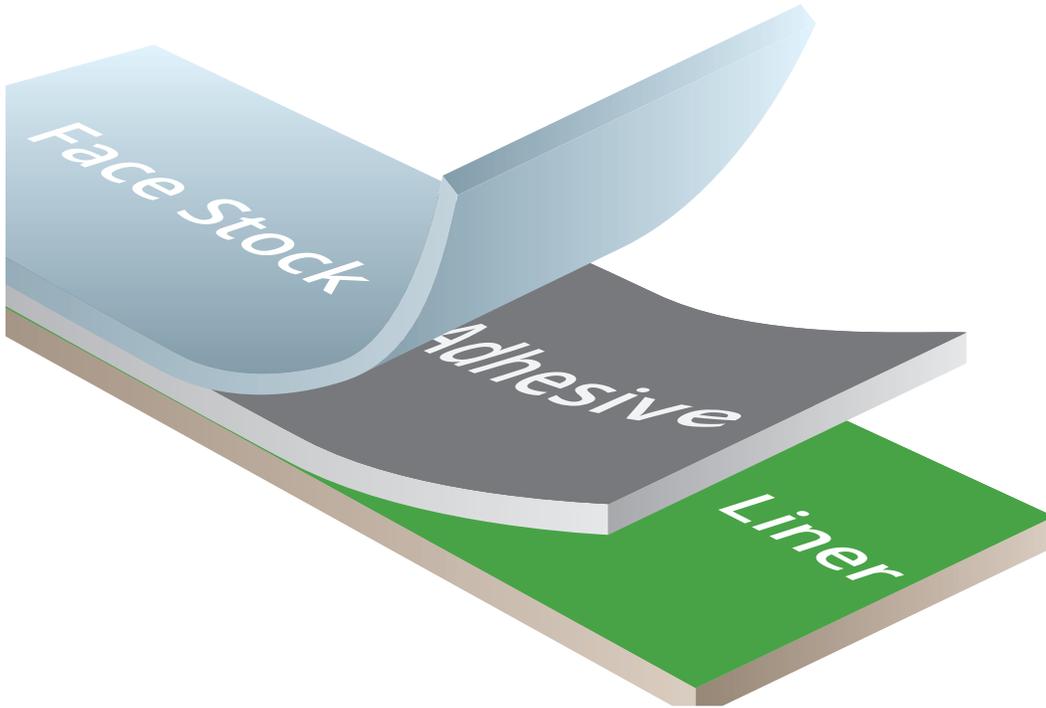


TT451



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 freesolder 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 Applications

- Electronic component marking
- Circuit boards that require an ESD material
- Top and bottom sides of circuit boards

Typical Industry Sectors

- Medical
- Electronics
- Industrial



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Thermal Transfer Semi-Gloss Anti-Static
White Polyimide Film



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	Agency Recognitions UL-MH16873/MH16225																					
	Adhesion <table><tr><td>Stainless Steel</td><td></td><td></td><td></td><td>Epoxy PC Board</td><td></td><td></td></tr><tr><td>20 minute dwell</td><td>35 oz/in (38 N/100mm)</td><td></td><td></td><td>20 minute dwell</td><td>36 oz/in (40 N/100mm)</td><td></td></tr><tr><td>24 hour dwell</td><td>40 oz/in (44 N/100mm)</td><td></td><td></td><td>24 hour dwell</td><td>36 oz/in (40 N/100mm)</td><td></td></tr></table>	Stainless Steel				Epoxy PC Board			20 minute dwell	35 oz/in (38 N/100mm)			20 minute dwell	36 oz/in (40 N/100mm)		24 hour dwell	40 oz/in (44 N/100mm)			24 hour dwell	36 oz/in (40 N/100mm)	
Stainless Steel				Epoxy PC Board																		
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	Material Caliper <table><tr><td>Face Stock</td><td>.0027"</td><td>68.6μ</td><td></td><td>Liner (kraft/FL)</td><td>.0030"/.0015"</td><td>76.0/38.1μ</td></tr><tr><td>Adhesive</td><td>.0020"</td><td>50.8μ</td><td></td><td>Total Material</td><td>.0077"/.0062"</td><td>195.4/157.5μ</td></tr></table>	Face Stock	.0027"	68.6μ		Liner (kraft/FL)	.0030"/.0015"	76.0/38.1μ	Adhesive	.0020"	50.8μ		Total Material	.0077"/.0062"	195.4/157.5μ							
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Adhesive	.0020"	50.8μ		Total Material	.0077"/.0062"	195.4/157.5μ																
	Exterior Durability Recommended: Indoor use only																					
	Temperature Range Service Temperature: -40°F to 572°F (-40°C to 300°C) Minimum Application Temperature: 50°F (10°C)																					
	Shelf Life Recommended Storage: 45-90°F (7-32°C) 20-75% R.H. Shelf Life: 2 years @ recommended storage																					
	Recommended Ribbons TTRR-B TTRR-D																					

Note: All values shown are averages and should not be used for specification purposes. Test data and test results contained in this document are for general information only and shall not be relied upon by IDENTCO customers for designs and specifications, or be relied on as meeting specific performance criteria. Customers desiring to develop specifications or performance criteria for specific product applications should contact IDENTCO for further information. Revised 11/1/2016

UNITED STATES HEADQUARTERS

28164 W. Concrete Drive
Ingleside, IL 60041
Phone: +1 (815) 385 - 0011
Fax +1 (815) 385 - 0359

MEXICO MONTERREY

Carr. a Laredo Km. 16.5 Interior
14B, Col. Moisés Sáenz, 66613
Apodaca, Nuevo Leon
Phone: +52 (81) 8008 - 0438

GERMANY FRANKFURT

Güterbahnhofstrasse 3-7
63450 Hanau
Phone: +49 (6181) 440 830 - 0
Fax: +49 (6181) 440 830 - 99

PRC HONG KONG

Unit 1708, 17/F, 9 Wing Hong St.
Cheung Sha Wan, Kowloon
Phone: +852 2959 2156
Fax: +852 2959 2019

MALAYSIA PENANG

Suite 163E, Level 16, Room 1602
Hunza Tower Gurney Paragon
Jalan Kelawei, Georgetown
10250 Penang
Phone: +6012 466 - 0866

TT451

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" (0.195/0.158 mm)
Adhesion to: Stainless Steel Expoy 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

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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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Performance Properties

PERFORMANCE PROPERTIES		CHEMICAL RESISTANCE			
CHEMICAL REAGENT		SUBJECTIVE OBSERVATION OF VISIBLE CHANGE			
	EFFECT TO LABEL	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

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Performance Properties

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 Defluxer	Meets Requirement
Solvent C Saponifier @ 70C	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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ASTM: American Society for Testing and Materials (U.S.A.)
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