

FireLock® LP-46 Low Pressure Storage Sprinkler Model V4601, K25, Storage Pendent Sprinkler



1.0 PRODUCT DESCRIPTION

Style: Pendent

Nominal Connection Size: 1" NPT/ 25mm BSPT/ IGS Grooved, reference publication 10.65.

K-Factor: 25.2 Imp./36.8 S.I.¹

Maximum Working Pressure: 175 psi/1200 kPa

Factory Hydrostatic Test: 100% @ 500 psi/3450 kPa

Minimum Working Pressure: Application Specific

Temperature Rating: See "Approved Temperature Ratings F°/C°" table in section 2.0

Application: Designed for controlling fires in single, double and multiple row rack storage of up to Cartoned, Unexpanded, Group A plastic commodities stored up to 35ft/10.7m in height under a maximum 40ft/12.2m high ceiling without the need for in-rack sprinklers.

Codes and Requirements: For coverage area and sprinkler placement, refer to NFPA 13, FM Datasheets, or any applicable local requirements.

¹ For K-Factor when pressure is measured in Bar, multiply S.I. units by 10.

ALWAYS REFER TO ANY NOTIFICATIONS AT THE END OF THIS DOCUMENT REGARDING PRODUCT INSTALLATION, MAINTENANCE OR SUPPORT.

System No.		Location	
Submitted By		Date	

Spec Section		Paragraph	
Approved		Date	

2.0 CERTIFICATION/LISTINGS



APPROVALS/LISTINGS	Model V4601	
Orifice Size (inches)	-	
Orifice Size (mm)	-	
Nominal K Factor Imperial	25.2	
Nominal K Factor S.I. ¹	36.8	
Response	Standard	
Deflector Type	Pendent	
Agency	Approved Temperature Ratings	Maximum Exposure Temperature
	F° C°	F° C°
cULus, FM	162	100
	72	38
	212	150
	100	66
	286	225
	141	107

¹ For K-Factor when pressure is measured in Bar, multiply S.I. units by 10.

NOTES

- Listings and approval as of printing. Not all temperature rating combinations are Approved or Listed. Check Victaulic for specific combinations.
- All glass bulbs are rated for temperatures from -67°F/-57°C up to those shown in table above.

Commodity Selection and Design Criteria Overview for Model V4601		
Storage Type	NFPA	FM
Open Frame (that is, no solid shelves) Single, Double, Multiple-Row, or Portable Rack Storage of Class I-IV and Group A or B Plastics	NFPA 13	Datasheet 2-0
Solid Pile or Palletized Storage of Class I-IV and Group A or B Plastics	NFPA 13	Datasheet 2-0
Idle Pallet Storage	NFPA 13	Datasheet 8-24
Rubber Tire Storage	NFPA 13	Datasheet 8-3
Rolled Paper Storage (Refer to the standard.)	NFPA 13	Datasheet 8-21
Flammable Liquid Storage (Refer to the standard.)	NFPA 30	Datasheet 7-29
Aerosol Storage (Refer to the standard.)	NFPA 30B	Datasheet 7-31

3.0 SPECIFICATIONS – MATERIAL

Deflector: Bronze

Link: Nickel

Lever: Monel per UNS N04400

Load Screw: Stainless steel

Cap: Stainless steel

Seal: Teflon² tape

Strut: Monel

Frame: Brass

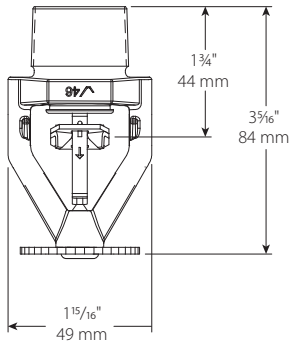
Sprinkler Finishes: Plain brass

For cabinets and other accessories, refer to separate sheet.

²Teflon is a registered trademark of Dupont Co.

