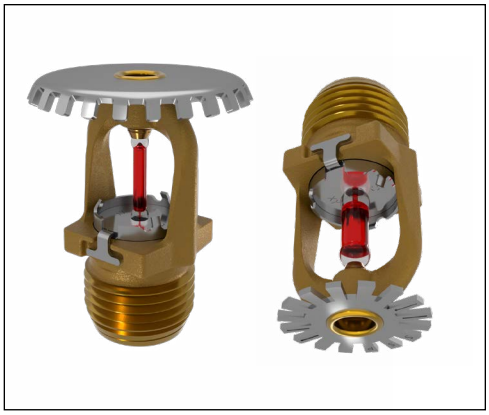
TECHNICAL DATA

APPROVED SPRINKLERS FOR USE WITH FOAM CONCENTRATES

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
Visit the Viking website for the latest edition of this technical data page www.vikinggroupinc.com

1. DESCRIPTION

Viking Pendent and Upright Foam-Water Sprinklers are non-aspirated foam discharge devices. Viking Pendent and Upright Foam-Water Sprinklers are FM Approved and UL Listed in both closed sprinkler (with bulb or fusible element) and open sprinkler (bulb removed) configurations.



Features:

- Tested and Approved as foam-water sprinklers with specific foam concentrates (see Performance Data).
- K-factors available: K5.6 (K80.6), K8.0 (K115.2), and K11.2 (K161.3)

2. LISTINGS AND APPROVALS

Viking Foam Water Sprinklers are FM Approved and/or UL Listed as part of a fire extinguishing system combining designated foam concentrates, bladder tanks and proportioning devices. Approved and Listed system components can be found at **www.approvalguide.com** and **https://iq.ulprospector.com**.

FM Approved – Low Expansion Foam Systems (FM5130)

UL Listed – GFGV.EX6015 (UL162)

"SFFF compatible" refers to this product as being part of a SFFF Foam system that has been tested to recognized standards. Not all configurations are available. Please consult technical data and/or the Approval/Listing for usage requirements.

Refer to the FM Approval and UL Listings tables in this document for technical performance data.

WARNING: Cancer and Reproductive Harm- www.P65Warnings.ca.gov

SFFF compatible

3. TECHNICAL DATA

Refer to the applicable sprinkler's data page for product data.

4. SCOPE OF DELIVERY

Ensure that all components are complete and in good condition. Viking Foam/Water Sprinklers are supplied boxed with protective shield or cap.

5. AVAILABILITY

Please contact Viking for further information.

Americas:

The Viking Corporation
5150 Beltway SE
Caledonia, MI 49316
Tel.: (800) 968–9501
Fax: 269–818–1680
Technical Services: 1–877–384–5464
techsvcs@vikingcorp.com

6. PRODUCT VARIANTS

Please refer to relevant sprinkler data page.

7. SCOPE OF DELIVERY

Ensure that all components are complete and in good condition. Viking Foam/Water Sprinklers are supplied boxed with protective shield or cap.

8. INSTALLATION

Refer to appropriate Installation Standards (i.e. NFPA, VdS, LPCB, etc.) and / or applicable FM Global Property Loss Prevention Data Sheets such as 4-12, Foam Extinguishing Systems.

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9. 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 or Foam/Water Solution flowing through the sprinkler orifice strikes the sprinkler deflector, forming a uniform spray pattern to extinguish or control the fire.

10. GUARANTEE

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

11. INSPECTION, TESTS AND MAINTENANCE

Refer to respective requirements, according to the relevant standards for Inspection, Testing and Maintenance. Refer to NFPA 25 for Inspection, Testing and Maintenance requirements.

If applicable, refer to FM Global Property Loss Prevention Datasheet 4-12 for specific test and commissioning criteria. In addition, the "Authority Having Jurisdiction" (AHJ) may have additional maintenance, testing and inspection requirements that must be followed.

WARNING

Any system maintenance or testing that involves placing a control valve or detection system out of service may eliminate the fire protection capabilities of that system. Prior to proceeding, notify all Authorities Having Jurisdiction. Consideration should be given to employment of a fire patrol in the affected areas.

