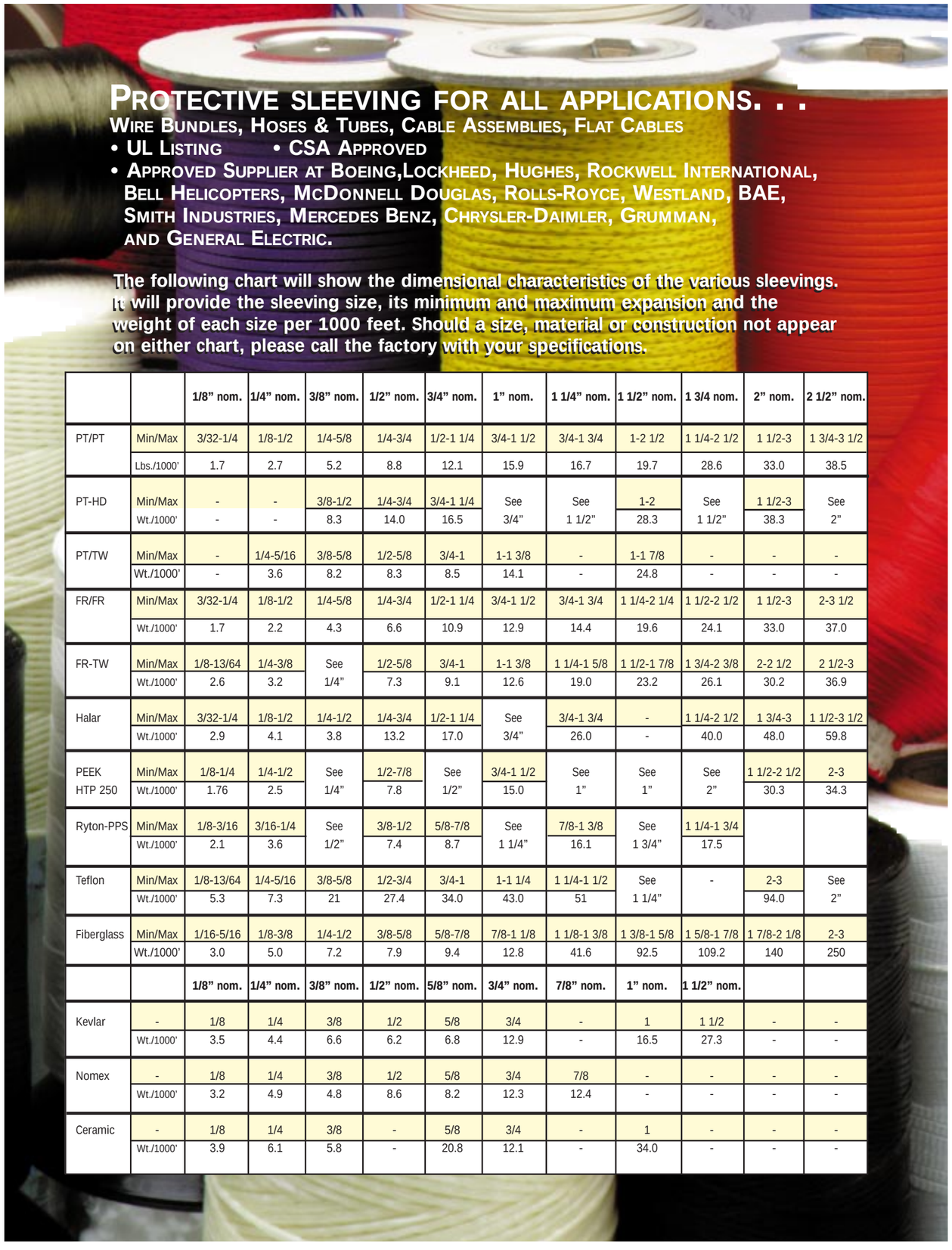
western filament, inc.

Expandable Sleeving Products

THE SOLUTION FOR THE PROTECTION
OF WIRE HARNESSES, HOSES AND CABLES

PROVIDING THE HIGHEST QUALITY PRODUCT FOR TECHNOLOGICAL AND INDUSTRIAL USAGE



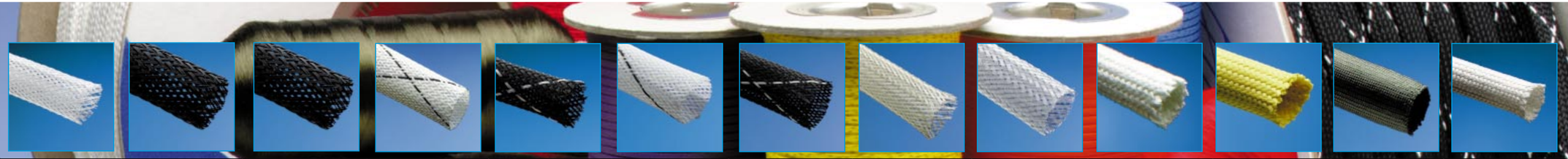
PROTECTIVE SLEEVING FOR ALL APPLICATIONS. . .

