



High Temperature Thermal Transfer Printable
WHITE Polyimide Label Stock
 Suitable for **LEAD FREE** Electronics Applications



533 & 535

Technical Data



Description: **LM-533** and **LM-535** are polyimide label materials coated with pressure sensitive acrylic adhesive. **LM-533** has a *high opacity semi-gloss white topcoat*. **LM-535** has a *matte white topcoat*. Both are specifically designed for thermal transfer printing. Bar code labels made from each material demonstrate excellent performance in **lead free wave solder environments ranging from 260 degrees Celsius to 290 degrees Celsius**.

Each polyimide label material is designed for barcode or alphanumeric identification of printed circuit boards, or related electronic component. It is the ideal label to withstand mixed circuit board processes, on either the top or bottom side of the board. It has excellent resistance to harsh fluxes, cleaners, saponifiers and wave solder environments, and resists all commonly employed methods of cleaning. **LM- 533 and LM535** labels are one of several polyimide label materials available.

When used with the proper ribbon, **LM-533** and **LM-535** polyimide labels pass **MIL-202F method 215J**. The printed polyimide label resists smearing, even when the board and labels are directly removed from a re-flow or wave solder environment.

Advantages of 1 mil polyimide labels:

- **Cost Savings:** The thinner construction of our 1-mil polyimide label material allows you to keep the high performance properties of Liberty’s traditional materials, while reducing your label cost.
- **Greater Operational Ease of Use:** The lower profile of these new polyimide label materials allows for easier use in processes which demand thin materials, such as solder paste screen printing. The lower profile also makes it easier for uniform stacking and loading of boards.
- **Weight Reduction:** lighter 1 mil labels are ideal for small electronics applications in which reducing overall product weight is critical.

Some useful properties of LM 533 and LM-535 printable white polyimide labels

Adhesive thickness	ASTM D 1000	0.0008-.0010 in. (0.018-0.025 mm)
180 degree peel adhesion	ASTM D 1000	24 hour dwell 35 oz/in (39 N/100 mm)
		72 hour dwell 50 oz/in (55 N/100 mm)
Coated film thickness	ASTM D 1000	0.0015-.0018 in. (0.038-0.046 mm)
Flammability	ASTM D 1000	Average Burn Time < 2 seconds
Dielectric Strength	ASTM D 1000	> 8 kv

LM-533 / LM-535 Performance Properties	Typical Results
Short Term High Service Temperature	50 minutes at 600°F (315°C)
	No visible effect
	Label remains functional
2 hours at 338°F (170°C)	No visible effect to label at 170°C, 190°C, or 220°C
	Label remains functional
Long Term High Service Temperature	1000 hours at 212°F (100°C)
	No visible effect to label at 120°
	Label discolors slightly at 145°
	Label remains functional

Chemical Resistance, measured by PCS (Print Contrast Signal)

Chemical	Test Condition	PCS
Control	260°C heat, 5 minutes	99%
Trichloroethane	74°C, 10 minutes	98%
Aquanox SSA 30 aqueous	40-50°C, 10 minutes	98%
RE-ENTRY ® KNI 2000 Terpene	40-50°C, 10 minutes	98%
BIOACT ® EC-7R Terpene	40-45°C, 10 minutes	98%
Alpha Metals Inc. 2110 Saponifier 6% aqu	65-70°C, 10 minutes	98%
Isopropanol 99%	82°C, 10 minutes	99%
Deionized Water	100°C, 10 minutes	99%

Customer expectations, supported by our laboratory data clearly show Liberty Series 581 polyimide material can be stored at least one year in an environment below 80 degrees F and 60% RH. We are confident that our product will perform well beyond this time frame. However, it remains the responsibility of the user to assess the risk of using such product. We encourage customers to develop functional testing protocols that will quality a product's fitness for use in their actual applications.

Warranty

Liberty Marking Systems products are sold with the understanding that the buyers will test them in actual use and determine for themselves their adaptability to their intended uses. Liberty Marking Systems warrants to the buyers that it's products are free from defects in material and workmanship, but limits it's obligation under this warranty to replacement of the product shown to Liberty Marking Systems' satisfaction to have been defective at the time Liberty Marking Systems sold it. This warranty does not extend to any persons obtaining the product from the buyers. This warranty is in lieu of any other warranty, express or implied, including, but not limited to any implied warranty of merchantability or fitness for a particular purpose, and of any other obligations or liability on Liberty Marking Systems' part. Under no circumstance will Liberty Marking Systems be liable for any loss, damage, expense, or consequential damages of any kind arising in connection with the use, or inability to use, Liberty Marking Systems' products.



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