12. DISPOSAL

At end of use the product described here should be disposed of via the national recycling system.

13. ACCESSORIES AND SPARE PARTS

Please refer to relevant sprinkler data page.

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TABLE 1

FM APPROVALS: HEPTANE[1]

Foam Concentrate	Nominal K-factor		Sprinkler Identification Number (SIN)		Height				Listed[2] Foam Design Density		Water Discharge Density		Tested[3] Sprinkler Pressure	
					Minimum		Maximum							
	U.S.	Metric[4]	Upright	Pendent	Ft.	m	Ft.	m	gpm/ft²	Lpm/m²	gpm/ft²	Lpm/m²	PSI	bar
ARK 3%	5.6	80.6	VK1001 VK3001	--	6	1.8	24.8	7.6	0.3	12.2	0.3	12.2	29	1.99
	5.6	80.6	--	VK1021 VK3021	6	1.8	20	6.1	0.3	12.2	0.3	12.2	29	1.99
	8.0	115.2	VK200 VK204 VK350 VK351	--	9	2,7	45	13,7	0.4	16,3	0.4	16,3	25	1,72
	8.0	115.2	--	VK2021 VK2022 VK3521 VK3522	8.5	2,6	44	13,4	0.3	12,2	0.3	12,2	14	0,97
	8.0	115.2	VK2001 VK2002 VK3501 VK3502	--	9	2,7	30	9,1	0.4	16,3	0.4	16,3	25	1,72
	11.2	161.3	VK530 VK531	--	9	2,7	45	14	0.4	16,3	0.4	16,3	13	0,89
	11.2	161.3	--	VK377 VK536	6	1.8	25.2	8	0.4	16.3	0.4	16.3	13	0.89
USP 3%	5.6	80.6	VK1001 VK3001	--	6	1.8	24.8	7.6	0.2	8.1	0.3	12.2	13	0.89
	5.6	80.6	--	VK1021 VK3021	6	1.8	44	13.4	0.2	8.1	0.3	12.2	13	0.89
	8.0	115.2	VK200 VK204 VK350 VK351	--	9	2.7	45	13.7	0.3	12.2	0.3	12.2	14	0.96
	8.0	115.2	--	VK2021 VK3521 VK3522 VK2022	8	2.4	44	13.4	0.3	12.2	0.3	12.2	14	0.96
	11.2	161.3	--	VK377 VK536	6	1.8	25.2	8	0.3	12.2	0.3	12.2	7	0.48

1. This table shows approvals available at the time of printing.
2. Density indicated is minimum application density required per FM5130 Standard for Foam Extinguishing Systems. This density cannot be reduced.
3. The pressure indicated is the minimum starting pressure required for the sprinkler. However, the minimum density shown overrides the minimum starting pressure (depending on head spacing) and cannot be reduced.
4. Metric K-factor shown is for use when pressure is measured in bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.

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TABLE 2

FM APPROVALS: JET A1[1]

Foam Concentrate	Nominal K-factor		Sprinkler Identification Number (SIN)		Height				Listed[2] Foam Design Density		Water Discharge Density		Tested[3] Sprinkler Pressure	
					Minimum		Maximum							
	U.S.	Metric[4]	Upright	Pendent	Ft.	m	Ft.	m	gpm/ft²	Lpm/m²	gpm/ft²	Lpm/m²	PSI	bar
USP 3%	5.6	80.6	--	VK1021, VK3021	8.5	2.6	44	13.4	0.2	8.1	0.3	12.2	13	0.89

1. This table shows approvals available at the time of printing.
2. Density indicated is minimum application density required per FM5130 Standard for Foam Extinguishing Systems. This density cannot be reduced.
3. The pressure indicated is the minimum starting pressure required for the sprinkler. However, the minimum density shown overrides the minimum starting pressure (depending on head spacing) and cannot be reduced.
4. Metric K-factor shown is for use when pressure is measured in bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.

