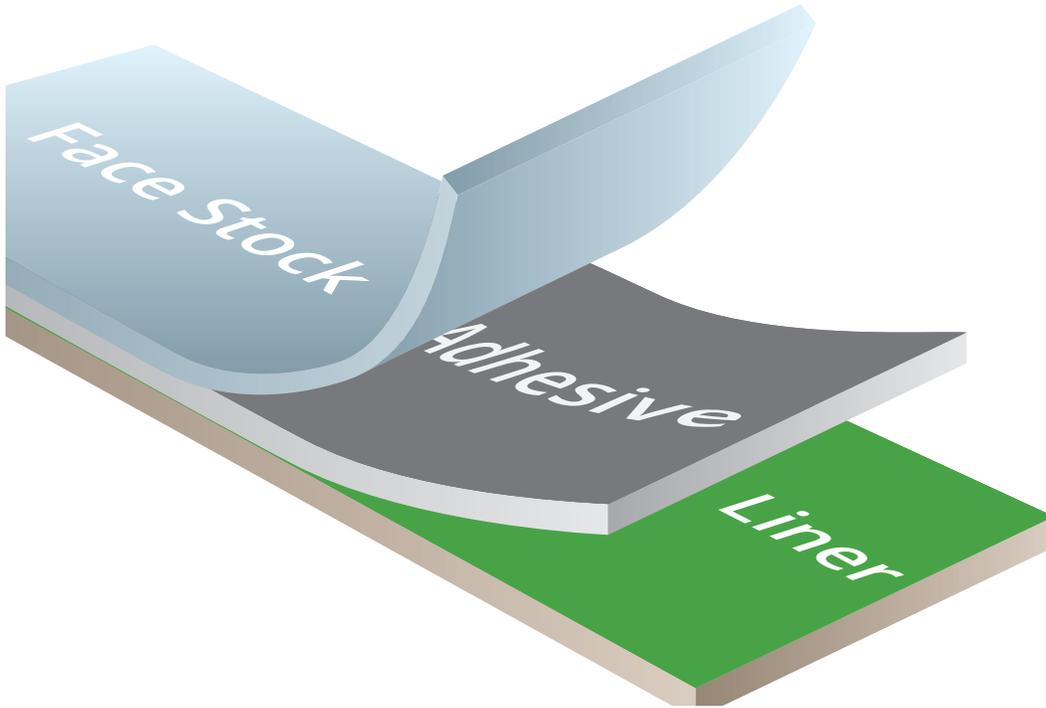


TT451



Labels for Life.



Face Stock: 2.7 mil topcoated semi-gloss white static dissipative polyimide offers excellent chemical and high-temperature resistance. The material will not curl and is designed to withstand the high temperatures of lead-free solder processes and can be used for ESD/anti-static applications.

Adhesive: 2 mil high-performance permanent acrylic adhesive offering excellent high-temperature and harsh-chemical resistance.

Release Liner: 50# kraft liner or a 1.5 mil polyester liner designed to offer excellent performance for both manual and automatic application.

Thermal Transfer Semi-Gloss Anti-Static White Polyimide Film

TT451 is designed for on-demand thermal transfer printing of variable information. **Key features include:** indoor only applications, ESD/Static dissipative topcoat and excellent smudge, solvent, heat and abrasion resistance. When used in combination with the recommended IDENTCO ribbon, it will meet the most demanding durable labeling requirements. When peeled, less than 25 volts per square inch are generated, making it static safe by EIA 625 & 541 standards.

Typical Industry Sectors

Electronics
Industrial

TT451

Thermal Transfer Semi-Gloss Anti-Static
White Polyimide Film



Labels for Life.



Agency Recognitions

UL-MH16873/MH16225



Adhesion

Stainless Steel

20 minute dwell
24 hour dwell

35 oz/in (38 N/100mm)
40 oz/in (44 N/100mm)

Epoxy PC Board

20 minute dwell
24 hour dwell

36 oz/in (40 N/100mm)
36 oz/in (40 N/100mm)



Material Caliper

See following charts for specific details.



Exterior Durability

Recommended: Indoor use only



Temperature Range

See following charts for specific Temperature Ranges.



Shelf Life

Recommended Storage conditions : 40°F (5°C) - 80°F (26°C) and 40-70% RH.
Shelf Life: 2 years @ recommended storage



Recommended Ribbons

TTRR-B
TTRR-D
TTRR-CR

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Thermal Transfer Semi-Gloss Anti-Static
White Polyimide Film



Labels for Life.

