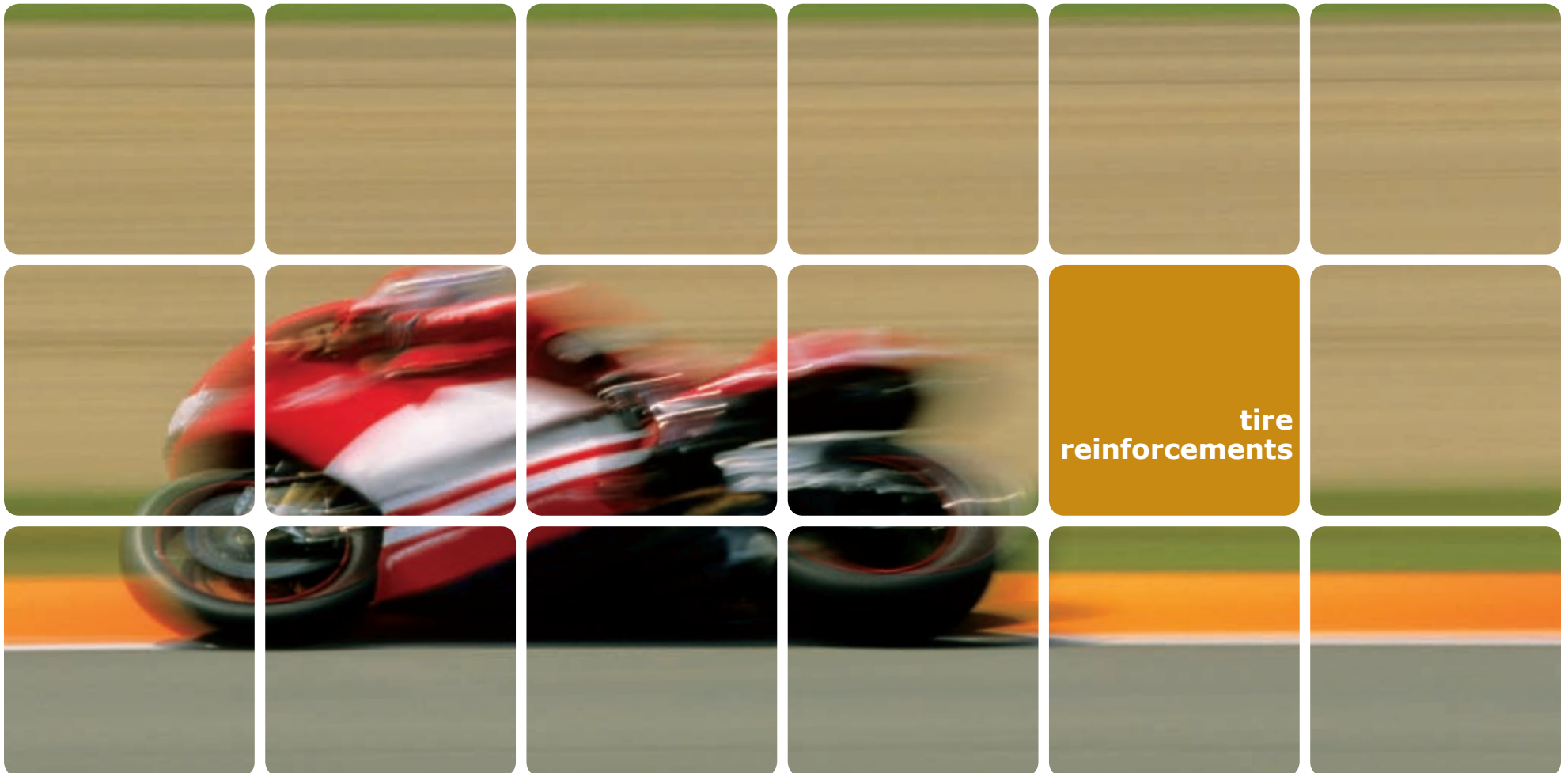


PRODUCT GUIDE: TIRE REINFORCEMENTS

SPEED, STRENGTH AND DURABILITY





TIRE REINFORCEMENTS: SPEED, STRENGTH AND DURABILITY

Since 1972, Performance Fibers has been a leader in the innovation, production, and fabrication of advanced materials for tires. Today, we remain committed to develop and produce some of the world's most advanced tire reinforcements. With manufacturing facilities in the U.S., Europe and Asia, we bring our customers around the world consistent, high quality materials, timely delivery and continuous technology improvements.

