

# Optimizer® Point-of-use Photochemical Filters

*Liquid photochemical filters designed for developer, DI water, and solvent applications in POU photolithography processes*

Optimizer® point-of-use (POU) liquid photochemical filters deliver high-purity filtration to photolithography processes. Optimizer ST-LX DEV 10 nm filter is the latest filter to join the Optimizer product family.

Optimizer ST filters use Entegris' Connectology® technology to quickly connect and seal with compatible manifolds. Easy to install or retrofit, Optimizer ST's compact design saves space and enables faster startup with minimal exposure to process chemicals. Utilizing a pleated UPE membrane, the hydrophilic filter achieves maximum flow with minimal risk of contamination, all without the need for prewetting. The added surface area yields lower pressure drop and maintains filter lifetime as the filters become more retentive over time.

Optimizer DEV and DI disposable filters use a capsule form factor that enables high purity with minimal contamination. Because no manifolds are needed, these filters occupy less space for filter changeouts. The integrated polypropylene (PP) housing minimizes downtime and limits the handling of hazardous chemicals during installation. The surface-modified UPE membrane matches the surface energies and surface tensions of base fluids. Consequently with less potential for dewetting, the filters achieve maximum flow with minimal risk of micro-bubble formation.



*Optimizer ST with Connectology Technology*



*Optimizer Disposable*

## Superior Cleanliness with Optimizer ST-LX DEV 10 nm

Built on Entegris' DEV technology, Optimizer ST-LX DEV 10 nm filter enables advanced POU filtration to aqueous chemistries at sub-30 nm technology nodes. Utilizing a surface-modified, asymmetric UPE membrane with a 10 nm retention rating, Optimizer ST-LX DEV reduces on-wafer defects and improves yield, while maintaining the highest level of cleanliness and particle retention. The hydrophilic membrane eliminates pre-wetting, enables a stable process, and prevents the likelihood of microbubble formation.

## APPLICATIONS

Filter type	POU applications
ST	Solvent filtration
ST DEV	Positive developer DI water filtration
ST DI	DI water filtration
ST-L	Solvent filtration
ST-L DEV	Positive developer DI water filtration
ST-L DI	DI water filtration
ST-LX	Solvent filtration
ST-LX DEV	Positive developer DI water filtration Aqueous
DEV	Positive developer DI water filtration
DI	DI water filtration

*\*Surface-modified hydrophilic UPE*

## FEATURES AND BENEFITS

### Rapid filter changeout

Optimizer ST filters with Optimizer ST2 manifold (with Connectology):

- Filter changeout in less than a minute
- Minimal dripping
- No need for tools or draining

Optimizer disposable filters (without manifold):

- Require less space for filter changeouts
- Membrane eliminates chemical usage while reducing system downtime during filter changeouts

### Highly retentive UPE membrane

- Ensure maximum flow and limit microbubble formation
- Promote excellent small particle retention
- Advanced surface modification chemistry for improved hydrophilic performance and instant wettability
- Requires no pretreatment

### Maximum performance

Filter structure of Optimizer ST filters combined with Optimizer ST2 Manifold (with Connectology):

- Minimizes the risk of contamination when handling membrane cartridges
- Limits handling of hazardous chemicals during installation
- Speeds up installation and reduces downtime

# Optimizer ST Filters with Connectology (Manifold Design)

## SPECIFICATIONS

### Optimizer ST UPE filter

<b>Materials</b>	Membrane	UPE	
	Supports	HDPE	
	Housing, core, sleeve	PP	
	O-ring	Perfluoroelastomer	
<b>Retention rating and membrane area</b>	ST	3 nm, 5 nm, 10 nm	2300 cm <sup>2</sup> (4.78 ft <sup>2</sup> )
		0.05 µm, 0.1 µm	2200 cm <sup>2</sup> (2.37 ft <sup>2</sup> )
		20 nm	2600 cm <sup>2</sup> (2.80 ft <sup>2</sup> )
	ST-L	3 nm	4000 cm <sup>2</sup> (4.31 ft <sup>2</sup> )
		5 nm	4300 cm <sup>2</sup> (4.63 ft <sup>2</sup> )
		10 nm, 20 nm	4500 cm <sup>2</sup> (4.84 ft <sup>2</sup> )
		0.05 µm	3900 cm <sup>2</sup> (4.20 ft <sup>2</sup> )
	ST-LX	3 nm, 5 nm 1.0 µm	6800 cm <sup>2</sup> (7.32 ft <sup>2</sup> ) 5200 cm <sup>2</sup> (5.60 ft <sup>2</sup> )
<b>Manifold connections</b>	Please see page 9.		
<b>Operating conditions</b>	Maximum inlet pressure: 0.39 MPa (3.9 bar, 57 psi) @ 25°C (77°F) Maximum forward/reverse pressure: 0.28 MPa (2.8 bar, 40 psi) @ 25°C (77°F) Operating temperature: 40°C (104°F)		
<b>Unassembled accessories</b>	One-piece molded PE cap** for IN, OUT, and VENT (1 ea.)		