WIRE BUNDLES, HOSES & TUBES, CABLE ASSEMBLIES, FLAT CABLES

- **UL LISTING** • **CSA APPROVED**
- **APPROVED SUPPLIER AT BOEING,LOCKHEED, HUGHES, ROCKWELL INTERNATIONAL, BELL HELICOPTERS, MCDONNELL DOUGLAS, ROLLS-ROYCE, WESTLAND, BAE, SMITH INDUSTRIES, MERCEDES BENZ, CHRYSLER-DAIMLER, GRUMMAN, AND GENERAL ELECTRIC.**

The following chart will show the dimensional characteristics of the various sleevings. It will provide the sleeving size, its minimum and maximum expansion and the weight of each size per 1000 feet. Should a size, material or construction not appear on either chart, please call the factory with your specifications.

		1/8" nom.	1/4" nom.	3/8" nom.	1/2" nom.	3/4" nom.	1" nom.	1 1/4" nom.	1 1/2" nom.	1 3/4 nom.	2" nom.	2 1/2" nom.
PT/PT	Min/Max	3/32-1/4	1/8-1/2	1/4-5/8	1/4-3/4	1/2-1 1/4	3/4-1 1/2	3/4-1 3/4	1-2 1/2	1 1/4-2 1/2	1 1/2-3	1 3/4-3 1/2
	Lbs./1000'	1.7	2.7	5.2	8.8	12.1	15.9	16.7	19.7	28.6	33.0	38.5
PT-HD	Min/Max	-	-	3/8-1/2	1/4-3/4	3/4-1 1/4	See	See	1-2	See	1 1/2-3	See
	Wt./1000'	-	-	8.3	14.0	16.5	3/4"	1 1/2"	28.3	1 1/2"	38.3	2"
PT/TW	Min/Max	-	1/4-5/16	3/8-5/8	1/2-5/8	3/4-1	1-1 3/8	-	1-1 7/8	-	-	-
	Wt./1000'	-	3.6	8.2	8.3	8.5	14.1	-	24.8	-	-	-
FR/FR	Min/Max	3/32-1/4	1/8-1/2	1/4-5/8	1/4-3/4	1/2-1 1/4	3/4-1 1/2	3/4-1 3/4	1 1/4-2 1/4	1 1/2-2 1/2	1 1/2-3	2-3 1/2
	Wt./1000'	1.7	2.2	4.3	6.6	10.9	12.9	14.4	19.6	24.1	33.0	37.0
FR-TW	Min/Max	1/8-13/64	1/4-3/8	See	1/2-5/8	3/4-1	1-1 3/8	1 1/4-1 5/8	1 1/2-1 7/8	1 3/4-2 3/8	2-2 1/2	2 1/2-3
	Wt./1000'	2.6	3.2	1/4"	7.3	9.1	12.6	19.0	23.2	26.1	30.2	36.9
Halar	Min/Max	3/32-1/4	1/8-1/2	1/4-1/2	1/4-3/4	1/2-1 1/4	See	3/4-1 3/4	-	1 1/4-2 1/2	1 3/4-3	1 1/2-3 1/2
	Wt./1000'	2.9	4.1	3.8	13.2	17.0	3/4"	26.0	-	40.0	48.0	59.8
PEEK	Min/Max	1/8-1/4	1/4-1/2	See	1/2-7/8	See	3/4-1 1/2	See	See	See	1 1/2-2 1/2	2-3
HTP 250	Wt./1000'	1.76	2.5	1/4"	7.8	1/2"	15.0	1"	1"	2"	30.3	34.3
Ryton-PPS	Min/Max	1/8-3/16	3/16-1/4	See	3/8-1/2	5/8-7/8	See	7/8-1 3/8	See	1 1/4-1 3/4		
	Wt./1000'	2.1	3.6	1/2"	7.4	8.7	1 1/4"	16.1	1 3/4"	17.5		
Teflon	Min/Max	1/8-13/64	1/4-5/16	3/8-5/8	1/2-3/4	3/4-1	1-1 1/4	1 1/4-1 1/2	See	-	2-3	See
	Wt./1000'	5.3	7.3	21	27.4	34.0	43.0	51	1 1/4"		94.0	2"
Fiberglass	Min/Max	1/16-5/16	1/8-3/8	1/4-1/2	3/8-5/8	5/8-7/8	7/8-1 1/8	1 1/8-1 3/8	1 3/8-1 5/8	1 5/8-1 7/8	1 7/8-2 1/8	2-3
	Wt./1000'	3.0	5.0	7.2	7.9	9.4	12.8	41.6	92.5	109.2	140	250
		1/8" nom.	**1/4" nom.**	**3/8" nom.**	**1/2" nom.**	**5/8" nom.**	**3/4" nom.**	**7/8" nom.**	**1" nom.**	**1 1/2" nom.**		
Kevlar	-	1/8	1/4	3/8	1/2	5/8	3/4	-	1	1 1/2	-	-
	Wt./1000'	3.5	4.4	6.6	6.2	6.8	12.9	-	16.5	27.3	-	-
Nomex	-	1/8	1/4	3/8	1/2	5/8	3/4	7/8	-	-	-	-
	Wt./1000'	3.2	4.9	4.8	8.6	8.2	12.3	12.4	-	-	-	-
Ceramic	-	1/8	1/4	3/8	-	5/8	3/4	-	1	-	-	-
	Wt./1000'	3.9	6.1	5.8	-	20.8	12.1	-	34.0	-	-	-



