

Printed Circuit Board Label

FLEXcon® THERMLfilm® HT™ 9000 and 9001

For Wave Solder & Surface Mount Leaded and Non-Leaded Reflow

Printability and heat resistance are the most critical factors in choosing materials for printed circuit board (PCB) labeling. These labels contain crucial information for the production process which, if lost, result in disruptions that impact profitability. To be sure the labels on your printed circuit boards can withstand the fluctuating temperatures, abrasion and chemicals inherent in the PCB manufacturing process and end-uses, look to FLEXcon® THERMLfilm® HT™ series of high-temperature films.

THERMLfilm® HT™ polyimide films are designed specifically for high-density barcode, data matrix code and alphanumeric identification of printed circuit boards. All products are thermal transfer printable. FLEXcon's durable thermal transfer printable topcoat allows for printability at 600 DPI for superior print quality. THERMLfilm® HT™ polyimide films, offered in 1 and 2 mils on a variety of liners, are sure to meet your specific application and dispensing requirements. All products are available in the U.S., Europe and Asia for consistent supply worldwide. Look to THERMLfilm® HT™ to meet the challenging requirements of PCB labeling.

For more information on FLEXcon's pressure-sensitive film solutions for printed circuit board labeling, contact your local Sales Representative or, in the United States/Canada/Mexico, our Product Identification Business Team at +1 (508) 885-8300; in Europe +31 294 491 800, europeinfo@FLEXcon.com; and in Asia +852 2350 2100, asiainfo@FLEXcon.com.



Products: FLEXcon® THERMLfilm® HT™ 9000 and 9001

BENEFITS:

- 2 mil polyimide film withstands intermittent heat up to 750°F (398°C) and endures wave solder and printed circuit board cleaning environments
- Tested and approved for leaded and lead free reflow (top and bottom) in the wave solder environment
- Durable thermal transfer printable topcoat allows for printability at 600 DPI for high-density barcodes, such as data matrix codes, with consistent ANSI scannability
- Permanent pressure-sensitive adhesive bonds well to standard PCBs
- Low outgassing of adhesive
- Available on a variety of liners to meet your specific application and dispensing requirements (9000 with 50 lb. glassine and 9001 with 1.5 mil polyester)
- Halogen free; REACH and RoHS compliant
- Thermal transfer printable (resin ribbons)
- UL/cUL Recognized under UL 969 - UL File No. PGJ12.MH16635 Printing Materials - Component

SPECIAL CONSIDERATIONS:

- All surfaces should be clean, dry and free of any surface contamination. IPA is the recommended cleaning solution.
- We recommend exposing printed labels to high heat (302°F/150°C) prior to performance testing.
- The printed surface should not be touched while hot. The resin TTR will be soft and will smudge or remove.
- Test data is based on Laboratory test structure. Actual application testing should be done to confirm suitability for application.