### Optimizer ST DEV filter

<b>Materials</b>	Membrane	DEV (Hydrophilic UPE*)	
	Supports	HDPE	
	Housing, core, sleeve	PP	
	O-ring	Perfluoroelastomer	
<b>Retention rating and membrane area</b>	ST DEV	0.05 µm, 0.1 µm	1600 cm <sup>2</sup> (1.72 ft <sup>2</sup> )
	ST-L DEV	30 nm (0.03 µm)	4500 cm <sup>2</sup> (4.84 ft <sup>2</sup> )
		0.05 µm, 1.0 µm	3000 cm <sup>2</sup> (3.23 ft <sup>2</sup> )
	ST-LX DEV	10 nm	6800 cm <sup>2</sup> (7.32 ft <sup>2</sup> )
		20 nm	6300 cm <sup>2</sup> (6.78 ft <sup>2</sup> )
<b>Manifold connections</b>	Please see page 9.		
<b>Operating conditions</b>	Maximum inlet pressure: 0.39 MPa (3.9 bar, 57 psi, 4.01 kg/cm <sup>2</sup> ) @ 25°C (77°F) Maximum forward/reverse pressure: 0.28 MPa (2.8 bar, 40 psi, 2.8 kg/cm <sup>2</sup> ) @ 25°C (77°F) Operating temperature: 40°C (104°F)		
<b>Unassembled accessories</b>	One-piece molded PE cap** for IN, OUT, and VENT (1 ea.)		

\* Surface-modified UPE \*\*Please contact Entegris to order the one-piece molded PE cap.

## SPECIFICATIONS (CONTINUED)

### Optimizer ST DI and ST-L DI filters

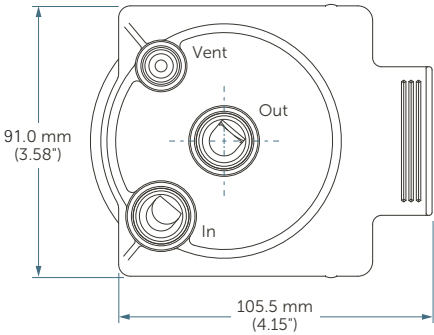
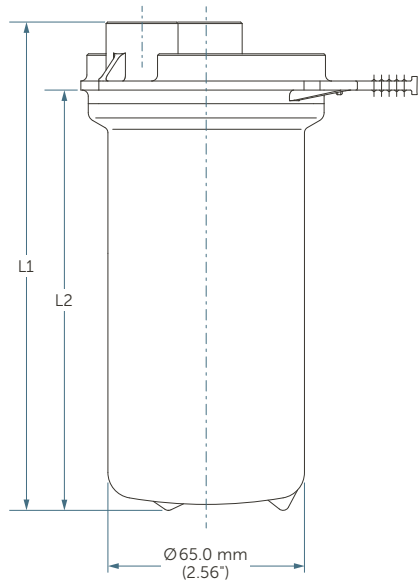
<b>Materials</b>	Membrane	DI (Hydrophilic UPE*)	
	Supports	HDPE	
	Housing, core, sleeve	PP	
	O-ring	Perfluoroelastomer	
<b>Retention rating and membrane area</b>	ST DI	0.05 µm, 0.1 µm, 0.2 µm	1800 cm <sup>2</sup> (1.94 ft <sup>2</sup> )
	ST-L DI	0.05 µm, 0.1 µm, 0.2 µm	3400 cm <sup>2</sup> (3.66 ft <sup>2</sup> )
<b>Manifold connections</b>	Please see page 9.		
<b>Operating conditions</b>	Maximum inlet pressure: 0.39 MPa (3.9 bar, 57 psi, 4.01 kg/cm <sup>2</sup> ) @ 25°C (77°F)  Maximum forward/reverse pressure: 0.28 MPa (2.8 bar, 40 psi, 2.8 kg/cm <sup>2</sup> ) @ 25°C (77°F)		
<b>Unassembled accessories</b>	One-piece molded PE cap** for IN, OUT, and VENT (1 ea.)		

