Garfilm available for Adhesive Tape applications

ERE:Garfilm ERE is a slightly hazy film with excellent handling properties used specially for Cable Wrap , Electrical Insulation , Lamination, Transformer Winding , Cassette Mask , Adhesive Tapes and other general purpose applications.

Sr. No.	Property	Unit	Test Method	Typical Values							
General											
1	Thickness	Micron	GPL Method	12	19	23	36	50	75	100	125
2	Yield	M^2/Kg	GPL Method	59.5	37.5	31.0	19.8	14.3	9.5	7.14	5.71
3	Density	gm/cc	ASTM-D-1505	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
4	Water Absoption (Max)	%	ASTM-D-570	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Mechanical											
1	Tensile Strength at break (MD / TD)	Kg/cm^2	ASTM-D-882	1900	1900	2000	2000	2000	1800	1700	1700
2	Elongation (MD / TD)	%	ASTM-D-882	90	100	100	100	130	140	150	150
3	Slip(COF)	--	ASTM-D-1894	0.5	0.5	0.5	0.4	0.4	0.3	0.3	0.3
Optical											
1	Haze	%	ASTM-D-1003	3.5	4.0	5 .0	8 .0	10.0	10.0	10.0	30.0
Thermal											
1	Shrinkage @ 150 C 30 min		ASTM-D-1204								
	MD	%		2.0	2.0	1.6	1.6	1.2	1.0	1.0	1.0
	TD	%		1.0	1.0	0.4	0.4	0.4	0.4	0.4	0.4
2	Melting Point	C	DSC	255	255	255	255	255	255	255	255

Electrical											
1	Break Down Voltage (2" Electrode)	KV	ASTM-D-149	3.5	4.0	5.5	7.0	9.5	12.5	13.5	15.5
2	Surface Resistivity	Ohm	ASTM-D-257	10^{12}	10^{12}	10^{12}	10^{12}	10^{12}	10^{12}	10^{12}	10^{12}
3	Volume Resistivity @ RT	Ohm cm	ASTM-D-257	10^{16}	10^{16}	10^{16}	10^{16}	10^{16}	10^{16}	10^{16}	10^{16}
4	Permitivity 23°C,50Hz 23°C,1kHz 23°C,10 kHz 0°C,50Hz 50°C,50Hz 100°C,50Hz 150°C,50Hz	---	IEC 250	3.26 3.24 3.21 3.26 3.27 3.35 3.65							
5	Dissipation Factor 23°C,50Hz 23°C,1kHz 23°C,10 kHz 0°C,50Hz 50°C,50Hz 100°C,50Hz 150°C,50Hz	---	IEC 250	0.002 0.0055 0.011 0.004 0.0015 0.007 0.006							
6	Coeff of Thermal Expansion between 20°C & 50° C	1/ K(cm/cm °C) 1/ K(cm/cm °C)	-- --	$34X10^{-6}$ (MD) $28X10^{-6}$ (TD)							
Chemical Resistance											
	Dilute Acids & Alkalis			Good							
	Concentrated Alkalis			Poor							
	Concentrated Hydrochloric Acid			Fair							
	Concentrated Sulphuric Acid			Poor							
	Greases,Oils & Fats			Good							
	Organic Solvents , Alcohols &			Good							

	Hydrocarbons										
	Ketones, Esters & Chlorinated Compounds			Fairly Good							
	Phenols,Cresols & Chlorinated Phenols			Poor							
Roll											
1	Width -Max	mm	GPL METHOD	2400	2100	2100	1630	1630	1850	1850	1850
2	Standard length -Min	Mtrs	GPL METHOD	6000	3300	1650	1050	750	500	375	300
3	Standard length -Max	Mtrs	GPL METHOD	36000	8000	18500	8400	6750	4500	3375	2700
Pancake											
1	Width -Min	mm	GPL METHOD	NA	NA	11	11	11	11	11	11
2	Width -Max	mm	GPL METHOD	NA	NA	150	150	150	150	150	150
3	Standard length -Min	Mtrs	GPL METHOD	NA	NA	1650	1050	750	500	375	300
4	Standard length -Max	Mtrs	GPL METHOD	NA	NA	6600	4200	3000	2000	1500	1200

MD - Machine Direction

TD - Transverse Direction

The foregoing data have been obtained using standard test procedures on defined specimens. The results should therefore only be regarded as a general guide to material properties and not as design data.

Garfilm available for Audio Base Film application

EA: Garfilm EA is a Hazy film suitable for magnetic coating for Audio Cassette.

