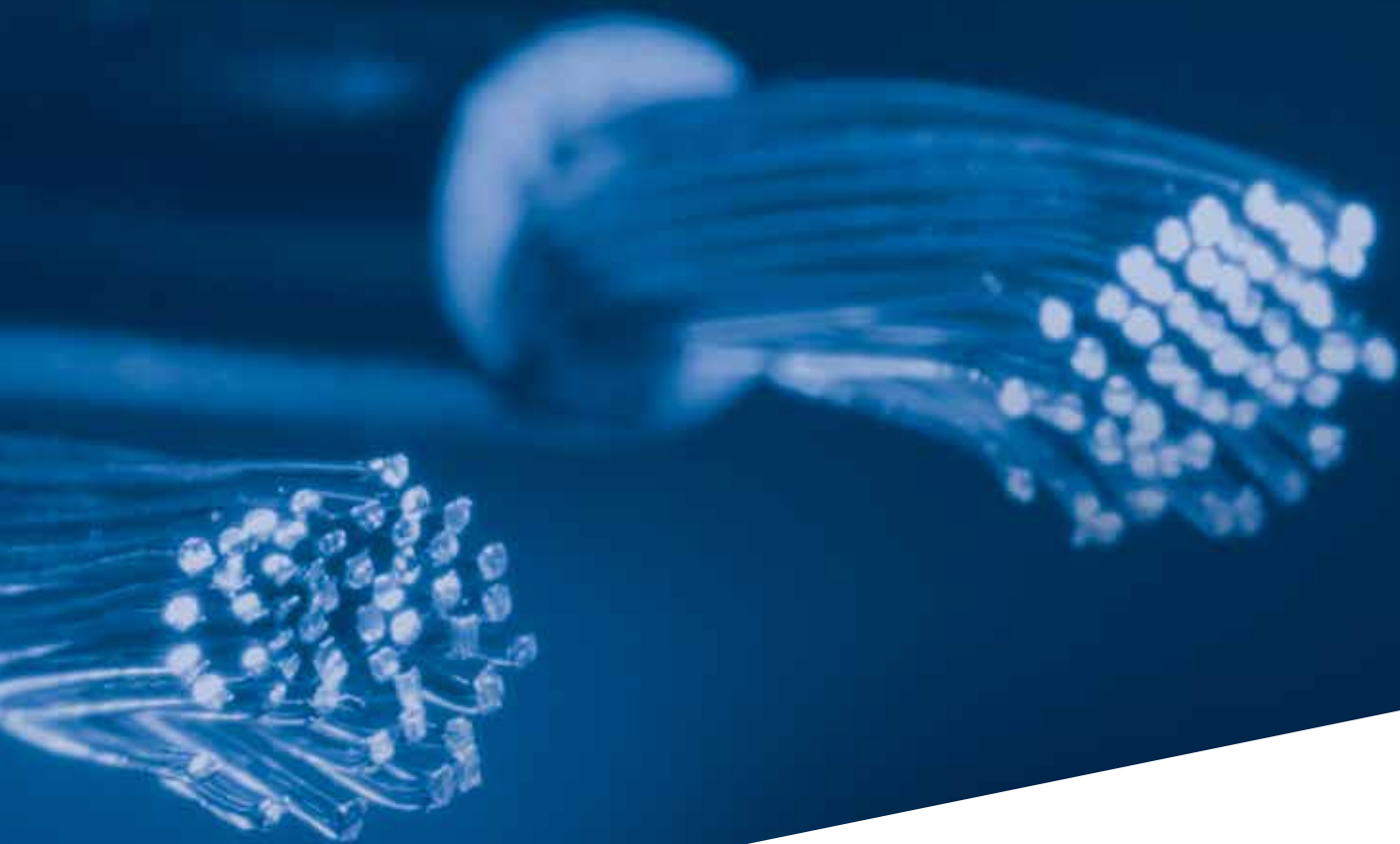


NORGARD 



SAINT-GOBAIN® TAPE SOLUTIONS

NORGARD® ELECTRICAL INSULATION

ENGINEERED FOR **HIGH**
PERFORMANCE INSULATION





Norgard[®] wire and cable films are engineered for high performance electrical insulation. **Norgard** solutions include fluoropolymer tapes and heat sealable polyimide - fluoropolymer composites engineered for the most demanding insulation utilized in aerospace, electronics, energy and industrial applications.