\*Surface-modified UPE

\*\*Please contact Entegris to order the one-piece molded PE cap.

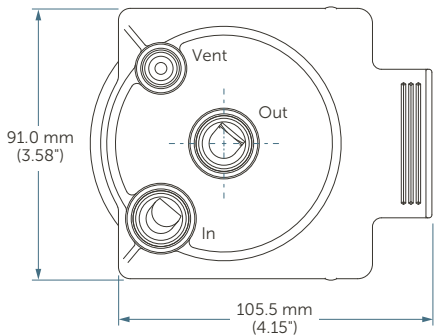
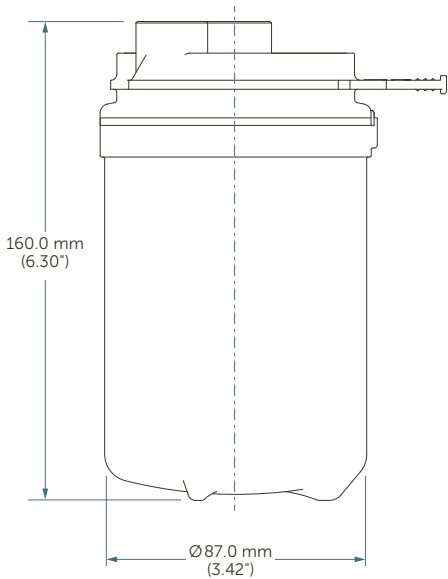
**DIMENSIONS**

Optimizer ST Filter Types (applies to ST, ST DI, and ST DEV)



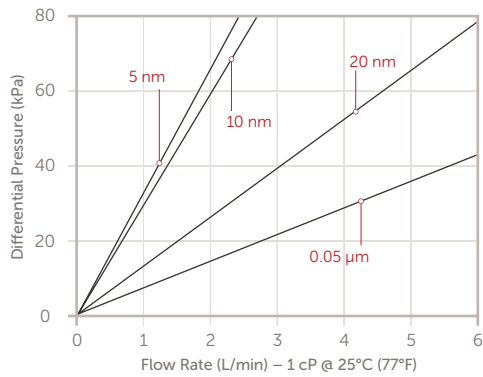
	ST (short type)	ST-L (long type)
L1	108.0 mm (4.25")	162.0 mm (6.37")
L2	87.0 mm (3.42")	137.0 mm (5.39")

Optimizer ST-LX Filter Types (applies to ST-LX UPE and ST-LX DEV)

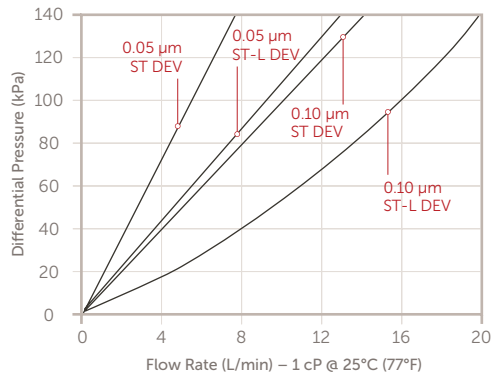


## PERFORMANCE DATA

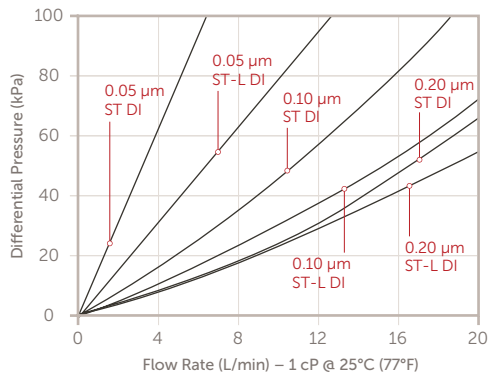
**Optimizer ST-L Filter**  
½" Tube Connection Fitting