TABLE 3

FM APPROVALS: IPA[1]

Foam Concentrate	Nominal K-factor		Sprinkler Identification Number (SIN)		Height				Listed[2] Foam Design Density		Tested[3] Sprinkler Pressure	
					Minimum		Maximum					
	U.S.	Metric[4]	Upright	Pendent	Ft.	m	Ft.	m	gpm/ft²	Lpm/m²	PSI	bar
ARK 3%	5.6	80.6	VK1001 VK3001	--	6	1.8	24.8	7.6	0.3	12.2	29	1.99
	5.6	80.6	--	VK1021 VK3021	6	1.8	24	7.3	0.3	12.2	29	1.99
	8.0	115.2	VK200 VK204 VK350 VK351	--	6.5	2	45	13.7	0.4	16.3	25	1.7
	8.0	115.2	--	VK2021 VK2022 VK3521 VK3522	6	1.8	44	13.4	0.3	12.2	14	0.97
	8.0	115.2	VK2001 VK2002 VK3501 VK3502	--	6	1.8	30	9.1	0.4	16.3	25	1.7
	11.2	161.3	--	VK377 VK536	6	1.8	44	13.4	0.4	16.3	13	0.89
	11.2	161.3	VK530 VK531	--	6	1.8	45	13.7	0.4	16.3	13	0.89

1. This table shows approvals available at the time of printing.
2. Density indicated is minimum application density required per FM5130 Standard for Foam Extinguishing Systems. This density cannot be reduced.
3. The pressure indicated is the minimum starting pressure required for the sprinkler. However, the minimum density shown overrides the minimum starting pressure (depending on head spacing) and cannot be reduced.
4. Metric K-factor shown is for use when pressure is measured in bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.

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TABLE 4

FM APPROVALS: ACETONE[1]

Foam Concentrate	Nominal K-factor		Sprinkler Identification Number (SIN)		Height				Listed[2] Foam Design Density		Tested[3] Sprinkler Pressure	
					Minimum		Maximum					
	U.S.	Metric[4]	Upright	Pendent	Ft.	m	Ft.	m	gpm/ft²	Lpm/m²	PSI	bar
ARK 3%	5.6	80.6	VK1001 VK3001	--	6	1.8	24.8	7.6	0.3	12.2	29	1.99
	5.6	80.6	--	VK1021 VK3021	6	1.8	24	7.3	0.3	12.2	29	1.99
	8.0	115.2	VK200 VK204 VK350 VK351	--	6.5	2	45	13.7	0.3	12.2	14	0.97
	8.0	115.2	--	VK2021 VK2022 VK3521 VK3522	6	1.8	44	13.4	0.3	12.2	14	0.97
	8.0	115.2	VK2001 VK2002 VK3501 VK3502	--	6	1.8	45	13.7	0.4	16.3	25	1.7
	11.2	161.3	VK530 VK531	--	6	1.8	45	13.7	0.3	12.2	7	0.48
	11.2	161.3	--	VK377 VK536	6	1.8	25.2	8	0.3	12.2	7	0.48

1. This table shows approvals available at the time of printing.
2. Density indicated is minimum application density required per FM5130 Standard for Foam Extinguishing Systems. This density cannot be reduced.
3. The pressure indicated is the minimum starting pressure required for the sprinkler. However, the minimum density shown overrides the minimum starting pressure (depending on head spacing) and cannot be reduced.
4. Metric K-factor shown is for use when pressure is measured in bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.

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TABLE 5

FM APPROVALS: ETHANOL[1]