Sr.No.	Property	Unit	Test Method	Typical Values
	General			
1	Thickness	Micron	GPL Method	11.5
2	Yield	M^2/Kg	GPL Method	62.1
3	Density	gm/cc	ASTM-D-1505	1.4
	Mechanical			
1	Tensile Strength at break (MD / TD)	Kg/cm^2	ASTM-D-882	2700
2	F -5 Value (MD)	Kg/cm^2	ASTM-D-882	1100
3	Elongation (MD / TD)	%	ASTM-D-882	100
4	Slip(COF)	--	ASTM-D-1894	0.3
5	Surface Roughness		DIN-4768	
	Ra	Micron		0.047
	Rt	Micron		0.5
	Rz	Micron		0.4
	Optical			
1	Haze	%	ASTM-D-1003	6
	Thermal			
1	Shrinkage @105°C 30 min		ASTM-D-1204	
	MD	%		1.4
	TD	%		0.2
	Shrinkage @150°C 30 min		ASTM-D-1204	
	MD	%		3
	TD	%		1
	Roll			
1	Width - Min	mm	GPL Method	317
2	Width - Max	mm	GPL Method	345
3	Standard Length - Min	Mtrs	GPL Method	5500
4	Standard Length - Max	Mtrs	GPL Method	6300

MD - Machine Direction

TD - Transverse Direction

The foregoing data have been obtained using standard test procedures on defined specimens. The results should therefore only be regarded as a general guide to material properties and not as design data.

Cable insulation

ERE: Garfilm ERE is a slightly hazy film with excellent handling properties used specially for Cable Wrap, Electrical Insulation, Lamination, Transformer Winding, Cassette Mask, Adhesive Tapes and other general purpose applications.

Sr. No.	Property	Unit	Test Method	Typical Values							
General											
1	Thickness	Micron	GPL Method	12	19	23	36	50	75	100	125
2	Yield	M^2/Kg	GPL Method	59.5	37.5	31.0	19.8	14.3	9.5	7.14	5.71
3	Density	gm/cc	ASTM-D-1505	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
4	Water Absoption (Max)	%	ASTM-D-570	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Mechanical											
1	Tensile Strength at break (MD / TD)	Kg/cm^2	ASTM-D-882	1900	1900	2000	2000	2000	1800	1700	1700
2	Elongation (MD / TD)	%	ASTM-D-882	90	100	100	100	130	140	150	150
3	Slip(COF)	--	ASTM-D-1894	0.5	0.5	0.5	0.4	0.4	0.3	0.3	0.3
Optical											
1	Haze	%	ASTM-D-1003	3.5	4.0	5 .0	8 .0	10.0	10.0	10.0	30.0
Thermal											
1	Shrinkage @ 150 C 30 min		ASTM-D-1204								
	MD	%		2.0	2.0	1.6	1.6	1.2	1.0	1.0	1.0
	TD	%		1.0	1.0	0.4	0.4	0.4	0.4	0.4	0.4

2	Melting Point	°C	DSC	255	255	255	255	255	255	255	255
Electrical											
1	Break Down Voltage (2" Electrode)	KV	ASTM-D-149	3.5	4.0	5.5	7.0	9.5	12.5	13.5	15.5
2	Surface Resistivity	Ohm	ASTM-D-257	10^{12}	10^{12}	10^{12}	10^{12}	10^{12}	10^{12}	10^{12}	10^{12}
3	Volume Resistivity @ RT	Ohm cm	ASTM-D-257	10^{16}	10^{16}	10^{16}	10^{16}	10^{16}	10^{16}	10^{16}	10^{16}
4	Permitivity 23°C,50Hz 23°C,1kHz 23°C,10 kHz 0°C,50Hz 50°C,50Hz 100°C,50Hz 150°C,50Hz	---	IEC 250	3.26 3.24 3.21 3.26 3.27 3.35 3.65							
5	Dissipation Factor 23°C,50Hz 23°C,1kHz 23°C,10 kHz 0°C,50Hz 50°C,50Hz 100°C,50Hz 150°C,50Hz	---	IEC 250	0.002 0.0055 0.011 0.004 0.0015 0.007 0.006							
6	Coeff of Thermal Expansion between 20°C & 50° C	1/K(cm/cm°C) 1/K(cm/cm°C)	-- --	$34X10^{-6}$ (MD) $28X10^{-6}$ (TD)							
Chemical Resistance											
	Dilute Acids & Alkalis			Good							
	Concentrated Alkalis			Poor							
	Concentrated Hydrochloric Acid			Fair							
	Concentrated Sulphuric Acid			Poor							
	Greases,Oils & Fats			Good							