Product Details

PHYSICAL PROPERTIES	TEST METHODS	AVERAGE RESULTS
Thickness	ASTM D 1000 Substrate (Topcoat & Film) Adhesive Liner (Glassine) Total	0.0027" (0.0686 mm) 0.0020" (0.051 mm) 0.0031/0.0015" (0.079/0.038 mm) 0.0077/0.0062" (0.195/0.158mm)
Adhesion to: Stainless Steel Epoxy PC Board	ASTM D 1000 20 minute dwell 24 hours dwell 20 minute dwell 24 hours dwell	35 oz/in (38 N/100mm) 40 oz/in (44 N/100mm) 36 oz/in (40 N/100mm) 36 oz/in (40 N/100mm)
Tack	ASTM 2979 Polyken Probe Tack 0.5 second dwell	10 oz (280 g)
Drop Shear	PSTC-7 (1/2" x 1" sample)	>100 hours
Dielectric Strength	ASTM D1000	10,000 volts

Performance Properties

PHYSICAL PROPERTIES	TEST METHODS	AVERAGE RESULTS
Short-Term High Service Temperature	80 seconds at 572F (300C)	No visible effect
	5 minutes at 500F (260C)	No visible effect
	2 hours at 338F (170C)	No visible effect
Long-Term High Service Temperature	1000 hours at 212F (100C)	No visible effect
Low Service Temperature	1000 hours at -94F (-70C)"	No visible effect
Humidity Resistance	1000 hours at 98F (37C), 95% R.H.	No visible effect
UV Light Resistance"	30 days in UV Sunlighter 100	Topcoat turns yellow, label remains functional
Weatherability	1000 hours in Xenon Arc Weatherometer	Slight discoloration
Salt Fog Resistance	ASTM B 117 30 days in 5% salt fog solution chamber	No visible effect
Abrasion Resistance	Taber Abraser, CS-10 grinding wheels, 500 g/arm (Fed. Std. 191A, Method 5306	Print legible after 100 cycles
Chemical Vapor Phase Resistance	Labels adhered to epoxy PC board and exposed to the vapor of the boiling chemical for 10 minutes and then rubbed with a cotton swab saturated with the chemical for 10 rubs. Testing samples were baked 4 minutes at 160C prior to testing Ionox 3955 Micronox MX2501"	Severe print removal Complete print removal

Performance properties tested on TT451 printed with IDENTCO Series TTRR-D thermal transfer ribbon. Printed samples of TT451 were laminated to aluminum and allowed to dwell 24 hours before exposure to the indicated environmental conditions. * TT451 is not recommended for outdoor use.

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White Polyimide Film



Labels for Life.

Performance Properties

PERFORMANCE PROPERTIES		CHEMICAL RESISTANCE			
CHEMICAL REAGENT	EFFECT TO LABEL	SUBJECTIVE OBSERVATION OF VISIBLE CHANGE			
		RIBBON PERFORMANCE: TTRR-B, TTRR-CR, TTRR-D			
		WITHOUT RUB	WITH RUB		
			TTRR-B	TTRR-CR	TTRR-D
Kyzen Corp. 15% Aquanox® A4625 at 140F (60C)	No visible effect	1	5	5	5
Kyzen Corp. 17% Aquanox® A4520 at 140F (60C)	No visible effect	1	5	5	5
Kyzen Corp. 10% Aquanox® A4638 at 150F (65C)	No visible effect	1	3	1	1
Kyzen Corp. 20% Aquanox® A4703 at 145F (63C)	No visible effect	1	5	5	5
Zestron, 15% Atron® AC205 at 150F (65)	No visible effect	1	5	5	5
Zestron, 15% Atron® AC207 at 150F (65)	No visible effect	1	5	5	5
Zestron, 15% Vigon® A201 at 150F (65)	No visible effect	1	5	5	5
Zestron, 15% Vigon® N600 at 150F (65)	No visible effect	1	5	5	5
Isopropyl Alcohol 99% at 180F (82C)	No visible effect	1	1	1	1
Deionized Water AT 212F (100C)	No visible effect	1	1	1	1

Samples printed with TTRR-B, TTRR-CR, & TTRR-D thermal transfer ribbons. Samples laminated to epoxy PC board. Test samples exposed to indicated environments. Test samples baked 4 minutes at 160°C before testing. All test samples were immersed in the test fluids for 10 minutes. Samples were rubbed 10 times with cotton swab saturated with the test fluid.

Rating Scale: 1=no visible effect. 2=slight smear or print removal, detectable but minimal smear. 3=moderate smear or print removal (print still legible). 4=severe smear or print removal (print illegible or just barely legible). 5=complete print removal

PERFORMANCE PROPERTIES	CHEMICAL RESISTANCE
Solvent Resistance TEST FLUID	MIL-STD202G, Method 215K RESULTS TTRR-D
solvent A 1 part IPA, 3 parts mineral spirits	Meets Requirement
Solvent B Terpene Deflux	Meets Requirement
Solvent C Saponifier @ 70	Meets Requirement

Test samples were printed with TTRR-D thermal transfer ribbon. Labels were printed with alphanumerics and barcodes. Test samples were subjected to 3 cycles of 3 minute immersions immediately followed by a toothbrush rub after each immersion.

Product testing, customer feedback and history of similar products support a customer performance expectation of at least two years from the date of receipt for this product as long as this product is stored in its original packaging in an environment between 45-90°F (7-32°C) and 20-75% 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 qualify a product's fitness for use in their actual applications.

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