4.0 DIMENSIONS

Standard Pendent – Model V4601



5.0 PERFORMANCE

System Design and Listing Requirements per FM Global

LP-46 Pendent (V4601) for Wet Systems Class I – IV and Cartoned Unexpanded Group A Plastic Solid-Piled or Open Frame Rack Storage arrangements			
Storage	Number of Sprinklers	Discharge Pressure psi kPa	System Demand gpm lpm
Up to 40 ft/12.2 m high ceiling and up to 35 ft/10.7 m high storage	12	30 207	1656 6269
Up to 30 ft/9.1 m high ceiling and up to 25 ft/7.6 m high storage	12	10 69	956 3619
Up to 20 ft/6.1 m high ceiling and up to 15 ft/4.6 m high storage	12	7 48	800 3028

Data based upon FM Global Loss Prevention Data Sheet 8-9 10ft x 10ft/3m x 3m deflector spacing, 12"/305mm deflector to ceiling distance.

Operating Area and Hose Stream Demand Requirements		
Number of Sprinklers	Hose Demand gpm lpm	Duration minutes
12	250 946	60
13 – 15	500 1893	90
16 or more	500 1893	120

Loss prevention recommendations

Install the Victaulic V4601 K25.2 (K360) pendent automatic sprinkler in accordance with the following guidelines:

Application: This FM Approved pendent automatic sprinkler may be used to protect Class 1 through 4, and cartoned (unexpanded) Group A plastic commodities under ceilings up to and including 40 ft/12 m high. This sprinkler may also be used to protect other commodity hazards with limited ceiling heights. It may be used to protect any storage arrangement outlined in FM Global Data Sheet 8-9, however portable racks must meet the guidelines required to be considered open-frame racks. Maintain a minimum clearance of 3 ft/0.9 m between the top of storage and the sprinkler deflector.

Temperature Rating – The Victaulic V4601 K25.2 (K360) pendent sprinkler is available in nominal temperature ratings of either 162°F/72°C, 212°F/100°C or 286°F/141°C. Use the nominally rated 162°F/72°C sprinkler for all wet sprinkler system applications unless the ambient temperature of the protected occupancy requires the temperature rating to be 212°F/100°C.

Commodities other than Class I-IV and Cartoned Plastics	
Design Pressure of K16.8 sprinkler ³ psi kPa	Corresponding Design Pressure of LP-46 K25.2 Sprinkler ³ psi kPa
15	7
103	48
20	10
138	69
22	10
152	69
35	15
241	103

³ One sprinkler for every 100 sq. ft/30.5 sq. m

Data based upon FM Global Loss Prevention Data Sheet 8-9

5.0 PERFORMANCE (CONTINUED)

System Design and Listing Requirements per FM Global

Shape of Operating Area: This sprinkler is not permitted in buildings having a ceiling slope over 10° unless the ceiling sprinkler is supplemented with in-rack sprinkler protection.

Base the number of sprinklers in the Operating Area parallel to the branchline based on the following equation:

$$\text{Number of AS in operating area parallel to branchline} = (\text{shape factor/on-line AS spacing}) \times (\text{Number of AS} \times \text{area spacing of sprinklers})^{0.5}$$

The shape factor is 1.2 for slope less than or equal to 5°.

The shape factor is 1.4 for slope greater than 5° and up to 10°.

Round this equation to the nearest whole number using standard rounding methods (i.e. round down if the resulting fraction is 0.49 or less and round up if the resulting fraction is 0.50 or greater).

System Types: Wet-pipe sprinkler systems or pre-action sprinkler systems, whose sprinkler protection design can be based on the equivalent of a wet-pipe system, are acceptable.

Sprinkler Spacing

Ceiling Height (Up To and Including)	Minimum Linear Distance Between Sprinklers	Maximum Linear Distance Between Sprinklers	Minimum Area of Coverage	Maximum Area of Coverage
ft m	ft m	ft m	ft ² m ²	ft ² m ²
30 9.00	8 2.40	12 3.60	64 7.50	100 9.30
above 30 ft/9m and up to 40 ft/12.3m	8 2.40	10 3.00	80 7.50	100 9.30

Sprinkler Location from Walls: Locate the automatic sprinkler with respect to walls, measured perpendicular to the wall, as follows:

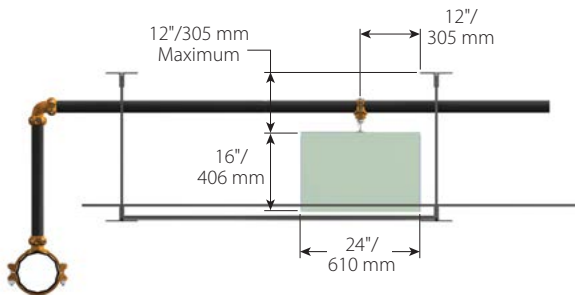
- Minimum Horizontal Distance: 4"/100mm
- Maximum Horizontal Distance unless indicated otherwise in either the FM Global occupancy data sheet or the FM Approval Guide:
 - A. Wall Angle Greater Than 90°: 5ft/1.5m
 - B. Wall Angle Equal to or Less Than 90°: 7ft/2.1m