Applications include:

passenger cars; sport utility vehicles; light and medium trucks; motorcycles; agriculture vehicles; recreational vehicles; and sport racing cars.

FEATURES AND BENEFITS:

- DSP[®] fiber is a high modulus, low shrinkage product with good dimensional, thermal and chemical stability. This fiber can provide high-performance reinforcement with virtually no moisture absorption, high strength, squirm resistance and crisp handling
- Specifically designed for use as a cap ply, Beltec[®] fiber is designed for adhesion to rubber, good modulus, and low shrinkage. The result is a high-performance tire that can be both more durable and secure with better handling and less flat spotting
- Designed for especially demanding high performance needs, PenTec[®] fiber offers a unique balance of high modulus and strength as well as enhanced thermal properties

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(energy)

(environment)

(lifestyle&leisure)

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(transportation)

(fiber and fabric for your most demanding and delicate applications)

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Tire Reinforcements (Part 1)																														
Product	Features/ Benefits	North America	Europe	Asia	Denier	Dtex	Filament Count	Intermingled				Breaking Strength		Tenacity		Elongation @ 54cN/tex (%)	Elongation @ 45N (10 LBS) (%)	Elongation @ 67N (15 LBS) (%)	Elongation @ 89N (20 LBS) (%)	Elongation @ break (%)	Thermal Shrinkage 177°C-0.05gpd-2min (%)	Hot Air Shrinkage 180°C-0.01gpd-15min (%)	Free Shrinkage 177°C-0.01gpd-2min (%)	Hot Air Shrinkage 177°C-zero load-30min (%)	Max Testrite Shrinkage 172°C-0.06gpd-2min (%)	Shrinkage Force 180°C (cN)	DPU (%)	Twist (t/10cm)		
								(V0)	(lbs)	(kg)	(N)	(g/d)	(cN/dtex)																	
1H75	High Tenacity HMLS	X		X	1000	1100	300	V0	19.6	8.9	87	8.7	7.7		5.0			10.0	4.7		7.0	8.2								
					1500	1670	391	V0	29.0	13.2	129	8.6	7.6		4.0			11.0	4.5		6.7	7.9								
A360/A363 (AA)*			X		1650	1840	391	V0	22.9	10.4	102	6.2	5.5	3.3					1.6		3.2	4.0								
Beltec® Fiber		X			840	930	250	V0	13.8	6.3	61	7.4	6.5	6.8				10.0	5.0		7.3	8.6								
					1000	1100	300	V0	16.4	7.4	73	7.4	6.5	5.4				10.0	5.0		7.3	8.6								
1P70 (Non-AA)/ 1P73 (AA)	PenTec® Fiber		X		500	550	70	T0	10.1	4.6	45	9.1	8.0	3.5				6.0	6.5	7.0	9.2	10.6				300				
					1000	1100	140	T0	20.2	9.2	90	9.1	8.0	3.5				6.0	6.5	7.0	9.2	10.6				560				
					1300	1440	140	T0	26.3	11.9	117	9.1	8.0	3.9				6.0	6.5	7.0	9.2	10.6				600				
					1500	1670	210	T0	30.3	13.8	135	9.1	8.0	3.5				6.0	6.5	7.0	9.2	10.6				840				
1X30 (Non-AA)/ 1X33 (AA)	HMLS for Dimensional Stability	X	X	X	1000	1100	300	V0	17.3	7.8	77	7.8	6.9	5.3				10.5	5.0		7.3	8.6								
					1300	1440	391	V0	22.4	10.2	100	7.8	6.9	4.5				11.0	4.5		6.7	7.9								
					1500	1670	446	V0	25.3	11.5	113	7.6	6.7	3.9				11.0	5.0		7.3	8.6								
					2000	2200	600	V0	34.4	15.6	153	7.8	6.9	3.4				11.0	5.0		7.3	8.6								
1X50 (Non-AA)/ 1X53 (AA)	HMLS for Dimensional Stability	X	X	X	1000	1100	300/391	V0	17.4	7.9	78	7.8	6.9	5.1				10.0	3.0-4.6											
					1300	1440	391	V0	22.4	10.2	100	7.8	6.9	4.3				10.0	2.8-4.5											
					1500	1670	446/546	V0	26.3	11.9	117	7.8	6.9	3.9				10.0	3.0-4.5											
					2000	2200	546/600	V0	34.8	15.8	155	7.8	6.9	3.2				10.3	2.8-4.0											
1X90 (Non-AA)/ 1X93 (AA)	HMLS for Dimensional Stability	X	X	X	1000	1100	300	V0	18.0	8.2	80	8.1	7.1	6.0				11.2	6.3		8.9	10.3								
					1500	1670	300	V0	26.3	11.9	117	8.0	7.1	3.8				11.2	5.5		8.0	9.3								