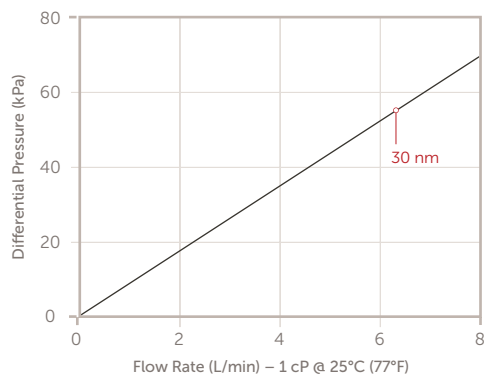
**Optimizer ST DEV and ST-L DEV Filters**  
½" Tube Connection Fitting



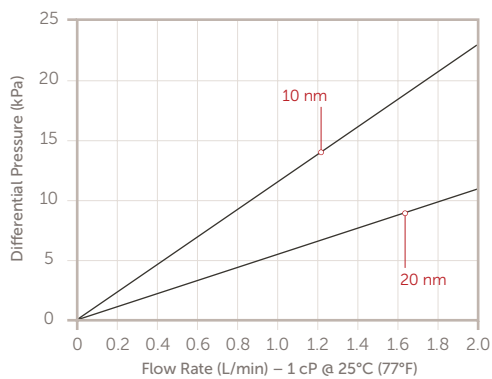
**Optimizer ST DI and ST-L DI Filters**  
½" Tube Connection Fitting