	Organic Solvents , Alcohols & Hydrocarbons		Good								
	Ketones, Esters & Chlorinated Compounds		Fairly Good								
	Phenols,Cresols & Chlorinated Phenols		Poor								
Roll											
1	Width -Max	mm	GPL METHOD	2400	2100	2100	1630	1630	1850	1850	1850
2	Standard length -Min	Mtrs	GPL METHOD	6000	3300	1650	1050	750	500	375	300
3	Standard length -Max	Mtrs	GPL METHOD	36000	8000	18500	8400	6750	4500	3375	2700
Pancake											
1	Width -Min	mm	GPL METHOD	NA	NA	11	11	11	11	11	11
2	Width -Max	mm	GPL METHOD	NA	NA	150	150	150	150	150	150
3	Standard length -Min	Mtrs	GPL METHOD	NA	NA	1650	1050	750	500	375	300
4	Standard length -Max	Mtrs	GPL METHOD	NA	NA	6600	4200	3000	2000	1500	1200

MD - Machine Direction

TD - Transverse Direction

The foregoing data have been obtained using standard test procedures on defined specimens. The results should therefore only be regarded as a general guide to material properties and not as design data.

Electrical insulation/laminate

ERE: Garfilm ERE is a slightly hazy film with excellent handling properties used specially for Cable Wrap, Electrical Insulation, Lamination, Transformer Winding, Cassette Mask, Adhesive Tapes and other general purpose applications.

EM6: Garfilm EM6 is a Milky White Film specially developed as an insulating material for rotating electrical machines, exhibits superior thermal ageing performance compared to normal polyester films.

Sr. No.	Property	Unit	Test Method	Typical Values							
General											
1	Thickness	Micron	GPL Method	12	19	23	36	50	75	100	125
2	Yield	M^2/Kg	GPL Method	59.5	37.5	31.0	19.8	14.3	9.5	7.14	5.71
3	Density	gm/cc	ASTM-D-1505	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
4	Water Absoption (Max)	%	ASTM-D-570	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Mechanical											
1	Tensile Strength at break (MD / TD)	Kg/cm^2	ASTM-D-882	1900	1900	2000	2000	2000	1800	1700	1700
2	Elongation (MD / TD)	%	ASTM-D-882	90	100	100	100	130	140	150	150
3	Slip(COF)	--	ASTM-D-1894	0.5	0.5	0.5	0.4	0.4	0.3	0.3	0.3
Optical											
1	Haze	%	ASTM-D-1003	3.5	4.0	5 .0	8 .0	10.0	10.0	10.0	30.0
Thermal											
1	Shrinkage @ 150 &#65533; C 30 min		ASTM-D-1204								
	MD	%		2.0	2.0	1.6	1.6	1.2	1.0	1.0	1.0
	TD	%		1.0	1.0	0.4	0.4	0.4	0.4	0.4	0.4
2	Melting Point	&#65533;C	DSC	255	255	255	255	255	255	255	255
Electrical											
1	Break Down Voltage (2" Electrode)	KV	ASTM-D-149	3.5	4.0	5.5	7.0	9.5	12.5	13.5	15.5

2	Surface Resistivity	Ohm	ASTM-D-257	10^{12}	10^{12}	10^{12}	10^{12}	10^{12}	10^{12}	10^{12}	10^{12}
3	Volume Resistivity @ RT	Ohm cm	ASTM-D-257	10^{16}	10^{16}	10^{16}	10^{16}	10^{16}	10^{16}	10^{16}	10^{16}
4	Permitivity 23°C,50Hz 23°C,1kHz 23°C,10 kHz 0°C,50Hz 50°C,50Hz 100°C,50Hz 150°C,50Hz	---	IEC 250	3.26 3.24 3.21 3.26 3.27 3.35 3.65							
5	Dissipation Factor 23°C,50Hz 23°C,1kHz 23°C,10 kHz 0°C,50Hz 50°C,50Hz 100°C,50Hz 150°C,50Hz	---	IEC 250	0.002 0.0055 0.011 0.004 0.0015 0.007 0.006							
6	Coeff of Thermal Expansion between 20°C & 50° C	1/ K(cm/cm °C) 1/ K(cm/cm °C)	-- --	$34X10^{-6}$ (MD) $28X10^{-6}$ (TD)							

Chemical Resistance

	Dilute Acids & Alkalis	Good
	Concentrated Alkalis	Poor
	Concentrated Hydrochloric Acid	Fair
	Concentrated Sulphuric Acid	Poor
	Greases,Oils & Fats	Good
	Organic Solvents , Alcohols & Hydrocarbons	Good
	Ketones, Esters & Chlorinated Compounds	Fairly Good
	Phenols,Cresols & Chlorinated Phenols	Poor

Roll

1	Width -Max	mm	GPL METHOD	2400	2100	2100	1630	1630	1850	1850	1850
2	Standard length -Min	Mtrs	GPL METHOD	6000	3300	1650	1050	750	500	375	300
3	Standard length -Max	Mtrs	GPL METHOD	36000	8000	18500	8400	6750	4500	3375	2700
Pancake											
1	Width -Min	mm	GPL METHOD	NA	NA	11	11	11	11	11	11
2	Width -Max	mm	GPL METHOD	NA	NA	150	150	150	150	150	150
3	Standard length -Min	Mtrs	GPL METHOD	NA	NA	1650	1050	750	500	375	300
4	Standard length -Max	Mtrs	GPL METHOD	NA	NA	6600	4200	3000	2000	1500	1200

MD - Machine Direction

TD - Transverse Direction

The foregoing data have been obtained using standard test procedures on defined specimens. The results should therefore only be regarded as a general guide to material properties and not as design data.

