



HB FR700 - xxxB

V1.0: 13.12.2022

Description

HB FR700 flame-retardant film is a black, one side matt, one side velvet thin-gauge polycarbonate film with UL94-V0 listing to meet the stringent requirements in a wide range of electrical, electronic and transportation applications. HB FR700 film is suitable for applications such as printed circuit board insulation, business equipment insulation, computer rack partition, and TV and monitor insulation.

Typical Property Values ♦

Property	ASTM Test Method	Units (USCS)	Value	ISO Test Method	Units (SI)	Value
Mechanical						
Tensile Strength @ Yield (0.43mm)	ASTM D882	psi	9427	ISO 527	MPa	61
Ultimate (0.43mm)	ASTM D882	psi	12118	ISO 527	MPa	66
Tensile Modulus (0.43mm)	ASTM D882	psi	377143	ISO 527	MPa	2617
Tensile Elongation at Break (0.43mm)	ASTM D882	%	41	ISO 527	%	41
Gardner Impact Strength at 0.03" (0.75 mm)	ASTM D3029	ft-lb	11	ISO 6603-1	J	28
Tear Strength						
Initiation	ASTM D1004	lb/mil	1.4-1.8		kN/m	298
Propogation	ASTM D1922	g/mil	18.8		kN/m	16
Puncture Resistance (Dynatup)	ASTM D3763	ft-lb	9		J	12
Fold Endurance (MIT)						
0.010" (0.25 mm)	ASTM D2176-69	double folds	27			
0.020" (0.50 mm)	ASTM D2176-69	double folds	12			
Thermal						
Coefficient of Thermal Conductivity	ASTM D5470	Btu/hr/ft2/°F/in	1.35		W/m²K	0.2
Coefficient of Thermal Expansion	ASTM E831	(x 10 ⁻⁵ /°F)	3.2	ISO 11359	(x 10 ⁻⁵ /°C)	5.8
Specific Heat @40°F (4°C)	ASTM E1269	Btu/lb/°F	0.3		KJ/Kg-°C	1.25
Glass Transition Temperature	ASTM D3417 / D3418	°F	307	ISO 11357	°C	153
Vicat Softening Temperature, B	ASTM 1525-00	°F	347			
Heat Deflection Temp. by TMA at 1.8 Mpa	modified	°F	290	ISO 75 Modified	°C	145
Shrinkage at 302°F (150°C)	ASTM D1204	%	0.09		%	0.09
Brittleness Temperature	ASTM D746	°F	-211		°C	-135
Physical						
Density	ASTM D792	slug/ft³	2.6	ISO 1183	kg/m³	1344
Water Absorption, 24 hrs.	ASTM D570	% change	0.28	ISO 62	% change	0.28
Surface Energy	ASTM D5946-01	-	35			
Surface Tension	Dyne Pens	Dyne	35-40			
Pencil Hardness	ASTM D3363	-	b-hb			
Taber Abrasion	ASTM D1044	delta Haze	25			
Optical						
Gloss over flat black min/max 60°C	ASTM D523-60	-	10.5	ISO 2813	-	10.5

UL Flammability Rating / Performance Levels

Thickness	Rating	HWI	HAI
>= 0.010" (0.250mm) and < 0.015" (0.375mm)	UL94V-0	1	0
	UL94V-0	0	0
CTI: 3			
File Number	E61257		

Manufacturing Specifications

Nominal Gauge Ranges	Min./Max Limit of Nominal
0.010" (0.250mm)	-/+ 10%
0.015 - 0.030" (0.375 - 0.750mm)	-/+ 5%

- These are typical properties and are not intended for specification purposes. If minimum certifiable properties are required, please contact us

ELECTRICAL

Dielectric Strength in oil, short time	ASTM D149-97a Method A	kv/mil	1.5	IEC 60243	kv/mm	59
Dielectric Constant						
@ 60 Hz	ASTM D150	-	2.9	IEC 60250	-	2.9
@ 1 MHz	ASTM D150		2.8	IEC 60250		2.8
Dissipation Factor						
@ 60 Hz	ASTM D150	-	0.0026	IEC 60250	-	0.0026
@ 1 MHz	ASTM D150	-	0.0117	IEC 60250	-	0.0117
Volume Resistivity	ASTM D257	Ω -cm	1.00E+17	IEC 60093	Ω -cm	1.00E+17
Surface Resistivity	ASTM D257	Ω /square	1.00E+16	IEC 60093	Ω /square	1.00E+16
Arc Resistance, Tungsten Electrodes	ASTM D495	s	64			