36" (914 mm) between the deflector and top of storage.

For panel construction, and beam and girder construction, sprinklers must be located in bays not under beams.

Comply with paragraphs titled "Obstructions to Distribution:" in the ESFR sprinkler chapter of NFPA Pamphlet 13.

Pipe Size: Maximum nominal branch line size is 2-1/2" (65 mm).

Hose Streams: 250 gpm (946 L/min), 1-1/2" (40 mm) hose lines. Maximum 100 ft. (30,5 m) to reach all areas.

Water Supply: One-hour duration.

\* Sprinklers with 220 °F (104 °C) and 286 °F (141 °C) temperature rated sprinklers are available for use near heat-generating equipment, but only the 165 °F (74 °C) temperature rated sprinkler is UL Listed at the time of this writing.
\*\*UL Listed with 3/4" (20 mm) sprigs when adequate flow is verified by hydraulic calculation.