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Polyester Mat/Polyester Film Composites

Description

Polyester Mat/Polyester Film Composites consist of short fiber polyester mat laminated to polyester film with a heat resistant adhesive system.

The film provides the dielectric barrier while the mat gives the construction good mechanical properties. These are designated DM 70 or Pyrolam 70.

Excellent heat resistance is obtained by bonding the composites with thermosetting adhesives which enclose and protect the film at elevated temperatures. Increases in cut-through temperature and improvements in physical properties can be obtained by 100% saturating the mat with suitable resins. These composites are known as Pyrolam 100 or MEMCO 100. MEMCO 100 is approved for hermetic applications.

Pyrolam® Composites

The thermal stability of Class F Pyrolam polyester mat/polyester film combinations is demonstrated by the data summarized below.

The thermal tests were run according to ASTM D1830, commonly called a curved electrode test. Essentially, the test measures flexibility retention versus heat aging using dielectric strength as the failure criterion. Current standards set the failure point at 50% loss in dielectric strength.

As can be seen from the data, we have yet to find a temperature or aging time at which the Pyrolam system will fail. The initial tests were run at 200C and 220C which are the standard test temperatures for establishing the slope of a Class F curve. However, when the Pyrolam system showed no signs of deterioration at triple the aging times reported by the industry for similar materials, further tests were run at 240C. But even at 240C, a failure point could not be reached after over 10 times the projected life of other Class F polyester mat/film composites.

DM70 or Pyrolam® 70

Product DM - 70	Composites thickness ASTM D374 (Inches)	Yield Sq. Yds./ Lb	Dielectric Strength ASTM D149 (2 in. Dia. Electrodes) (Volts)	Volume Resistivity ¹ ASTM D257 (ohm/cms)	Tensile Strength ASTM D828 (Lbs./In. of Width)		Tear Strength Graves (Lbs.)	
					MD	CMD	MD	CMD
222	0.006	3.57	6,500	10 ¹⁵	85	70	6	4
313	0.007	3.13	5,300	10 ¹⁵	85	40	9	8
323	0.008	2.56	6,700	10 ¹⁵	100	75	16	6
333	0.009	2.17	9,000	10 ¹⁵	110	80	13	8
353	0.011	1.69	11,900	10 ¹⁵	130	127	19	13
3-7 ½ -3	0.013	1.35	16,600	10 ¹⁵	206	222	20	16
3-10-3	0.016	1.13	19,000	10 ¹⁵	215	220	30	24
555	0.015	1.49	11,000	10 ¹⁵	131	140	21	14

1 – Values obtained were greater than values shown.

MEMCO® 100 or Pyrolam® 100

Product P100 or Memco	Com- posites thicknes s ASTM D374 (Inches)	Yield Sq. Yds./ Lb	Dielectric Strength ASTM D149 (2 in. Dia. Elect- rodes) (Volts)	Volume Resis- tivity ¹ ASTM D257 (ohm/ cms)	Surface Resis- tivity ¹ ASTM D257 (ohm/ cms)	Tensile Strength ASTM D828 (Lbs./In. of Width)		Tear Strength Graves (Lbs.)		
						MD	CMD	MD	CMD	
222	0.006	3.45	0.29	9,000	10 ¹⁵	10 ¹³	79	51	8	5
232	0.007	2.94	0.34	8,000	10 ¹⁵	10 ¹³	90	95	8	7
2-7 ½ -2	0.0118	1.56	0.64	16,800	10 ¹⁵	10 ¹³	190	190	17	17
333	0.009	1.96	0.51	8,900	10 ¹⁵	10 ¹³	125	94	12	9
353	0.011	1.65	0.61	12,000	10 ¹⁵	10 ¹³	155	130	18	13
3753	0.014	1.23	0.81	15,000	10 ¹⁵	10 ¹³	210	195	25	20
3103	0.16	1.04	0.96	19,800	10 ¹⁵	10 ¹³	250	250	25	24
3143	0.20	0.82	1.22	22,000	10 ¹⁵	10 ¹³	277	289	39	33
535	0.014	1.69	0.59	9,300	10 ¹⁵	10 ¹³	185	115	17	11
555	0.0154	1.39	0.72	14,000	10 ¹⁵	10 ¹³	203	148	22	15
5105	0.020	0.96	1.04	17,600	10 ¹⁵	10 ¹³	270	220	34	26
5145	0.025	0.76	1.31	25,500	10 ¹⁵	10 ¹³	290	270	39	37

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Technical Data 96-534

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**Thermal Aging of Pyrolam® Polyester
Mat/Polyester Film Composite.**

Military Specifications

All Bedford Materials Polyester Mat/Polyester Film composites are manufactured to conform to MIL-I-22834 and MIL-E-917D (Navy) and are approved for Class F (155°C).

Test Results on Pyrolam® 70 313
Per ASTM D1830

Aging Temp.	Hours Req'd for Class F	Hours Aging on Pyrolam	% Retention of Dielectric Strength
240°C	40	510	85
220°C	100	380	109
200°C	500	1512	109
180°C	5000	5000	103

Bedford Materials has no control over the final applications of the product by others, therefore, the information contained herein is intended as a general guide to product use and should not be construed as a warranty.