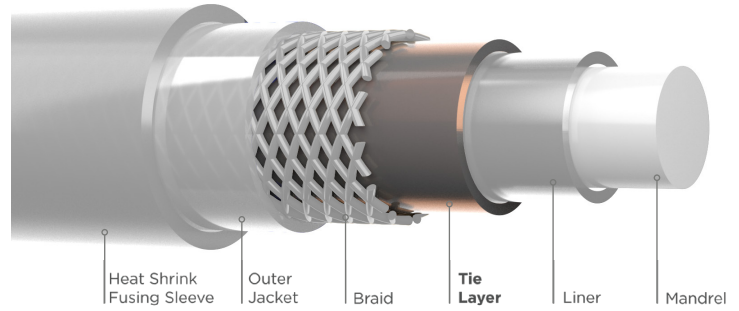


Overcoming Catheter Failure with Tie Layer

A common practice for catheter manufacturers is to stretch the liner, drawing it thinner manually. However, stretching chemically etched PTFE or FEP liners reduces their bondability, leading to delamination and device failure.

Introducing Tie Layer: A thin thermoplastic coating that can be applied over a catheter liner to improve jacket-to-liner bond strength.



Catheter construction using Tie Layer

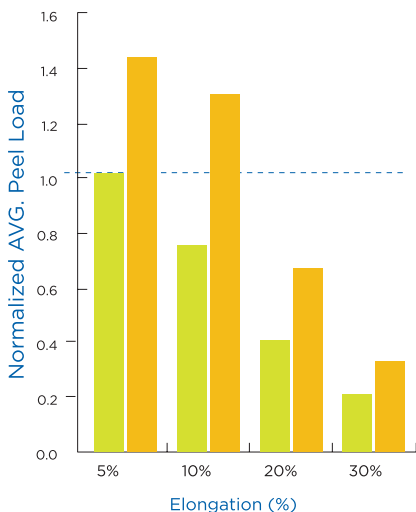
Putting Tie Layer to the Test

To test this new solution, two sizes of catheters were built with and without a Tie Layer. The peel force necessary to remove the jacket from the completed catheters was measured at various elongation levels to assess the effects of Tie Layer upon stretched jacket-to-liner adhesion in a series of tests.

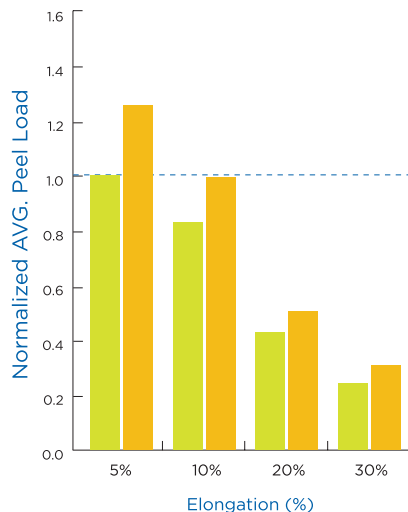
	Mandrel	Liner - PTFE	Tie Layer* - Pebax®	Braiding - LCP	Jacketing - Pebax®	Heat Shrink - FEP
Catheter Build 1	0.075" (1.905 mm)	0.0015" wall (0.0381 mm)	55D	0.003" (0.076 mm)	55D - 0.005" wall (55D - 0.127 mm)	0.010" wall (0.254 mm)
Catheter Build 2	0.062" (1.575 mm)	0.002" wall (0.051 mm)	55D	0.003" (0.076 mm)	55D - 0.005" wall (55D - 0.127 mm)	0.009" wall (0.229 mm)

*Both catheter builds represented above were tested against corresponding builds without a tie layer.

Catheter Build 1



Catheter Build 2



Comparison of Avg. Normalized Peel Load at Various Elongations ■ No Tie Layer ■ Tie Layer

The Results

Enhanced bond strength between the liner and jacket ranging from 20-40% with minimal to moderate liner stretching in the catheter assembly that included Tie Layer.

As a best practice recommendation, we suggest stretching liners no more than 15% for the greatest benefit when adding Tie Layer to your catheter design.

Request Your Free Samples

To aid your prototyping, order your free Tie Layer samples at zeusinc.com/tielayer.

[Order Samples Here](#)