**Optimizer ST-L DEV Filter**  
½" Tube Connection Fitting

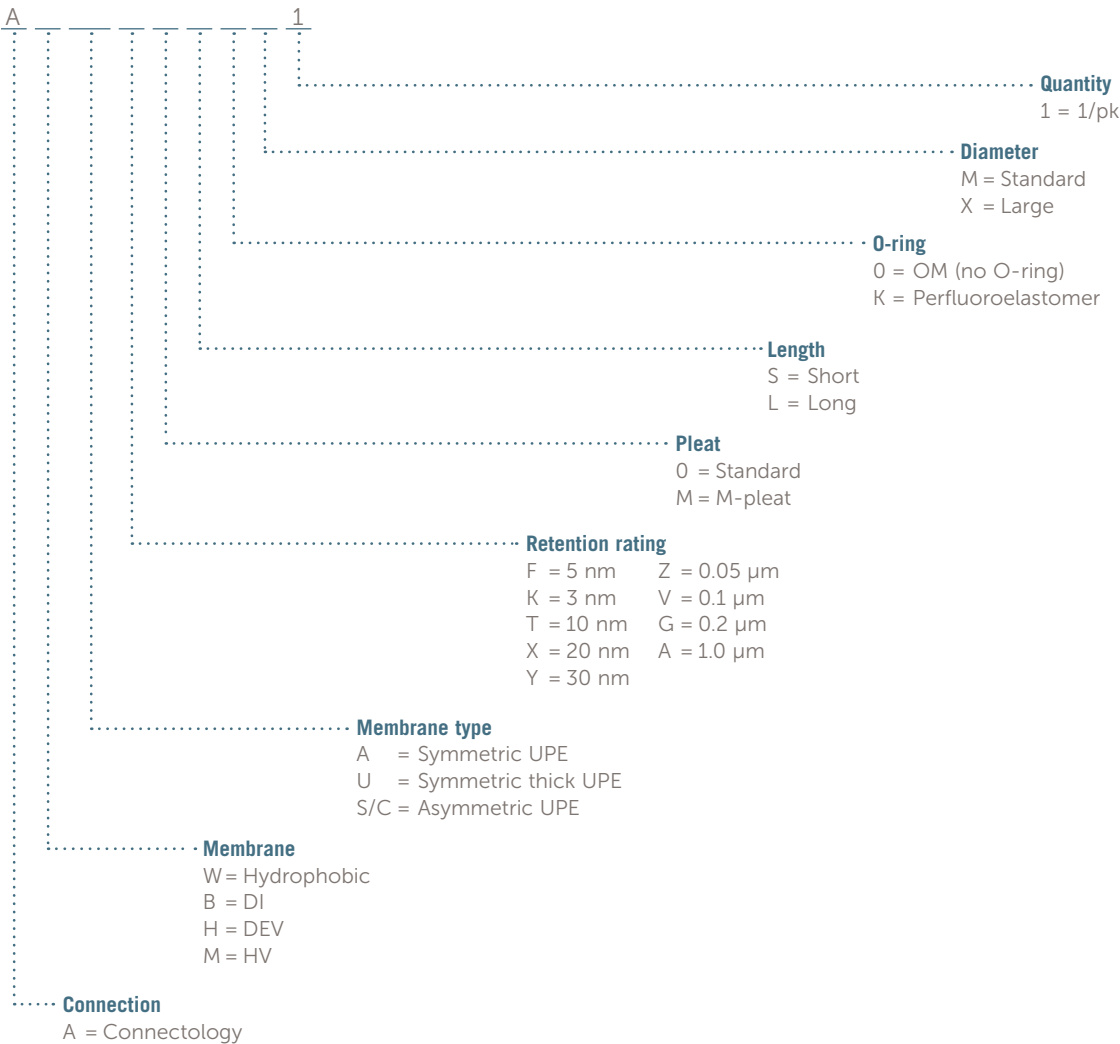


**Optimizer ST-LX DEV Filter**  
½" Tube Connection Fitting



**ORDERING INFORMATION\***

Optimizer Point-of-use Photochemical Filters: part number



\*This information serves as a guide. Please contact your local representative to confirm part numbers.

# Optimizer ST Flushing Shell

## SPECIFICATIONS

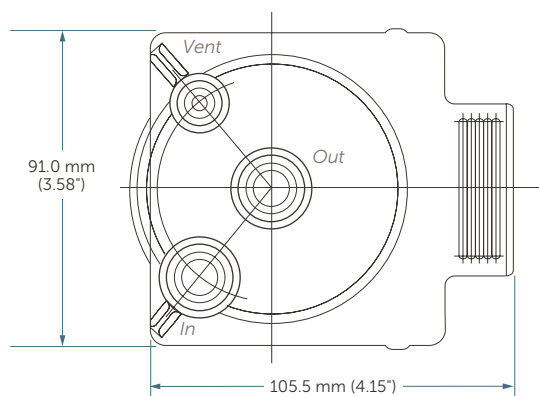
<b>Material</b>	Shell	Polypropylene
	O-ring	Perfluoroelastomer
<b>Operating Conditions</b>	Maximum inlet pressure: 0.39 MPa (3.9 bar, 57 psi, 4.01 kg/cm <sup>2</sup> ) @ 25°C (77°F)	
	Maximum temperature: 40°C (104°F)	

Note: The flushing shell is designed for short-term use (less than 1 month) in flushing chemical lines and systems.

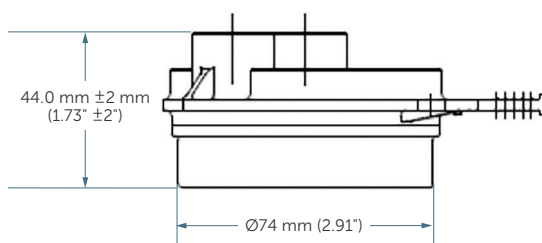
- Replace flushing shell with appropriate filter once line flushing is completed.
- Discard used flushing shells. Do not reuse.
- Do not use flushing shells in lieu of a filtration device or subject to long-term exposure to solvents in a pressurized environment.
- The warranty will be voided if the product is used in lieu of a filtration device or is subjected to long-term exposure to solvents in a pressurized environment.
- If expecting extended idle time in dispense line, we strongly urge customers to perform one of the following to avoid compromising flushing shell integrity:
  - Depressurize line while flushing shell is installed.
  - Dry the line and discontinue using the flushing shell.

## DIMENSIONS

Top View



Side View



## ORDERING INFORMATION

Part number	Description
AMH0000K1	Optimizer ST flushing shell, perfluoroelastomer