Sprinkler Location from Ceilings: Locate the centerline of the thermal sensing element of the automatic sprinkler with respect to the vertical distance below ceilings as follows:

- **Minimum Vertical Distance:** 2"/50mm for smooth ceilings or 4"/100mm for non-smooth ceilings.
- **Maximum Vertical Distance:** Standard Response sprinklers or extended coverage sprinklers 12"/300mm for all ceiling heights.

Obstructions: Use the obstruction guidelines outlined in FM Global Data Sheet 2-0 for this sprinkler, except that an individual object up to a maximum width of 1.25"/31mm can be tolerated less than 12"/300mm horizontally away from the sprinkler as long as the object is located at least 16"/406mm vertically below the sprinkler.

All other design details, should be in accordance with FM Global Data Sheet 8-9.



5.0 PERFORMANCE (CONTINUED)

System Design and Listing Requirements per Underwriters Laboratories (UL)

Scope

The Victaulic K25.2 (K360) pendent sprinkler (V4601) has been UL Listed as a Control Mode Specific Application (CMSA) sprinkler

UL, NFPA 13 Applications

Commodity: Up to cartoned, unexpanded group A plastic

Storage Arrangement: Single, double or multi-row, open-shelf rack storage, minimum 4 ft aisles

Height: 40ft/12.2m ceiling maximum, 35ft/10.7m storage maximum

Design Discharge: 15 most remote sprinklers at a minimum discharge pressure of 23 psi/159 kPa
or

Height: 30ft/9.1m ceiling maximum, 25ft/7.6m storage maximum

Design Discharge: 15 most remote sprinklers at a minimum discharge pressure of 10 psi/69 kPa

Hose Stream and Duration: per NFPA 13 for CMSA sprinklers

Installation Per: NFPA 13 for CMSA sprinklers

Obstruction Rules: NFPA 13 for ESFR sprinklers

UL Design Criteria – Palletized, solid pile, Bin-Box, Single-, Double-, and Multiple Rack Storage (without solid shelves) storage of class I-IV and plastic commodities for storage maintained under ceiling heights up to and including 40ft/12.2m using Control Mode Specific Application pendent sprinkler LP-46.				
Configuration	Commodity Class	Maximum Ceiling/ Roof Height ft m	Number of Design Sprinklers	Minimum Operating Pressure psi kPa
Palletized and Solid Piles, Shelf or Bin-Box, and Open Frame (no open-top containers or solid shelves)	Class I-IV and Cartoned Unexpanded Plastics	30	15 most remote	10
		9.10		69
		40	15 most remote	23
		12.00		159

NOTE

- Hose Stream allowance and water supply duration per NFPA 13 for Control Mode Specific Application sprinklers





5.0 PERFORMANCE (CONTINUED)

Commodity Selection and Design Criteria Overview for Model V4601: FM	
Description	Specification, FM
Sprinkler Type	Standard Response Storage Sprinkler
Temperature Rating	162°F/72°C, 212°F/100°C and 286°F/141°C
K Factor	K25.2/368
Thread Size	1" NPT, 25mm BSPT or IGS grooved
Sprinkler Position	Pendent
System Type	Wet
Maximum Area of Coverage	100ft ² /9.1m ²
Minimum Area of Coverage	64ft ² /6m ²
Maximum Slope Ceiling	2 in 12/10.5°
Maximum Spacing	12ft/3.6m for up to 30ft/9.1m ceiling 10ft/3m for over 30ft/9.1m ceiling
Minimum Spacing	8ft/2.4m
Deflector Distance from Walls	4"/100mm
Deflector to Top of Storage	3ft/0.9m
Deflector to Ceiling Distance	2"-12"/50mm-300mm
Maximum Ceiling Height	40ft/12.2m
Maximum Storage Height	35ft/10.7m
Storage Arrangement	Solid-piled, bin-box, palletized and open-frame rack (no solid shelves)
Commodity	Class I-IV, Cartoned unexpanded plastics, cartoned expanded plastics, uncartoned unexpanded plastics, uncartoned expanded plastics
Sprinkler System Design	12 A.S @ approved pressures
Minimum Aisle Width	4ft/1.2m
Hose Stream allowance and Water Supply Duration	250gpm/946Lpm