Fibre-glass bond film

PT055: Garfilm PT055 is a Co-Extruded, one side Heat sealable Polyester film. The other side (Plain) has the same characteristics as that of Plain Polyester film (Garfilm ERP) & hence has good Adhesion for most of the Surface Printing Inks.

Sr.No	Property	Unit	Test Method	Typical Values				
	General							
1	Thickness	Micron	GPL Method	12	15	18	23	30
2	Yield	M^2 /Kg	GPL Method	58	48	40	31	24
3	MVTR	$g/m^2/24hr$	38 C 90 % RH	30	28	25	22	20
4	Oxygen Permeability	$cc/m^2/24$ hr	27 C 65 % RH	90	75	70	55	45
5	Density	gm/cc	ASTM-D-1505	1.4	1.4	1.4	1.4	1.4
	Mechanical							
1	Tensile Strength at break (MD / TD)	Kg/cm^2	ASTM-D-882	2000	1800	1750	1850	1850
2	Elongation (MD / TD)	%	ASTM-D-882	100	100	100	100	100
3	Slip(COF)	--	ASTM-D-1894	0.6	0.55	0.55	0.6	0.6
	Optical							
1	Haze	%	ASTM-D-1003	3.5	3.5	4.0	5.0	5.0
2	Total Luminous Transmission	%	ASTM-D-1003	84	84	84	84	84
	Thermal							
1	Shrinkage @ 150 C 30min		ASTM-D-1204					
	MD	%		2	2	2	2	2
	TD	%		1	1	1	1	1
2	Melting Point	^0C	DSC	255	255	255	255	255
3	Coeff of thermal expansion between 20 C & 50 C	1/K(cm/cm C) 1/K(cm/cm C)	--	$19X10^{-6}$ (MD) $16X10^{-6}$ (TD)				

MD - Machine Direction
TD - Transverse Direction

The foregoing data have been obtained using standard test proce
should therefore only be regarded as a general guide to material

4	Heat Seal Strength. HS to HS surface (Min)	gm/25mm	$140^{o}C$ 2.8 Kg/cm^2 2 Sec.	600	650	700	750	800
5	Sealing temp. range	^{o}C	--	120-200				

Food packaging

Garfilm available for Food packaging applications.
PT005: Garfilm PT005 is a Co-Extruded, one side Heat sealable Polyester film. The other side (Plain) has the same characteristics as that of Plain Polyester film (Garfilm ERP) & hence has good adhesion for most of the Surface Printing Inks.

ERP: Garfilm ERP has excellent handling properties and is used for printing, metallising and lamination.

ERC: Garfilm ERC is a slightly Hazy Film which is one side Corona Treated with good wettability and excellent handling properties used for processes such as printing, metallising and laminating.

PT007: Garfilm PT007 is a slightly Hazy Film which is one side Chemically coated to give improved ink adhesion for high quality printing.

PT066: Garfilm PT066 is a slightly Hazy Film which is one side Chemically coated to give improved metal adhesion in metallising.

Lable

Garfilm available for **lable application.**

OPQ: Garfilm White Opaque is a white film used for pressure sensitive lables, security cards, tickets and general printing applications.

OPQ007: Garfilm White Opaque is a white film pretreated on one side. Improves adhesion on most printing inks. It is used for pressure sensitive labels, security cards and general printing applications.

MATTE: Garfilm Matte is a Transluscent film with Medium gloss suitable for Stamping Foil (18 μ only), Metallising, Release film application and Photosensitive Coatings. It finds an important use in Thermal Lamination.

EMCL: Garfilm EMCL is an optically clear film with Low Haze used specially for Reprographics, Labels, OHP and photosensitive coating.

Lidding applications

OPQ
Garfilm OPQ is a white opaque film used for pressure sensitive lables, security cards, tickets and general printing applications.