AA = adhesive activated; V0 = intermingling with no twist; T0 = no twist, no intermingling

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Tire Reinforcements (Part 2)																													
Product	Features/ Benefits	North America	Europe	Asia	Denier	Dtex	Filament Count	Intermingled				Tenacity		Elongation @ 54cN/tex	Elongation @ 45N (10 LBS)	Elongation @ 67N (15 LBS)	Elongation @ 89N (20 LBS)	Elongation @ break	Thermal Shrinkage 177°C-0.05gpd-2min	Hot Air Shrinkage 180°C-0.01gpd-15min	Free Shrinkage 177°C-0.01gpd-2min	Hot Air Shrinkage 177°C-zero load-30min	Max Testrite Shrinkage 172°C-0.06gpd-2min	Shrinkage Force 180°C	DPU	Twist			
								(V0)	(lbs)	(kg)	(N)	(g/d)	(cN/dtex)																
792 (Non-AA)/ 793 (AA)	HMLS for Dimensional Stability	X			1000	1100	328	V0	17.7	8.1	79	8.0	7.1	4.7			10.0	3.8		5.9	7.0								
					1300	1440	420	V0	23.1	10.5	103	8.0	7.1	3.9			10.5	4.6		6.8	8.0								
					1500	1670	484	V0	26.6	12.1	118	8.0	7.0	3.4			10.3	4.9		7.2	8.4								
					2000	2200	492	V0	35.3	16.1	157	8.0	7.1	2.9			11.6	4.6		6.8	8.0								
					3000	3340	840	V0	52.3	23.7	233	7.9	7.0	1.8			11.2	4.1		6.2	7.3								
748 (AA)	HMLS for Dimensional Stability	X			1000	1100	200	V0	17.5	8.0	78	7.8	6.9	4.6			8.9	3.0		4.9	5.9								
					1300	1440	200	V0	22.9	10.4	102	7.8	6.9	3.8			9.5	2.9		4.8	5.7								
					1500	1670	300	V0	25.4	11.5	113	7.5	6.6	3.5			9.5	2.8		4.6	5.6								
					2000	2200	300	V0	34.4	15.6	153	7.7	6.8	2.3			9.5	2.3		4.0	4.9								
1X50 - 1100/2	HMLS Polyester Tire Fabric	X		X	2300						145			4.5			14.5	1.7		2.5					3.5	47.0			
	Polyester SEC			X	2300						145			4.5			14.5	1.7		2.5					3.5	47.0			
1X50 - 1440/2	HMLS Polyester Tire Fabric	X		X	3000						190			5.0			14.5	1.7		2.6					3.5	39.0			
	Polyester SEC			X	3000						190			5.0			14.5	1.7		2.6					3.5	39.0			
1X50 - 1670/2	HMLS Polyester Tire Fabric	X		X	3500						215				4.5		14.5	1.8		2.7					3.5	34.0			
	Polyester SEC			X	3500						215				4.5		14.5	1.8		2.7					3.5	34.0			
840/2	Nylon 6 Tire Fabric	X			2000						30.5	13.9	136		8.5					5.0		6.5			4.5	47.0			
1260/2	Nylon 6 Tire Fabric	X			2900						46.0	20.9	205			10.0				6.5		6.0			4.5	39.5			
1890/2	Nylon 6 Tire Fabric	X			4400						71.5	32.5	318			8.4				8.0		8.5			4.5	31.5			

AA = adhesive activated; V0 = intermingling with no twist

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