5.0 PERFORMANCE (CONTINUED)

Commodity Selection and Design Criteria Overview for Model V4601: UL	
Description	Specification, FM
Sprinkler Type	CMSA
Temperature Rating	162°F/72°C, 212°F/100°C and 286°F/141°C
K Factor	K25.2/368
Thread Size	1" NPT, 25mm BSPT or IGS grooved
Sprinkler Position	Pendent
System Type	Wet
Maximum Area of Coverage	100ft ² /9.1m ²
Minimum Area of Coverage	64ft ² /6m ²
Maximum Slope Ceiling	2 in 12/10.5°
Maximum Spacing	12ft/3.6m for up to 30ft/9.1m ceiling 10ft/3m for over 30ft/9.1m ceiling
Minimum Spacing	8ft/2.4m
Deflector Distance from Walls	4"/100mm
Deflector to Top of Storage	3ft/0.9m
Deflector to Ceiling Distance	2"-12"/50mm-300mm
Maximum Ceiling Height	40ft/12.2m
Maximum Storage Height	35ft/10.7m
Storage Arrangement	Solid-piled, bin-box, palletized and open-frame rack (no solid shelves)
Commodity	Class I-IV, Cartoned unexpanded plastics, cartoned expanded plastics, uncartoned unexpanded plastics, uncartoned expanded plastics
Sprinkler System Design	15 A.S @ approved pressures
Minimum Aisle Width	4ft/1.2m
Hose Stream allowance and Water Supply Duration	Per NFPA 13 for CMSA

6.0 NOTIFICATIONS

 WARNING	
  	<ul style="list-style-type: none"> Always read and understand installation, care, and maintenance instructions, supplied with each box of sprinklers, before proceeding with installation of any sprinklers. Always wear safety glasses and foot protection. Depressurize and drain the piping system before attempting to install, remove, or adjust any Victaulic piping products. Installation rules, especially those governing obstruction, must be strictly followed. Painting, plating, or any re-coating of sprinklers (other than that supplied by Victaulic) is not allowed. <p>Failure to follow these instructions could result in serious personal injury and/or property damage.</p> <p>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 current National Fire Protection Association 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.</p> <p>If you need additional copies of this publication, or if you have any questions about the safe installation of this product, contact Victaulic World Headquarters: P.O. Box 31, Easton, Pennsylvania 18044-0031 USA, Telephone: 001-610-559-3300.</p>

7.0 REFERENCE MATERIALS

- [10.65: FireLock™ IGS Installation-Ready™ Style V9 Sprinkler Coupling](#)
- [40.80: FireLock Automatic Sprinkler Wrenches](#)
- [I-40: FireLock™ Automatic Sprinklers Installation Manual](#)
- [I-V9: Installation Instructions FireLock™ Installation-Ready™ Style V9 Sprinkler Coupling](#)

User Responsibility for Product Selection and Suitability

Each user bears final responsibility for making a determination as to the suitability of Victaulic products for a particular end-use application, in accordance with industry standards and project specifications, and the applicable building codes and related regulations as well as Victaulic performance, maintenance, safety, and warning instructions. Nothing in this or any other document, nor any verbal recommendation, advice, or opinion from any Victaulic employee, shall be deemed to alter, vary, supersede, or waive any provision of Victaulic Company's standard conditions of sale, installation guide, or this disclaimer.

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Note

This product shall be manufactured by Victaulic or to Victaulic specifications. All products to be installed in accordance with current Victaulic installation/assembly instructions. Victaulic reserves the right to change product specifications, designs and standard equipment without notice and without incurring obligations.

Installation

Reference should always be made to the Victaulic installation handbook or installation instructions of the product you are installing. Handbooks are included with each shipment of Victaulic products, providing complete installation and assembly data, and are available in PDF format on our website at www.victaulic.com.

Warranty

Refer to the Warranty section of the current Price List or contact Victaulic for details.

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