Sr. No	Property	Unit	Test Method	Typical Values	
	General				
1	Thickness	Micron	GPL Method	36	50
2	Yield	M^2/Kg	GPL Method	19.8	14.3
3	Density	gm/cc	ASTM-D-1505	1.45	1.45
	Mechanical				
1	Tensile Strength at break (MD / TD)	Kg/cm^2	ASTM-D-882	1550	1550
2	Elongation (MD / TD)	%	ASTM-D-882	100	100
3	Slip(COF)	--	ASTM-D-1894	0.4	0.4
	Optical				
1	Whiteness Index	-	ASTM-E-313	110	110
2	VLT	%	ASTM-D-1003	15	15
	Thermal				
1	Shrinkage @ 190 $^{\circ}$C 5min		ASTM-D-1204		
	MD	%		2.6	2.6
	TD	%		0.4	0.4
2	Melting Point	^{o}C	DSC	255	255
	Electrical				
1	Surface Resistivity	Ohm	ASTM-D-257	$1x10^{13}$	$1x10^{13}$
	Chemical Resistance				
	Dilute Acids & Alkalis			Good	
	Concentrated Alkalis			Poor	
	Concentrated Sulphuric Acid			Poor	
	Greases, Oils & Fats			Good	

	Seawater			Good	
	Roll				
1	Width - Max	mm	GPL Method	1350	1350
2	Standard Length - Min.	Mtrs	GPL Method	1050	750
3	Standard Length - Max.	Mtrs	GPL Method	4200	3000

MD - Machine Direction

TD - Transverse Direction

The foregoing data have been obtained using standard test procedures on defined specimens. The results should therefore only be regarded as a general guide to material properties and not as design data.

Metallising and packaging applications

Garfilm available for Metallising and packaging applications.
Matte: Garfilm Matte is a Transluscent film with Medium gloss suitable for Stamping Foil (18 □ only), Metallising, Release film application and Photosensitive Coatings. It finds an important use in Thermal Lamination.

ERP: Garfilm ERP has excellent handling properties and is used for printing, metallising and lamination.

ERC: Garfilm ERC is a slightly Hazy Film which is one side Corona Treated with good wettability and excellent handling properties used for processes such as printing, metallising and laminating.

PT007: Garfilm PT007 is a slightly Hazy Film which is one side Chemically coated to give improved ink adhesion for high quality printing.

PT066: Garfilm PT066 is a slightly Hazy Film which is one side Chemically coated to give improved metal adhesion in metallising.

ERY: Garfilm ERY is a film with excellent handling property and low shrinkage specially for Metallic Yarn.

Montage base & static protection

Garfilm available for Montage base & static protection applications.
EMSC (ASB): Garfilm EMSC(ASB) is a Super Clear Film without static used for Montage application. The film is knurled 15mm from both sides.

Sr.No.	Property	Unit	Test Method	Typical Values		
	General					
1	Thickness	Micron	GPL Method	100	125	175
2	Yield	M^2/Kg	GPL Method	7.14	5.71	4
3	Density	gm/cc	ASTM-D-1505	1.4	1.4	1.4
	Mechanical					
1	Tensile Strength at break (MD/TD)	Kg/cm^2	ASTM-D-882	1800	1800	1700
2	Elongation (MD /TD)	%	ASTM-D-882	130	130	130
3	Slip(COF)	--	ASTM-D-1894	0.35	0.35	0.4
	Optical					
1	Haze	%	ASTM-D-1003	1.0	1.0	1.5
2	Total luminous Transmission	%	ASTM D 1003	89.5	89.5	89.5
	Thermal					
1	Shrinkage @ 150 ° C 30 min		ASTM-D-1204			
	MD	%		1.5	1.5	1.5
	TD	%		0.8	0.4	0.4
2	Melting Point	^oC	DSC	255	255	255
	Electrical					
1	Surface Resistivity	ohm	ASTM D 257	10^{10}	10^{10}	10^{10}
	Roll					
1	Width - Max	mm	GPL Method	1550	1550	1550
2	Standard Length - Min	Mtrs	GPL Method	375	300	225
3	Standard Length - Max	Mtrs	GPL Method	2250	1800	1200

Motor insulation

EM 6

Garfilm EM 6 is a Milky White Film specially developed as an insulating material for rotating electrical machines, exhibits superior thermal ageing performance compared to normal polyester films.