Foam Concentrate	Nominal K-factor		Sprinkler Identification Number (SIN)		Height				Listed[2] Foam Design Density		Tested[3] Sprinkler Pressure	
					Minimum		Maximum					
	U.S.	Metric[4]	Upright	Pendent	Ft.	m	Ft.	m	gpm/ft²	Lpm/m²	PSI	bar
Fomtec ARK 3%	8.0	115.2	VK200 VK204 VK350 VK351	--	6.5	2	45	13,7	0.3	12.2	14	0.97
	8.0	115.2	--	VK2021 VK2022 VK3521 VK3522	6.0	1.8	44.8	13.7	0.30	12.2	14	0.97
	8.0	115.2	VK2001 VK2002 VK3501 VK3502	--	6	1.8	45	13.7	0.4	16.3	25	1.7
	11.2	161.3	VK530 VK531	--	7.7	2.3	20.6	6.3	0.30	12.2	7	0.48
	11.2	161.3	--	VK377 VK536	6.0	1.8	44.8	13.7	0.30	12.2	7	0.48
Fomtec USP 3%[5]	8.0	115.2	--	VK2021 VK2022 VK3521 VK3522	6.1	1.8	43.7	13.3	0.3	12.22	14	0.96

1. This table shows approvals available at the time of printing.
2. Density indicated is minimum application density required per FM5130 Standard for Foam Extinguishing Systems. This density cannot be reduced.
3. The pressure indicated is the minimum starting pressure required for the sprinkler. However, the minimum density shown overrides the minimum starting pressure (depending on head spacing) and cannot be reduced.
4. Metric K-factor shown is for use when pressure is measured in bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.
5. Fomtec USP, 3% is primarliy used for hydrocarbon ignitable fuels. It has also been tested with Ethanol but must NOT be considered suitable for use with other polar solvent fuels unless stated in this document.

TABLE 6

FM APPROVALS: ETHYL ACETATE[1]

Foam Concentrate	Nominal K-factor		Sprinkler Identification Number (SIN)		Height				Listed[2] Foam Design Density		Tested[3] Sprinkler Pressure	
					Minimum		Maximum					
	U.S.	Metric	Upright	Pendent	Ft.	m	Ft.	m	gpm/ft²	Lpm/m²	PSI	bar
Fomtec ARK 3%	8.0	115.2	--	VK2021 VK2022 VK3521 VK3522	6.1	1.83	32.2	9.8	0.5	20.37	39	2.69

1. This table shows approvals available at the time of printing.
2. Density indicated is minimum application density required per FM5130 Standard for Foam Extinguishing Systems. This density cannot be reduced.
3. The pressure indicated is the minimum starting pressure required for the sprinkler. However, the minimum density shown overrides the minimum starting pressure (depending on head spacing) and cannot be reduced.
4. Metric K-factor shown is for use when pressure is measured in bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.

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TABLE 7

FM APPROVALS: MEK[1]

Foam Concentrate	Nominal K-factor		Sprinkler Identification Number (SIN)		Height				Listed[2] Foam Design Density		Tested[3] Sprinkler Pressure	
					Minimum		Maximum					
	U.S.	Metric	Upright	Pendent	Ft.	m	Ft.	m	gpm/ft²	Lpm/m²	PSI	bar
Fomtec ARK 3%	11.2	161.3	--	VK377 VK536	19	5.79	19	5.79	0.6	24.4	29	1.98

1. This table shows approvals available at the time of printing.
2. Density indicated is minimum application density required per FM5130 Standard for Foam Extinguishing Systems. This density cannot be reduced.
3. The pressure indicated is the minimum starting pressure required for the sprinkler. However, the minimum density shown overrides the minimum starting pressure (depending on head spacing) and cannot be reduced.
4. Metric K-factor shown is for use when pressure is measured in bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.

TABLE 8

FM APPROVALS: HEXANE[1]

Foam Concentrate	Nominal K-factor		Sprinkler Identification Number (SIN)		Height				Listed[2] Foam Design Density		Water Discharge Density		Tested[3] Sprinkler Pressure	
					Minimum		Maximum							
	U.S.	Metric[4]	Upright	Pendent	Ft.	m	Ft.	m	gpm/ft²	Lpm/m²	gpm/ft²	Lpm/m²	PSI	bar
Fomtec USP 3%	5.6	80.6	--	VK1021 VK3021	8	2.4	43.7	13.3	0.2	8	0.3	12.22	13	0.89
	8.0	115.2	--	VK2021 VK2022 VK3521 VK3522	8	2.4	43.7	13.3	0.3	12.22	0.3	12.22	14	0.96

1. This table shows approvals available at the time of printing.
2. Density indicated is minimum application density required per FM5130 Standard for Foam Extinguishing Systems. This density cannot be reduced.
3. The pressure indicated is the minimum starting pressure required for the sprinkler. However, the minimum density shown overrides the minimum starting pressure (depending on head spacing) and cannot be reduced.
4. Metric K-factor shown is for use when pressure is measured in bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.

