

FEP

Heat Shrink

Optinova offers three medical grade solutions: FEP Heat Shrink (1.6:1 and 1.3:1 Shrink Ratio) and FEP QuickShrink™ 2.0.

1.6:1 and 1.3:1 Shrink Ratio FEP Heat Shrink are our responses to the market demand for higher quality, cost-effective heat shrink solutions for medical devices. FEP QuickShrink™ 2.0 is our unique solution for challenging applications which require rapid shrink times or customized, low temperature processing.

FEP QuickShrink™ 2.0 can reach above 1.7:1 shrink ratio at over 210°C (410°F). It is ideal for processing low melt temperature materials and applications incorporating thermally sensitive components.

Optinova's FEP Heat Shrink is available in standard sizes and can also be customized to meet specific customer requirements with superior precision. For over 50 years, we have led the industry with quality, innovation and customer experience.

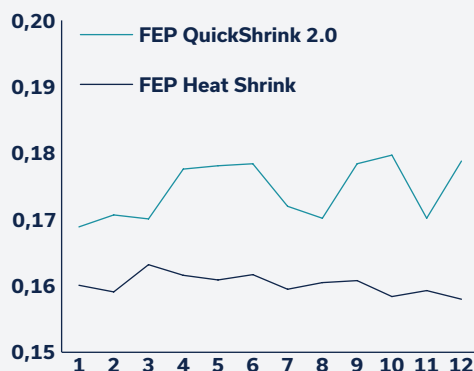
Key features

- Greater flexibility and better optical clarity than PTFE
- Precise tolerances and excellent controlled squeeze for customized heat shrink profiles up to shrink ratio 1.5:1, with recovered ID tolerance of $\pm 0.01''$ ($\pm 0.25\text{mm}$)
- Friction-free, anti-adhesive
- Certified max recovered dimension for all products

Applications

- Catheter shaft re-flow and component bonding
- Balloon bonding - good bondability with stable performance at cryogenic temperatures
- Surgical instrument jacketing
- Electronic component and cable jacketing - low dielectric loss at high frequencies

	Unit	Heat Shrink 1.6:1	Heat Shrink 1.3:1	QuickShrink 2.0
ID	mm (inches)	0.7-13 (0.028-0.512)	0.7-13 (0.028-0.512)	0.7-13 (0.028-0.512)
Wall	mm (inches)	0.15-0.30 (0.006-0.012)	0.15-0.30 (0.006-0.012)	0.15-0.30 (0.006-0.012)
Specific gravity		2.15	2.15	2.15
Transparency		Very good	Very good	Very good
Sterilization		EtO, Steam	EtO, Steam	Eto, Steam
Environmental				
Water absorption	%	<0.01	<0.01	<0.01
Oxygen index	%	>95	>95	>95
Flammability		V-0	V-0	V-0
Weather resistance		Excellent	Excellent	Excellent
Chemical resistance		Excellent	Excellent	Excellent
Thermal				
Melting temperature	°C (°F)	260-265 (500-509)	260-265 (500-509)	260-265 (500-509)
Continuous service temp	°C (°F)	200 (390)	200 (390)	200 (390)
Shrink temperature	°C (°F)	149-232 (300-450)	149-232 (300-450)	82-232 (180-450)
Deflection temp (66 psi)	°C (°F)	59 (138)	59 (138)	59 (138)
Deflection temp (264 psi)	°C (°F)	57 (134)	57 (134)	57 (134)
Mechanical				
Tensile strength at break	MPa	25-28	25-28	25-28
Elongation at break	%	320	320	320
Compressive strength	psi	15.2	15.2	15.2
Impact strength	Ft-Lb/in	No Break	No Break	No Break
Flexural Modulus	MPa	654.6	654.6	654.6
Tensile Modulus	psi	344.5	344.5	344.5
Hardness	Shore D	D-55	D-55	D-55
Electrical				
Dielectric const at 10 ³ Hz		2.1	2.1	2.1
Dielectric const at 10 ⁶ Hz		2.1	2.1	2.1
Dielectric DF at 10 ³ Hz		0.0001	0.0001	0.0001
Dielectric DF at 10 ⁶ Hz		0.0008	0.0008	0.0008
Volume resistivity (D 257)	Ohm	>10 ¹⁸	>10 ¹⁸	>10 ¹⁸


Recovery speed:

FEP Heat Shrink & FEP QuickShrink™ 2.0 at 210°C for 30 seconds, 12 samples (in inch)

Expanded state:

FEP Heat Shrink: 0.276"

FEP QuickShrink™ 2.0: 0.274"