			EXTRUDED PTFE (EXPANDED)					EXTRUDED PTFE						COMPOSITE POLYIMIDE		PTFE SKIVED FILMS					EXTRUDED FLUOROPOLYMER FILMS				
			E5	E7	ES4	ES5	ES7	E122	E124	E125	A	B	R128/ R129	150FH019	150PH019	191	195	T100	T500	mT100	PFA	FEP	ECTFE	ETFE	PVDF
Product offering	Units	Test Method																							
Thickness	mils		2-10	2-10	4-6	4-6	4-6	3-5	2-10	2-10	2.5-5	4	2-10	1.5	1.5	1-10	2-10				0.5-30	0.5-30	0.5-10	0.5-20	0.5-10
Standard Colors			Natural	Natural	Natural	Natural	Natural	Black	White, Natural, Colors	White, Natural	White, Natural, Colors	Natural	White, Natural / Colors	Natural	Natural	Natural	Black				Clear	Clear, White, Red	Natural, White, Blue	Clear, Blue	Natural
General Properties																									
Density	g/cm ³	ASTM D792	0.5	0.7	0.4	0.5	0.7	1.25	2.17	1.6	1.6	1.55	1.6	1.687	1.687	2.14-2.19	2.13-2.19				2.15	2.15	1.68	1.70-1.76	1.78
Flammability		UL-94	-	-	-	-	-	-	-	-	-	-	-	V-0	V-0	-	-				V-0	V-0	V-0	V-0	V-0
Water Absorption	%		-	-	-	-	-	-	-	-	-	-	-	<2.0	<2.0	-	-				<0.01	<0.01	<0.01	<0.03	<0.04
Mechanical Properties																									
Tensile Strength (MD)	psi	ASTM D882	3,500-2,500	4,000-2,500	6,200-5,600	7,000-6,300	7,100-6,500	1,150-900	5,500-7,500	1,800-800	3,100-2,400	2,000	2,500-1,000	24,000	24,000	3,500	3,500				2,250	3,500	8,000	7,000	5,000
Tensile Strength (TD)	psi	ASTM D882	80-150	100-165	130	200	330	-	-	-	250-300	225	250-375												
Elongation at Break	%	ASTM D882	65-80	70-90	35	40	65	50-100	150-300	50-125	75-80	175	250-375	85	85	300	250				300	300	250	300	100-250
Thermal Properties																									
Continuous Use Temp (20,000hrs)	°F	UL-746 B	500	500	500	500	500	500	500	500	500	500	500	400	500	500	500				500	400	340	330	265
Melt Point (typical)	°F	ASTM D3418	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				580	500	465	500	345
Coeff. of Linear Thermal Expansion	in/(in°F)	ASTM D696	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				5.5x10 ⁻⁵	5.5x10 ⁻⁵	9x10 ⁻⁵	4x10 ⁻⁵	7x10 ⁻⁵
Electrical Properties																									
Dielectric Strength	volts/mil	ASTM D149	-	-	-	-	-	-	6,000-15,000	-	-	-	-	5,500	5,500	1,680	-				4,700	6,000	5,500	5,500	4,000
Dielectric Constant, 1 kHz		ASTM D150	-	-	1.16	1.19	1.27	-	-	-	-	-	-	-	-	-	-				2.1	2.1	2.6	2.6	8.2
Dissipation Factor, 1 kHz		ASTM D150	-	-	0.0001	0.0001	0.0001	-	-	-	-	-	-	-	-	-	-				0.0005	0.0003	<0.0005	<0.0008	0.0005-0.02
Surface Resistivity	ohm/sq	ASTM D257	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				1x10 ¹⁵	1x10 ¹⁵	-	1x10 ¹⁴	1x10 ¹⁴
Chemical Resistance																									
	Relative, 1 = highest		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				1	1	2	3	3

The values presented are typical values and should not be used for specification purposes. Refer to technical datasheets for detailed information.

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