FLEXcon® THERMLfilm® HT™ 9000 and 9001

PRODUCT DATA	VALUE	TEST METHOD	
Physical Properties:			
Thickness (mils[microns])	Film (+/- 10%): Coating (+/- 10%): Adhesive (+/- 10%): Liner - 50 Glassine (+/- 10%): Liner - 150 Polyester (+/- 5%):	2.0 (50) 0.6 (15) 1.45 (36) 2.7 (69) 1.4 (36)	ASTM D 3652 (Modified for use with non-tape products)
Adhesion Properties:			
Surface	Dwell Time	Average Oz/in (N/m)	
Aluminum	15 mins. 24 hrs.	59 (649) 69 (759)	ASTM D 903
Stainless Steel	15 mins. 24 hrs.	44 (484) 51 (561)	
Service Temperature Range:	-40°F to 356°F (-40°C to 180°C) Intermittent 5 min.	Up to 750°F (398°C) Up to 500°F (260°C)	FLEXcon M29 applied to Panel
Expected Shear:	Room Temp (hours)	50	ASTM D 3654 Method A a. 1 hr. dwell b. 1 sq. in. surface c. 4 lb. load
Durability:		ANSI Scannability	
Leaded Reflow	Up to 7 washes	100%	Testing conducted at
Lead Free Reflow	Up to 7 washes	100%	ITW Speedline Technologies
No Reflow	Up to 7 washes	100%	ZESTRON and KYZEN
Chemical Resistance:	Test Fluid	ANSI Scannability	
	1 part IPA, 3 parts Mineral Spirits	100%	MIL-STD-202G
	Terpene Defluxer	100%	
	1 part IPA, 3 parts Mineral Spirits	100%	MIL-STD-883E
	Terpene Defluxer	100%	
Storage Stability:	Two years when stored at 70°F (21°C) and 50% relative humidity		
Minimum Application Temperature:	Room temperature (65°F/18°C) is recommended		
UL/cUL Recognized:	Under UL 969 - UL File No. PGJ12.MH16635 Printing Materials - Component		
UL/cUL Recognized Ribbons:	UL/cUL: Dia Nippon R510HF, iimak SP575, ITW Coding Products 7993, Ricoh B110CR, and Armor AXR 1 UL only: ITW Thermal Films B814		
Compliance and Content:			
RoHS - Restriction of Hazardous Substances (EU Directives 2002/95/EC and 2003/11/EC):	None of the substances named in these directives are knowingly used or intentionally added during the manufacturing process		
REACH - Registration, Evaluation and Authorization of Chemicals SVHC - Substances of Very High Concern (EU Directive 1907/2006/EC): Halogen Free IEC 61249-2-21:	None of the substances currently on the Candidate List are knowingly used or intentionally added during the manufacturing process Halogens are not knowingly used or intentionally added during the manufacturing process		

Product Performance and Suitability

All of the descriptive information, the typical performance data, and recommendations for the use of FLEXcon products shall be used only as a guide and do not reflect the specification or specification range for any particular property of the product. Furnishing such information is merely an attempt to assist you after you have indicated your contemplated use and shall in no event constitute a warranty of any kind by FLEXcon. All purchasers of FLEXcon products shall be responsible for independently determining the suitability of the material for the purpose for which it is purchased. No distributor, salesman, or representative of FLEXcon is authorized to give any warranty, guaranty, or make any representation in addition or contrary to the above.



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Printed Circuit Board - Processing Parameters

Cleaning Agent	Cleaning Agent Base	Process	Wash Time	Wash Temperature (°F / °C)	Rinse Time	Rinse Temperature (°F / °C)	Visual Appearance
ATRON® AC 205	Aqueous	Spray in Air	2.6 min	150 / 65.6	2-3 min	140 / 60	No Change
ATRON® AC 207	Aqueous	Spray in Air	2.6 min	150 / 65.6	2-3 min	140 / 60	No Change
Aquanox® A4241	Aqueous	Spray in Air	7.5 min	150 / 65.6	7.3 min	140 / 60	No Change
Aquanox®** A4625	Aqueous	Spray in Air	2.6 min	150 / 65.6	2-3 min	140 / 60	No Change
Aquanox® A4625B	Aqueous	Spray in Air	7.5 min	150 / 65.6	7.3 min	140 / 60	No Change
Aquanox® A4638	Aqueous	Spray in Air	7.5 min	150 / 65.6	7.3 min	140 / 60	No Change
Aquanox® A4639	Aqueous	Spray in Air	7.5 min	150 / 65.6	7.3 min	140 / 60	No Change
Aquanox®** A4708	Solvent	Spray in Air	7.5 min	150 / 65.6	7.3 min	140 / 60	No Change
HYDRON® WS 400 (high concentration 15%)	Aqueous	Spray in Air	2.6 min	150 / 65.6	2-3 min	140 / 60	No Change
HYDRON® WS 400 (low concentration 5%)	Aqueous	Spray in Air	2.6 min	150 / 65.6	2-3 min	140 / 60	No Change
VIGON®** A 201	Aqueous	Spray in Air	2.6 min	150 / 65.6	2-3 min	150 / 65.6	No Change
VIGON® N 600	Aqueous	Spray in Air	2.6 min	150 / 65.6	2-3 min	140 / 60	No Change
VIGON® N 680	Aqueous	Spray in Air	2.6 min	150 / 65.6	2-3 min	140 / 60	No Change
VIGON® PE 190 A	Aqueous	Spray in Air	2.6 min	150 / 65.6	2-3 min	140 / 60	No Change