# Optimizer DEV and DI Filters (Non-manifold)

## SPECIFICATIONS

<b>Materials</b>	Membrane	UPE*	
	Supports	HDPE	
	Housing, core, sleeve	PP	
<b>Retention rating and membrane area</b>	DI	20 nm, 0.05 µm, 0.1 µm, 0.2 µm	1800 cm <sup>2</sup> (1.94 ft <sup>2</sup> )
	DI-L	20 nm	2100 cm <sup>2</sup> (2.26 ft <sup>2</sup> )
		0.05 µm, 0.1 µm, 0.2 µm	3600 cm <sup>2</sup> (3.88 ft <sup>2</sup> )
	DEV	20 nm, 30 nm (0.03 µm)	2600 cm <sup>2</sup> (2.80 ft <sup>2</sup> )
		0.05 µm, 0.1 µm	1800 cm <sup>2</sup> (1.94 ft <sup>2</sup> )
	DEV-L	10 nm, 20 nm, 30 nm (0.03 µm)	4500 cm <sup>2</sup> (4.84 ft <sup>2</sup> )
		0.05 µm, 0.1 µm	3600 cm <sup>2</sup> (3.88 ft <sup>2</sup> )
<b>Fittings</b>	Available in a wide range of fittings including Super Type Pillar® fittings, compression seal (Swagelok® compatible fittings) and Flaretek fittings		
<b>Operating conditions</b>	Maximum inlet pressure:		
	0.345 MPa (3.45 bar, 50 psi, 3.52 kg/cm <sup>2</sup> ) @ 25°C (77°F)		
	Maximum forward/reverse differential pressure:		
	0.345 MPa (3.45 bar, 50 psi, 3.52 kg/cm <sup>2</sup> ) @ 25°C (77°F)		
	0.28 MPa (2.8 bar, 40 psid, 2.8 kg/cm <sup>2</sup> ) @ 25°C (77°F)		
	Maximum operating temperature:		
	60°C (140°F)		

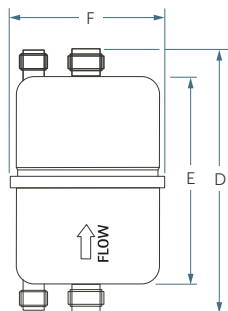
\* Surface-modified UPE

Entegris recommends that customers change filters at least annually to ensure optimal filtration performance. Routine annual changeout will also reduce the potential of chemical leakage that can result from excessive usage.

Our standard warranty period is 1 year (from Entegris ship date).

## DIMENSIONS

Optimizer DEV/DI Filter

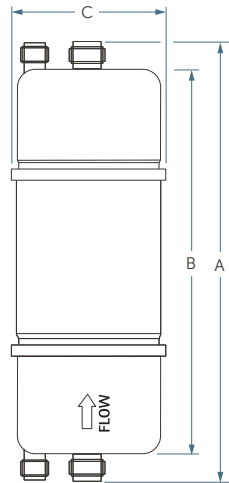


Optimizer DEV/DI filters

Fitting	In/out size	DIMENSIONS		
		D	E	F
Compression seal	6.35 mm (¼")	113 mm (4.45")	92 mm (3.62")	69 mm (2.72")
Super Type Pillar	6 mm	122 mm (4.80")	97 mm (3.81")	71 mm (2.80")
	6.35 mm (¼")	122 mm (4.80")	97 mm (3.81")	71 mm (2.80")
	8 mm	127 mm (5.00")	97 mm (3.81")	71 mm (2.80")

DIMENSIONS (CONTINUED)

Optimizer DEV-L/DI-L Filter

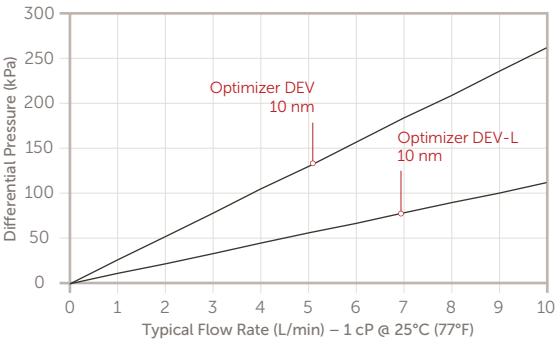


Optimizer DEV-L/DI-L filters

Fitting	In/out size	DIMENSIONS		
		A	B	C
Compression seal	6.35 mm (¼")	189 mm (7.44")	169 mm (6.65")	69 mm (2.72")
	9.53 mm (⅜")	192 mm (7.56")	169 mm (6.65")	69 mm (2.72")
Super Type Pillar	8 mm	205 mm (8.07")	175 mm (6.89")	71 mm (2.80")
	9.53 mm (⅜")	209 mm (8.23")	175 mm (6.89")	71 mm (2.80")
	12.7 mm (½")	185 mm (7.28")	145 mm (5.71")	82 mm (3.23")