Sr.No.	Property	Unit	Test Method	Typical Values			
	General						
1	Thickness	Micron	GPL Method	125	190	250	350
2	Yield	M^2/Kg	GPL Method	5.71	3.76	2.86	2.04
3	Density	gm/cc	ASTM-D-1505	1.4	1.4	1.4	1.4
4	Water Absorption (Max)	%	ASTM-D-570	0.6	0.6	0.6	0.6
5	Oligomer Extraction	%	GPL Method	1.5	1.5	1.5	1.5
	Mechanical						
1	Tensile Strength at break (MD/TD)	Kg/cm^2	ASTM-D-882	1800	1800	1800	1600
2	Elongation (MD / TD)	%	ASTM-D-882	150	150	150	150
3	Slip(COF)	--	ASTM-D-1894	0.3	0.3	0.3	0.3
	Optical						
1	Haze	%	ASTM-D-1003	70	80	88	94
	Thermal						
1	Shrinkage @ 150 &#65533; C 30 min		ASTM-D-1204				
	MD	%		1	1	1	1
	TD	%		0.4	0.4	0.4	0.4
2	Shrinkage @ 200^{o}C 30 min	%	ASTM-D-1204				
	MD (Max) TD (Max)	% %		7 7	7 7	7 7	7 7
3	Melting point	&#65533;C	DSC	255	255	255	255
4	Specific Heat @ 25 &#65533;C	cal/gm&#65533;C		0.32			
5	Coeff of Thermal Expansion between 20&#65533; C & 50 &#65533; C	1/K(cm/cm &#65533;C) 1/K(cm/cm&#65533;C)		36×10^{-6}(MD) 23×10^{-6}(TD)			

	Electrical						
1	Break Down Voltage (on 2" Brass electrod)	KV	ASTM-D-149	15.5	18.0	19.5	22.5
2	Surface Resistivity	Ohm	ASTM-D-257	10^{12}	10^{12}	10^{12}	10^{12}
3	Volume Resistivity	Ohm cm	ASTM-D-257	10^{16}	10^{16}	10^{16}	10^{16}
4	Dielectric Constant	--	ASTM-D-150	2.8 to 4			
5	Permittivity 23°C,50Hz 23°C,1kHz 23°C,10kHz 0°C,50Hz 50°C,50Hz 100°C,50 Hz 150°C,50Hz	--	IEC 250	 3.26 3.24 3.21 3.26 3.27 3.35 3.65			
	Dissipation Factor 23°C,50Hz 23°C,1kHz 23°C,10kHz 0°C,50Hz 50°C,50Hz 100°C,50 Hz 150°C,50Hz	 -- 	IEC 250	 0.002 0.0055 0.011 0.004 0.0015 0.007 0.006			
	Chemical Resistance						
	Dilute Acids & Alkalis			Good			
	Concentrated Alkalis			Poor			
	Concentrated Hydrochloric Acid			Fair			
	Concentrated Sulphuric Acid			Poor			
	Greases,Oils & Fats			Good			
	Organic Solvents,Alcohols, & Hydrocarbons			Good			
	Ketones,Esters & Chlorinated Compounds			Fairly Good			
	Phenols,Cresols & Chlorinated Phenols.			Poor			

	Roll							
1	Width - Max	mm	GPL method	1850	1850	1850	1525	
2	Standard Length - Min	Mtrs	GPL Method	300	200	150	110	
3	Standard Length - Max	Mtrs	GPL Method	2400	1600	1200	880	
	Pancake							
1	Width - Min	mm	GPL Mehtod	11	11	11	11	
2	Width - Max	mm	GPL Method	150	150	150	150	
3	Standard Length - Min	Mtrs	GPL Method	300	200	150	110	
4	Standard Length - Max	Mtrs	GPL Method	1200	800	600	440	

MD - Machine Direction
TD - Transverse Direction The foregoing data have been obtained using standard test procedures on defined specimens. The results should therefore only be regarded as a general guide to material properties and not as design data.

OHP applications

Garfilm EMCL is an optically clear film with Low Haze used specially for Reprographics, Labels, OHP and photosensitive coating.

Sr.No.	Property	Unit	Test Method	Typical Values						
	General									
1	Thickness	Micron	GPL Method	23	36	50	75	100	125	175
2	Yield	M^2/Kg	GPL Method	31 .0	19.8	14.3	9.5	7.14	5.71	4.0
3	Density	gm/cc	ASTM-D-1505	1.4	1.4	1.4	1.4	1.4	1.4	1.4
	Mechanical									
1	Tensile Strength at break (MD / TD)	Kg/cm^2	ASTM-D-882	2000	1800	1800	1900	1800	1800	1700
2	Elongation (MD / TD)	%	ASTM-D-882	100	130	130	120	130	130	130
3	Slip(COF)	--	ASTM-D-1894	0.4	0.4	0.4	0.4	0.4	0.4	0.4
	Optical									
1	Haze	%	ASTM-D-1003	1.5	1.5	1.5	1.5	1.5	1.5	2
2	Total Luminous Transmission	%	ASTM-D-1003	89	89	89	89	89	89	89
	Colour Values									
1	L (Min)	-	CILAB (SCALE) By Hunter lab colour spectro-photometer	89.5	89.5	89.5	89.5	89.5	89.5	89.5
2	a (Max)	-		0.4	0.4	0.4	0.4	0.4	0.4	0.4
3	b (Max)	-		2.5	2.5	2.5	2.5	2.5	2.5	2.5
	Thermal									
1	Shrinkage @ 150 °C 30min		ASTM-D-1204							
	MD	%		1.1	1.1	1.1	1.1	1.1	1.1	1.1
	TD	%		0.5	0.5	0.5	0.5	0.5	0.5	0.5
2	Melting Point	°C	DSC	255	255	255	255	255	255	255
3	Coeff of	1/K(c	--	$19X10^{-6}$ (MD)						

