



# Technical Data Sheet

## TT411

### THERMAL TRANSFER MATTE TAN POLYIMIDE FILM

**GENERAL DESCRIPTION:** TT411 is a topcoated matte tan polyimide film. It is coated with an aggressive permanent acrylic adhesive and backed with a 55# Glassine release liner.

**USES/FEATURES:** Ideal for marking electronic components, and the top/bottom side of printed circuit boards. This material is designed to withstand high temperatures and harsh chemicals. Can be used in through-hole and surface mount circuit board processes.

Indoor only. Excellent scratch, abrasion, chemical, and heat resistant when printed with thermal transfer resin/wax-based ribbons. This film is dimensionally stable (no shrinkage), high-performance adhesive. Preheating of the material and ribbon will enhance the performance. The matte topcoat printed with certain thermal transfer ribbons offers superior chemical resistance. This material has been tested to and passed MIL-STD-202G Method 215K and MIL-STD-883E Notice 4 Method 2015.13 when printed with our TTRR-AK or TTRR-CR ribbon.

**RECOGNITION(S):** RoHS Directive 2002/95/EC Compliant, UL- MH16873

**RECOMMENDED RIBBON:** TTRR-AK, TTRR-CR, TTRR-R and TTRR-V

PHYSICAL PROPERTIES	TEST METHODS	CONVENTIONAL UNITS	S.I. UNITS
<b>THICKNESS:</b>	Film	2.7 mils	68.6 microns
	Adhesive	2.0 mils	50.8 microns
	Liner (55#)	3.1 mils	78.7 microns
	Total	7.8 mils	198.1 microns

ADHESIVE PERFORMANCE	TEST METHODS	CONVENTIONAL UNITS	S.I. UNITS
	Memory Chip	16.7 oz/in	184 N/m (20 minute dwell)
	Memory Chip	24.8 oz/in	273 N/m (24 hour dwell)
	Stainless Steel	38.4 oz/in	422 N/m (72 hour dwell)

**WARRANTY**  
"Our products are sold with the understanding that the buyer will test them in actual use and determine for himself their adaptability to his intended uses. We warrant to the buyer that our products are free from defects in material and workmanship. This warranty is in lieu of any other warranty, expressed or implied"

**SERVICE TEMPERATURES:** Lab tested using stationary standard ovens (test completed on aluminum panels after a 24 hour dwell)

Aluminum Panels	Temperatures	
0-5 Minutes	500°F	260°C
0-2 Minutes	572°F	300°C
0-1 Minute	626°F	330°C
0-10 Seconds	842°F	450°C

**\*\*\*CUSTOMER TO TEST IN ACTUAL APPLICATION TO DETERMINE IF MATERIAL MEETS CUSTOMER REQUIREMENTS\*\***

**MINIMUM APPLICATION TEMPERATURE:** 50°F 10°C

**EXTERIOR DURABILITY:** Indoor Only

TEST ENVIRONMENT:	PCS	READ RATE
Control	99%	100%
Zestron, 5 minutes, 25°C	100%	99%

**STORAGE STABILITY:** Product should be stored at 70°F (21°C) and 40-50% relative humidity to ensure optimal performance.

**SHELF LIFE:** 2 years @ proper storage conditions.