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TABLE 9

FM APPROVALS: METHANOL[1]

Foam Concentrate	Nominal K-factor		Sprinkler Identification Number (SIN)		Height				Listed[2] Foam Design Density		Water Discharge Density		Tested[3] Sprinkler Pressure	
					Minimum		Maximum							
	U.S.	Metric[4]	Upright	Pendent	Ft.	m	Ft.	m	gpm/ft²	Lpm/m²	gpm/ft²	Lpm/m²	PSI	bar
Viking USP 3%[5]	5.6	80.6	--	VK1021 VK3021	6.1	1.8	33.7	10.2	0.2	8	---	---	13	0.89
	8.0	115.2	--	VK2021 VK2022 VK3521 VK3522	6.1	1.8	43.7	13.3	0.3	12.22	---	---	14	0.96

1. This table shows approvals available at the time of printing.
2. Density indicated is minimum application density required per FM5130 Standard for Foam Extinguishing Systems. This density cannot be reduced.
3. The pressure indicated is the minimum starting pressure required for the sprinkler. However, the minimum density shown overrides the minimum starting pressure (depending on head spacing) and cannot be reduced.
4. Metric K-factor shown is for use when pressure is measured in bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.
5. Fomtec USP, 3% is primarliy used for hydrocarbon ignitable fuels. It has also been tested with Ethanol but must NOT be considered suitable for use with other polar solvent fuels unless stated in this document.

TABLE 10

FM APPROVALS: MISCELLA[1]

Foam Concentrate	Nominal K-factor		Sprinkler Identification Number (SIN)		Height				Listed[2] Foam Design Density		Water Discharge Density		Tested[3] Sprinkler Pressure	
					Minimum		Maximum							
	U.S.	Metric[4]	Upright	Pendent	Ft.	m	Ft.	m	gpm/ft²	Lpm/m²	gpm/ft²	Lpm/m²	PSI	bar
Fomtec USP 3%	8.0	115.2	--	VK2021 VK2022 VK3521 VK3522	8	2.4	43.7	13.3	0.3	12.22	0.3	12.22	14	0.96

1. This table shows approvals available at the time of printing.
2. Density indicated is minimum application density required per FM5130 Standard for Foam Extinguishing Systems. This density cannot be reduced.
3. The pressure indicated is the minimum starting pressure required for the sprinkler. However, the minimum density shown overrides the minimum starting pressure (depending on head spacing) and cannot be reduced.
4. Metric K-factor shown is for use when pressure is measured in bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.

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TABLE 11

UL LISTINGS: HYDROCARBON FUELS - HEPTANE[1]

Foam Concentrate	Nominal K-factor		Sprinkler Identification Number (SIN)		Listed[2] Foam Design Density		Tested[3] Sprinkler Pressure	
	U.S.	Metric[4]	Upright	Pendent	gpm/ft²	Lpm/m²	PSI	bar
USP[5] 3%	5.6	80.6	VK1001 VK3001	VK1021 VK3021	0.16	6.5	7	0.48
	8.0	115.2	VK2001 VK2002 VK3501 VK3502	VK2021 VK2022 VK3521 VK3522	0.22	9.0	7	0.48
	11.2	161.3	VK530 VK531 VK533	VK377 VK536	0.32	13	7	0.48

1. This table shows approvals available at the time of printing.
2. Density indicated is minimum application density required per UL162 Standard for Foam Extinguishing Systems. This density cannot be reduced.
3. The pressure indicated is the minimum starting pressure required for the sprinkler. However, the minimum density shown overrides the minimum starting pressure (depending on head spacing) and cannot be reduced.
4. Metric K-factor shown is for use when pressure is measured in bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.
5. For fresh water use only.

