



# GLOBAL LAMINATES, INC.

## LPET Halogen Free Laminates of Polyester Copper

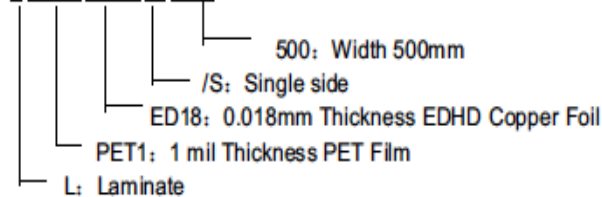
### 1. Description & Designation:

LPET product consists of PET film clad copper by coating adhesive. It includes various types according to different copper and PET film utilized to meet the specific needs of customers.

Materials		Thickness	Supplier
Base film	Polyester film	1, 2, 3, 4 and 5 mils (0.025, 0.05, 0.075, 0.100, 0.125mm) etc.	TeijinD upont
Copper foil	EDHD Copper	1/3, 1/2, 1.0 and 2.0 Oz/SF (0.012, 0.018, 0.035, 0.070mm) etc.	Mitsui, Fukuda
	RA Copper	1/3, 1/2, 1.0 and 2.0 Oz/SF (0.012, 0.018, 0.035, 0.070mm) etc.	Nikko, Olin
Adhesive	Modified epoxy adhesive	0.5 0.8 mils (0.0125 0.021mm) etc.	USA, Japan
Laminate structure		Single side (S) , Double sides (D)	

- The ED copper is the type of EDHD and is classified by the treatment surface color: ED as coffee, EDPM as pink; The RA copper is classified by the treatment surface color: RA as pink, RAB as black
- Some special types appointed by customers can also be produced besides the common types of PET and copper listed in the above form.
- LPET product is identified by the following method:

L PET1 ED18 /S 500



### 2. Features & Applications:

LPET products are widely used in the data communication, personal computer and automotive fields. It possesses following features.

- Meet the RoHS requirement & halogen free, and pass SGS certificate.
- High bond strength and good chemical resistance.
- Excellent dimensional stability.

### 3. Package

- Standard roll: 50+0.25 square meters or 500+2.0square feet per roll, maximum 2 splices and minimum 20m distance during two splices.
- Standard width: 500mm or 24 inches width except the customer's special instruction within the maximum width 24 inches.
- Inner diameter core: 6 inches (152mm) or 3inches (76mm), packed in carton and outside wrapped with PE film.

### 4. Storage:

- Storage time: 12 months since production date; please use after inspection again passed for the materials over the storage time.
- Recommended storage condition: temperature 68 86? (about room Temp. and cool no needed), maximum relative humidity 75%.
- Excessive exposure to heat and moisture may cause copper oxidation.



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## LPET Halogen Free Laminates of Polyester Copper Data Sheet of Performance

Property To Be Tested	Test Method	Typical Product Value LPET1ED18/S	Typical Product Value LPET3ED35/S
Peel strength, minimum, lb./in. width As received After sold float After temperature cycling	IPCT M6 50 2.4.9 Method B Method D Method F	4.5 4.5 4.5	7 7 7
Tensile strength, minimum lb./in. <sup>2</sup>	IPCT M6 50 2.4.19	11,400	22,000
Elongation, minimum percent	IPCT M6 50 2.4.19	60	90
Flexural endurance, minimum cycles	IPCT M6 50 2.4.3	In 4000 Out 2000	In 400 Out 200
Creasing endurance, minimum cycles	JIS C5016 1994 8.7	MD: ≥40 TD: ≥40	N/A
Adhesive Appearance	By eye	Transparent	Transparent
Adhesive Thickness	Q000463	0.021mm	0.021mm
Dimensional stability, maximum, percentage,	IPCT M6 50 2.2.4 Method B Method C	(MD/TD) ± 0.20 % MD: ± 0.40 % TD: ± 0.20 %	(MD/TD) ± 0.20 % MD: ± 0.40 % TD: ± 0.20 %
		400? 10seconds Pass	400? 10seconds Pass
Solder float	Q000085	N/A	N/A
Flatness, maximum, mm,	Q000060	25 mm	25 mm
Chemical resistance, percentage	IPCT M6 50 2.3.2	80	80
Dielectric constant, maximum (at 1MHz)	IPCT M6 50 2.5.5.3	3.50	3.50
Dissipation factor, maximum (at 1 MHz)	IPCT M6 50 2.5.5.3	0.015	0.015
Volume resistivity, minimum, megohm-cm	IPCT M6 50 2.5.17	10 <sup>7</sup>	10 <sup>7</sup>
Surface resistance, minimum, megohms	IPCT M6 50 2.5.17	10 <sup>5</sup>	10 <sup>5</sup>
Dielectric strength, minimum, volts/mil	ASTM D 149	3000	3000
Insulation resistance, minimum, megohms, at ambient	IPCT M6 50 2.6.3.2	10 <sup>5</sup>	10 <sup>6</sup>
Moisture and insulation resistance, minimum, megohms	IPCT M6 50 2.6.3.2	10 <sup>4</sup>	10 <sup>5</sup>
Moisture absorption, maximum, percent	IPCT M6 50 2.6.2	1.0	1.0