	thermal expansion between 20° C & 50° C	m/cm/°C)		$16X10^{-6}$ (TD)							
	Roll										
1	Roll width - Max	mm	GPL Method	1600	1600	1600	1600	1600	1600	1550	
2	Standard Length - Min	Mtrs	GPL Method	1650	1050	750	500	375	300	225	
3	Standard Length - Max	Mtrs	GPL Method	6600	4200	4500	3000	2500	1800	1200	

MD - Machine Direction

TD - Transverse Direction

The foregoing data have been obtained using standard test procedures on defined specimens. The results should therefore only be regarded as a general guide to material properties and not as design data.

Photo sensitive coating

Sr.No.	Property	Unit	Test Method	Typical Values						
	General									
1	Thickness	Micron	GPL Method	23	36	50	75	100	125	175
2	Yield	M^2/Kg	GPL Method	31 .0	19.8	14.3	9.5	7.14	5.71	4.0
3	Density	gm/cc	ASTM-D-1505	1.4	1.4	1.4	1.4	1.4	1.4	1.4
	Mechanical									
1	Tensile Strength at break (MD / TD)	Kg/cm^2	ASTM-D-882	2000	1800	1800	1900	1800	1800	1700
2	Elongation (MD / TD)	%	ASTM-D-882	100	130	130	120	130	130	130
3	Slip(COF)	--	ASTM-D-1894	0.4	0.4	0.4	0.4	0.4	0.4	0.4
	Optical									
1	Haze	%	ASTM-D-1003	1.5	1.5	1.5	1.5	1.5	1.5	2

2	Total Luminous Transmission	%	ASTM-D-1003	89	89	89	89	89	89	89
	Colour Values									
1	L (Min)	-	CILAB (SCALE) By Hunter lab colour spectro-photometer	89.5	89.5	89.5	89.5	89.5	89.5	89.5
2	a (Max)	-		0.4	0.4	0.4	0.4	0.4	0.4	0.4
3	b (Max)	-		2.5	2.5	2.5	2.5	2.5	2.5	2.5
	Thermal									
1	Shrinkage @ 150 °C 30min		ASTM-D-1204							
	MD	%		1.1	1.1	1.1	1.1	1.1	1.1	1.1
	TD	%		0.5	0.5	0.5	0.5	0.5	0.5	0.5
2	Melting Point	°C	DSC	255	255	255	255	255	255	255
3	Coeff of thermal expansion between 20° C & 50° C	1/K(cm/cm/°C)	--	$19X10^{-6}$ (MD) $16X10^{-6}$ (TD)						
	Roll									
1	Roll width - Max	mm	GPL Method	1600	1600	1600	1600	1600	1600	1550
2	Standard Length - Min	Mtrs	GPL Method	1650	1050	750	500	375	300	225
3	Standard Length - Max	Mtrs	GPL Method	6600	4200	4500	3000	2500	1800	1200

MD - Machine Direction

TD - Transverse Direction

The foregoing data have been obtained using standard test procedures on defined specimens. The results should therefore only be regarded as a general guide to material properties and not as design data.

Reprographics

EMCL

Garfilm EMCL is an optically clear film with Low Haze used specially for Reprographics, Labels, OHP and photosensitive coating.

Sr.No.	Property	Unit	Test Method	Typical Values						
	General									
1	Thickness	Micron	GPL Method	23	36	50	75	100	125	175
2	Yield	M^2/Kg	GPL Method	31 .0	19.8	14.3	9.5	7.14	5.71	4.0
3	Density	gm/cc	ASTM-D-1505	1.4	1.4	1.4	1.4	1.4	1.4	1.4
	Mechanical									
1	Tensile Strength at break (MD / TD)	Kg/cm^2	ASTM-D-882	2000	1800	1800	1900	1800	1800	1700
2	Elongation (MD / TD)	%	ASTM-D-882	100	130	130	120	130	130	130
3	Slip(COF)	--	ASTM-D-1894	0.4	0.4	0.4	0.4	0.4	0.4	0.4
	Optical									
1	Haze	%	ASTM-D-1003	1.5	1.5	1.5	1.5	1.5	1.5	2
2	Total Luminous Transmission	%	ASTM-D-1003	89	89	89	89	89	89	89
	Colour Values									
1	L (Min)	-	CILAB (SCALE) By Hunter lab colour spectro-photometer	89.5	89.5	89.5	89.5	89.5	89.5	89.5
2	a (Max)	-		0.4	0.4	0.4	0.4	0.4	0.4	0.4
3	b (Max)	-		2.5	2.5	2.5	2.5	2.5	2.5	2.5
	Thermal									
1	Shrinkage @		ASTM-D-1204							