TABLE 12

UL LISTINGS: JET A1

Foam Concentrate	Nominal K-factor		Sprinkler Identification Number (SIN)		Listed[2] Foam Design Density		Tested[3] Sprinkler Pressure	
	U.S.	Metric[4]	Upright	Pendent	gpm/ft²	Lpm/m²	PSI	bar
USP[5] 3%	5.6	80.6	--	VK1021 VK3021	0.16	6.5	7	0.48

1. This table shows approvals available at the time of printing.
2. Density indicated is minimum application density required per UL162 Standard for Foam Extinguishing Systems. This density cannot be reduced.
3. The pressure indicated is the minimum starting pressure required for the sprinkler. However, the minimum density shown overrides the minimum starting pressure (depending on head spacing) and cannot be reduced.
4. Metric K-factor shown is for use when pressure is measured in bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.
5. For fresh water use only.

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TABLE 13

UL LISTINGS: IPA[1]								
Foam Concentrate	Nominal K-factor		Sprinkler Identification Number (SIN)		Listed[2] Foam Design Density		Tested[3] Sprinkler Pressure	
	U.S.	Metric[4]	Upright	Pendent	gpm/ft²	Lpm/m²	PSI	bar
ARK 3%	8.0	115.2	VK2001 VK2002 VK3501 VK3502	VK2021 VK2022 VK3521 VK3522	0.34	13.9	16	1.1
	11.2	161.3	VK530 VK531 VK533	VK377 VK536	0.45	18.4	14	0.96

1. This table shows approvals available at the time of printing.
2. Density indicated is minimum application density required per UL162 Standard for Foam Extinguishing Systems. This density cannot be reduced.
3. The pressure indicated is the minimum starting pressure required for the sprinkler. However, the minimum density shown overrides the minimum starting pressure (depending on head spacing) and cannot be reduced.
4. Metric K-factor shown is for use when pressure is measured in bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.

TABLE 14

UL LISTINGS: KETONE - ACETONE[1]								
Foam Concentrate	Nominal K-factor		Sprinkler Identification Number (SIN)		Listed[2] Foam Design Density		Tested[3] Sprinkler Pressure	
	U.S.	Metric	Upright	Pendent	gpm/ft²	Lpm/m²	PSI	bar
Fomtec ARK 3%	8.0	115.2	--	VK2021 VK2022 VK3521 VK3522	0.25	10.2	7	0.62
	8.0	115.2	VK2001 VK2002 VK3501 VK3502	--	0.22	9.0	7	0.48
	11.2	161.3	VK530 VK531 VK533	VK377 VK536	0.32	13	7	0.48

1. This table shows approvals available at the time of printing.
2. Density indicated is minimum application density required per UL162 Standard for Foam Extinguishing Systems. This density cannot be reduced.
3. The pressure indicated is the minimum starting pressure required for the sprinkler. However, the minimum density shown overrides the minimum starting pressure (depending on head spacing) and cannot be reduced.
4. Metric K-factor shown is for use when pressure is measured in bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.

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TABLE 15

UL LISTINGS: ETHANOL[1]

Foam Concentrate	Nominal K-factor		Sprinkler Identification Number (SIN)		Listed[2] Foam Design Density		Tested[3] Sprinkler Pressure	
	U.S.	Metric[4]	Upright	Pendent	gpm/ft²	Lpm/m²	PSI	bar
Fomtec ARK 3%	8.0	115.2	VK2001 VK2002 VK3501 VK3502	VK2021 VK2022 VK3521 VK3522	0.26	10.5	9	0.62
	11.2	161.3	VK530 VK531 VK533	VK377 VK536	0.32	13	7	0.48

1. This table shows approvals available at the time of printing.
2. Density indicated is minimum application density required per UL162 Standard for Foam Extinguishing Systems. This density cannot be reduced.
3. The pressure indicated is the minimum starting pressure required for the sprinkler. However, the minimum density shown overrides the minimum starting pressure (depending on head spacing) and cannot be reduced.
4. Metric K-factor shown is for use when pressure is measured in bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.