	Expand-A-Flex Polyester (Type P) PT/PT	Expand-A-Flex Heavy Duty (Type HD) PT/HD	Expand-A-Flex Tight Weave (Type TW) PT/TW	Expand-A-Flex Flame Retardant (Type FR) FR/FR	Expand-A-Flex Flame Retardant Tight Weave (Type FRTW) FR/TW	Expand-A-Flex Halar® (Type H) HR/HR	Expand-A-Flex PEEK® HTP-250 (Type PK) PEEK®/HTP-250	Ryton™ (Type PPS) PPS	Teflon® Fluoro-Flex 500 (Type TF) Teflon® PFA	Expand-A-Flex Fiberglass	Kevlar® Kevlar®	Nomex® Nomex®	Ceramic (Nextel®) Ceramic
Operating Temperature	-70ºC +125ºC	125ºC	125ºC	125ºC	125ºC	150ºC	-70ºC 250ºC	125ºC	-70ºC +250ºC	1100ºF	250ºC	350ºC	1204ºC
Nominal I.D. (Inches)	1/8"-2 1/2"	1/8"-2 1/2"	1/8"-2 1/2"	1/8"-2 1/2"	1/8"-2 1/2"	1/8"-2"	1/8"-2 1/4"	1/8"-1 3/4"	1/8"-1 1/4"	1/8"-2 1/2"	1/8"-1"	1/8 - 1 1/4"	1/8"-3"
Size Range (Inches) Millimeters	3/32" - 4"	3/32" - 3 1/2"	3/32" - 3"	3/32" - 4"	3/32" - 3"	3/32" - 3"	3/32" - 3"	3/32" - 2 1/2"	1/16" - 1 1/2"	1/32"-3 1/2"	1"	1/8" - 1 1/4"	1/8" - 3"
UL Listing	UL1441	NA	NA	VW1 UL1441	VW1 UL1441	VW1 UL1441	NA	NA	NA	NA	NA	NA	NA
CSA Certified	Standard C22-2 Class 5836-01	NA	NA	Standard C22-2 Class 5836-01	Standard C22-2 Class 5836-01	Standard C22-2 Class 5836-01	NA	NA	NA	NA	NA	NA	NA
Fire Retardant	NO	NO	NO	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Abrasion Resistance	Good	Excellent	Excellent	Good	Excellent	Good	Excellent	Good	Excellent	Good	Excellent	Excellent	Excellent
Fluid Resistance	Good	Good	Good	Good	Good	Excellent	Excellent	Good	Excellent	Good	Excellent	Excellent	Excellent
Color	Black, Natural, Colors	Black, Natural	Black, Natural, Colors	Black or Natural w/Cross-Tracer	Black or Natural w/Cross-Tracer	Black or Natural w/1 Tracer	Black or Tan w/Cross-Tracer	Black or Tan	Clear	White	Natural (Yellow) (Can be dyed)	Camouflage, Natural, and Sage Green (Can be dyed)	White
Material Content	Polyester Monofilament .010"	Polyester Monofilament .015"	Polyester Monofilament .010"	Flame Retardant Polyester Monofilament .009" or .010"	Flame Retardant Polyester Monofilament .009" or .010"	Halar® Monofilament .011	Flame Retardant Polyetheretheketone .010"	Ryton™ Monofilament .008"	Teflon® Monofilament .016"	Fiber Forming Glass (Fiberglass)	Kevlar® High Temperature Resistant Aramid Fiber	Nomex® Synthetic Polyamide	Nextel 312 Ceramic
Application	The most cost effective and widely used material. Good chemical and abrasion resistance. Many general manufacturing, automotive, telecommunication, industrial and electronic uses.	Twice the abrasion and impact resistance of standard polyester. Ideal for high abrasion outdoor, marine and automotive applications.	Density and coverage considerably increased, but at the expense of expandability. Recommend use where snag resistance, coverage, and protection are crucial.	Self extinguishing, with good chemical and abrasion resistance. Aviation, automotive, electrical and space applications.	The same qualities of polyester tight weave with the added increase in density and coverage. Recommend use where self extinguishing snag resistance coverage and protection are critical.	Excellent chemical and abrasion resistance, withstands use with harsh chemicals, higher temperatures and more difficult mechanical environments. Aviation, automotive, space and telecommunication applications.	Lightweight replacement for Teflon sleeving. Self extinguishing and low out gassing, which makes it a perfect choice for critical aviation, space and industrial applications.	Exceptional chemical and temperature resistance. Ideal for uses in automotive, industrial, aviation and space, to protect hoses, wire bundles and cable assemblies.	Excellent abrasion and fluid resistance. Ideal for uses in aeronautical, space, electronic, marine, automotive and industrial applications.	Excellent temperature and solvent resistance. Inert to gasoline and alcohol. Lower cost, heat resistant product for automotive, electrical and aviation applications	High strength, temperature resistance and excellent solvent resistance. Minimum expansion makes for a tight, form fitting cover. Ideal for aerospace, aviation, and automotive hose applications.	High strength, solvent and abrasion resistance. Works well at elevated temperatures. Ideal for aerospace and aviation applications..	Excellent temperature, abrasion, and fluid resistance. Ideal for aerospace, automotive, aviation, and electrical applications.