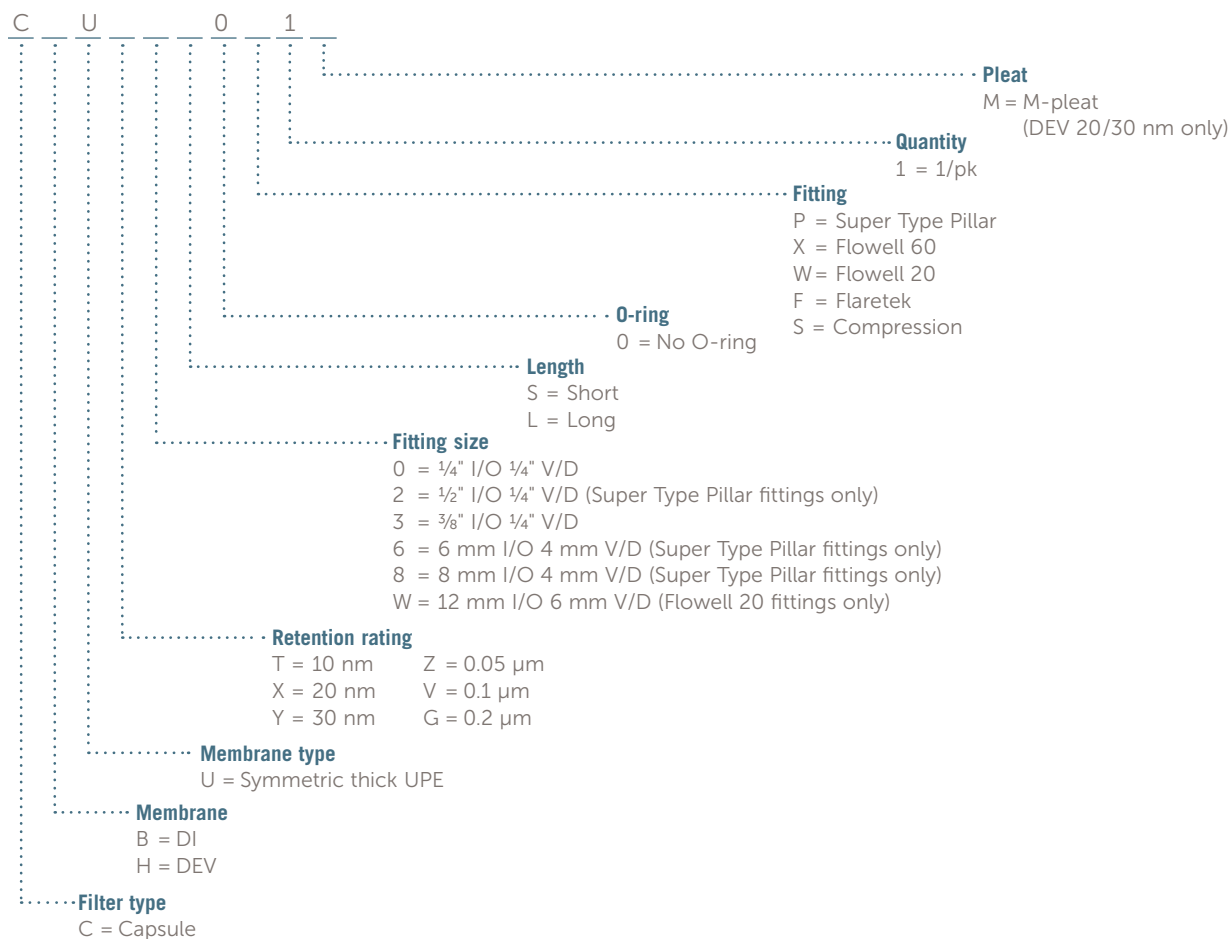
PERFORMANCE DATA

Optimizer DEV Filters



## ORDERING INFORMATION\*

Optimizer DEV and DI Filters: part number



\*This information serves as a guide. Please contact your local representative to confirm part numbers.

## FOR MORE INFORMATION

Please call your Regional Customer Service Center today to learn what Entegris can do for you. Visit [entegris.com](https://www.entegris.com) and select the [Contact Us](#) link to find the customer service center nearest you.

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