Printed Circuit Board - Processing Results

	Cleaning Agent	UL/cUL Recognized Ribbons				
		Dia Nippon R510HF◆	iimak SP575	ITW Coding Products 7993	ITW Thermal Films B814▲	Ricoh B110CR
LEAD FREE REFLOW	ATRON® AC 205	4	4	4	PR	4
	ATRON® AC 207	4	4	4	PR	4
	Aquanox® A4241	4	NT	NT	4	4
	Aquanox® A4625	4	4	4	NT	NT
	Aquanox® A4625B	4	NT	NT	4	4
	Aquanox® A4638	4	NT	NT	4	4
	Aquanox® A4639	4	NT	NT	4	4
	Aquanox® A4708	4	NT	NT	4	4
	HYDRON® WS 400 (high concentration 15%)	4	4	4	4	4
	HYDRON® WS 400 (low concentration 5%)	4	4	4	4	4
	VIGON® A 201	4	4	4	PR	4
	VIGON® N 600	4	4	4	PR	4
	VIGON® N 680	4	4	4	4	4
	VIGON® PE 190 A	4	4	4	4	4

Rating: 4 = Passes 4 cleanings

PR = Print Removal

NT = Not Tested

◆Dia Nippon R510HF ribbon is recommended for non-reflow applications

▲ ITW Thermal Films B814 is UL only

*ATRON®, HYDRON®, and VIGON® are registered trademarks of ZESTRON Americas

**Aquanox® is a registered trademark of KYZEN

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Printed Circuit Board - Processing Results

	Cleaning Agent	Armor AXR1	Armor AXR7 +	Dia Nippon R300	Dia Nippon TR4070	iimak SP330	ITW Thermal Films B813	ITW Thermal Films B324	IMP Z302
LEAD FREE REFLOW	ATRON® AC 205	NT	4	NT	4	NT	NT	NT	NT
	ATRON® AC 207	NT	4	NT	4	NT	NT	NT	NT
	Aquanox® A4241	4	4	4	4	4	4	4	4
	Aquanox®* A4625	4	4	NT	NT	NT	NT	4	NT
	Aquanox® A4625B	4	4	4	4	4	4	4	4
	Aquanox® A4638	4	4	4	4	4	4	4	4
	Aquanox® A4639	4	4	4	4	4	4	4	4
	Aquanox® A4708	4	4	4	4	4	4	4	4
	HYDRON®* WS 400 (high concentration 15%)	NT	4	NT	4	NT	NT	NT	NT
	HYDRON® WS 400 (low concentration 5%)	NT	4	NT	4	NT	NT	NT	NT
	VIGON®* A 201	NT	4	NT	4	NT	NT	NT	NT
	VIGON® N 600	NT	4	NT	4	NT	NT	NT	NT
	VIGON® N 680	NT	4	NT	4	NT	NT	NT	NT
	VIGON® PE 190 A	NT	4	NT	4	NT	NT	NT	NT

Rating: 4 = Passes 4 Cleanings

PR = Print Removal

NT = Not Tested

Printed Circuit Board - Printability

Ribbon	UL/cUL Recognized	Print Quality	ANSI Grade	Scratch Resistance	Tape Resistance
Armor AXR 1		Excellent	A	Excellent	Excellent
Armor AXR 7+		Excellent	A	Excellent	Excellent
Armor AXR 8		Excellent	A	Excellent	Excellent
Armor AXR EL		Excellent	A	Excellent	Excellent
Dia Nippon R510HF	•	Excellent	A	Excellent	Excellent
Dia Nippon TR4070		Excellent	A	Excellent	Excellent
iimak SP575	•	Excellent	A	Excellent	Excellent
iimak SP330		Excellent	A	Excellent	Excellent
IMP Z302		Excellent	A	Excellent	Excellent
ITW Thermal Films B324		Excellent	A	Excellent	Excellent
ITW Thermal Films B813		Excellent	A	Excellent	Excellent
ITW Thermal Films B814▲	•	Excellent	A	Excellent	Excellent
ITW Coding Products 7993	•	Excellent	A	Excellent	Excellent
Ricoh B110CR	•	Excellent	A	Excellent	Excellent
Zebra 5175		Excellent	A	Excellent	Excellent

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