western filament, inc.
Our products cover the world

Expandable Sleeving and Multifilament Products

Wire Harness, Hose, and Cable Protection

Western Filament's Expandable Sleeving is a lightweight, self-fitting sleeving designed to protect and restrain wires, wire bundles, cables, hoses and flat or ribbon cable assemblies. Called by some "Chinese finger material", expandable sleeving is flexible and self-fitting and adjusts to irregular surfaces and contours.

With uses in the electronic, electrical, automotive, aviation, aerospace, industrial, telecommunication, and motor industries, Western Filament's expandable sleeving is the perfect product to increase the abrasion resistance and protect against cuts, impacts and snagging.

Western Filament founded in 1938 and manufacturing from our centrally located Colorado facility, has become the lowest cost expandable sleeving producer in the world. Whether your product is one of our 13 different stocked sleevings manufactured from polyester, Halar, Nomex, Kevlar, Fiberglass, Nextel, Teflon, and Ryton or a special sleeving manufactured to your specifications, Western Filament can deliver you a top quality product on-tine and under budget. Call our factory today to order or for our customer service personnel to answer any of your technical questions.

When you are looking for quality, delivery, technical expertise and a truly competitive price, remember Western Filament, the lost cost provider.

Abrasion Resistant • Easy To Install • Removable For Repair • Lightweight • Flexible

Western Filament's Expandable Sleeving is a lightweight, self-fitting monofilament sleeving. It is designed to protect and retain wires, wire bundles, cables, hoses, and/or ribbon cable assemblies.

Only single source for ALL Expandable Sleeving needs

At Western Filament, specialists in textiles, chemicals, and plastics combine their skills to produce a complete line of expandable sleeving and multifilament products that meets the most stringent requirements.

Western Filament Products

New products and processes are major ingredients of Western Filament's leadership in the industry. Proprietary processes for applying the latest chemical and textile technology are under constant development in the laboratory and throughout the plant. In addition to Expandable Sleeving, Western Filament manufactures a complete line of wire harnessing systems.

Facilities Capabilities

Western Filament's manufacturing facilities include more than 2,500 braiders ranging in size from 8 carriers to 120 carriers. In addition, the same location provides all twisting, dyeing and coating production. Skilled technicians offer a full range of expertise in all areas of textile and coating technology. Statistical process control used in all manufacturing operations.

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