	150 °C 30min										
	MD	%		1.1	1.1	1.1	1.1	1.1	1.1	1.1	
	TD	%		0.5	0.5	0.5	0.5	0.5	0.5	0.5	
2	Melting Point	°C	DSC	255	255	255	255	255	255	255	
3	Coeff of thermal expansion between 20° C & 50° C	1/K(cm/cm/°C)	--	$19X10^{-6}$ (MD) $16X10^{-6}$ (TD)							
	Roll										
1	Roll width - Max	mm	GPL Method	1600	1600	1600	1600	1600	1600	1550	
2	Standard Length - Min	Mtrs	GPL Method	1650	1050	750	500	375	300	225	
3	Standard Length - Max	Mtrs	GPL Method	6600	4200	4500	3000	2500	1800	1200	

MD - Machine Direction

TD - Transverse Direction

The foregoing data have been obtained using standard test procedures on defined specimens. The results should therefore only be regarded as a general guide to material properties and not as design data.

Stamping foil applications

Garfilm Matte is a Transluscent film with Medium gloss suitable for Stamping Foil (18 µ only), Metallising, Release film application and Photosensitive Coating. It finds an important use in Thermal Lamination too.

Sr.No.	Property	Unit	Test Method	Typical Values				
	General							
1	Thickness	Micron	GPL Method	12	18	23	50	75
2	Yield	M^2/kg	GPL Method	59.5	39.7	31	14.3	9.5
3	Density	gm/cc	ASTM-D-1505	1.4	1.4	1.4	1.4	1.4
	Mechanical							
1	Tensile Strength at break (MD/TD)	Kg/cm^2	ASTM-D-882	1800	1800	1800	1800	1750
2	Elongation (MD /TD)	%	ASTM-D-882	120	120	120	130	130
3	Surface Roughness (Ra)	Micron	DIN-4768	0.21	0.23	0.21	0.21	0.21
4	Slip(COF)	---	ASTM-D-1894	0.3	0.3	0.3	0.3	0.3
	Optical							
1	Haze	%	ASTM-D-1003	53	78	65	72	83
2	Total Luminous Transmission	%	ASTM-D-1003	85	79	83	76	75
	Thermal							
1	Shrinkage @ 150 C 30 min		ASTM-D-1204					
	MD	%		1.6	1.6	1.6	1.6	1.4
	TD	%		0.8	0.0	0.4	0.4	0.4
	Shrinkage @195^oC 1min		ASTM-D-1204					
	MD	%		--	2.4	--	--	--
	TD	%		--	0	--	--	--
2	Melting Point	^oC	DSC	255	255	255	255	255

3	Coeff of thermal expansion between 20° C & 50° C	1/K(cm/cm °C) 1/K(cm/cm °C)	-- --	$19X10^{-6}$ (MD) $16X10^{-6}$ (TD)					
	Chemical Resistance								
	Dilute Acids & Alkalis			Good					
	Concentrated Alkalis			Poor					
	Concentrated Hydrochloric Acid			Fair					
	Concentrated Sulphuric Acid			Poor					
	Greases,Oils & Fats			Good					
	Organic solvents, Alcohols & Hydrocarbons			Good					
	Ketones,Esters & Chlorinated Compounds			Fairly Good					
	Phenols,Cresols & Chlorinated Phenols			Poor					
	Roll								
1	Width - Max	mm	GPL Method	1575	1575	1575	1575	1575	
2	Standard Length - Min	Mtrs	GPL Method	6000	2000	3300	1500	1000	
3	Standard Length - Max	Mtrs	GPL Method	15000	8000	6600	3000	2000	

MD - Machine Direction

TD - Transverse Direction

The foregoing data have been obtained using standard test procedures on defined specimens. The results should therefore only be regarded as a general guide to material properties and not as design data.

Thermal Lamination application

Garfilm available for **Thermal Lamination application.**

ERL: Garfilm ERL is a film with balanced shrinkage in the both directions for thermal lamination application.

Matte: Garfilm Matte is a Transluscent film with Medium gloss suitable for Stamping Foil (18 µ only), Metallising, Release film application and Photosensitive Coating. It finds an important use in Thermal Lamination.

PT007: Garfilm PT007 is a slightly Hazy Film which is one side Chemically coated to give improved ink adhesion for high quality printing.

PT066: Garfilm PT066 is a slightly Hazy Film which is one side Chemically coated to give improved metal adhesion in metallising and thermal lamination.