

**Description:**

POLYONICS XF-540 is a PEN (polyethylene naphthalene) film with a permanent pressure sensitive acrylic adhesive and a high opacity, gloss white topcoat specifically designed for thermal transfer printing.

**Properties:**

The XF-540 topcoat, in combination with the appropriate thermal transfer ribbon, passes the requirements of **MIL-STD-202G, Notice 12, Method 215K and MIL-STD-883E, Notice 4, Method 2015.13**. Preheating the labeled product can further enhance print permanence in the case of extreme solvent and/or abrasion exposure, although this is not typically required for board processing applications.

**Applications:**

- POLYONICS XF-540 is designed for barcode or alphanumeric identification of printed circuit boards, or related electronic components.
- It is the ideal label to withstand surface mount board processes, on the top side of the board, and is NOT recommended for the bottom side which is directly exposed to the wave solder environment. XF-540 is unique in that it is often used in lieu of polyester, but has significantly better thermal resistance properties than does Polyester.
- XF-540 is particularly useful in manufacturing processes where dimensional stability of the label is critical.
- IC labeling for work in process, permanent ID & warranty labeling
- Product ID, asset tracking
- Designed to work in automatic label application equipment

**Special Considerations:**

- The surface that you want to label should be clean, dry and free of any surface contamination, such as dust, oil or rust. Isopropyl alcohol would be a recommend solvent to clean the surface.
- When you apply the label, you must use firm pressure to increase the physical contact of the adhesive with the surface of the product.
- Pressure sensitive adhesives will provide stronger bonds to a warm surface, as compared to a colder one. The adhesive will 'flow' more readily, increasing the surface area and increasing the adhesion peel strength.
- The XF-540 top coat & print should not be contacted while exposed to elevated temperature.
- All values shown are averages and should not be used for specification purposes. Adhesion and tack values have a 15% tolerance allotted to the above values stated.
- Test data and test results contained in this document are for general information only and shall not be relied upon by POLYONICS customers for designs and specifications, or be relied on as meeting specified performance criteria.
- Customers desiring to develop specifications or performance criteria for specific product applications should contact Polyonics for further information



**Technical Data**

Properties	Test Methods	Average Results	
		USA Units	SI Units
<b>Thickness</b>	<b>ASTM D1000</b>		
-Face sheet		0.0027 inch	0.068 mm
-Adhesive		0.0020 inch	0.050 mm
-Total		0.0047 inch	0.118 mm
<b>Adhesion</b>	<b>Polyonics 80313</b>		
<b>Stainless Steel</b>	<b>20 minute dwell</b>	≥ 35 oz/in	38N/100 mm
	<b>24 hour dwell</b>	≥ 40 oz/in	44N/100 mm
<b>Tack</b>	<b>Polyonics 80155</b>		
		≥ 1200 g/in	
<b>Weatherometer Testing</b>	<b>ASTM G154</b>	No Visible Effect	
<b>Temperature Rating:</b>		-40 to 450°F (-40 to 232°C)	
<b>Shelf Life</b>		<b>1 year below 80°F (27°C) and 60% R.H.</b>	
<b>UL File#</b>		PGJI2.MH19503	
<b>UL Tested Ribbons</b>		Armor AXR7+, Sony 4070, JPP1, Ricoh B110C, Union Chemcar US300, DNP R510	

**Durability Testing**

Properties	Test Method	Test Environment	PCS <sup>1</sup>	Read Rate <sup>2</sup>
<b>Heat/Chemical Resistance</b>	<b>Polyonics 80386</b>	Control 70°C, 5 min.	99%	100%
		Kyzen Corp. Aquanox SSA 30% aqueous, 70°C, 5 min.	100%	99%
		Re-entry KNI 2000 Terpene, 70°C, 5 min	98%	100%
		Alpha Metals Inc. EC-7R Terpene, 70°C 5 min.	98%	100%
		Alpha Metals Inc. 2110 Saponifier 10% aqueous, 70°C, 5 min.	97%	100%
		Isopropanol 99%, 70°C, 5 min.	99%	100%
		Kyzen XJN +, 30% 70°C, 5min.	99%	100%

**Chemical Testing**

Properties	Test Method	Test Fluid	Results
<b>Chemical Resistance</b>	<b>MIL-STD-202G, Notice 12, Method 215K MIL-STD-883E, Notice 4, Method 2015.13</b>		
		Solvent A- 1 part IPA, 3 parts Mineral Spirits	No visible effect
		Solvent B- 1,1,1- Trichloroethane	Solvent deleted per notice 12
		Solvent C- Terpene Defluxer	No visible effect
		Solvent D- Saponifier	No visible effect

**Polyonics Material Compliance**

<b>RoHS- Restriction of Hazardous Substances (EU Directive 2002/95/EC)</b>	Limits set forth in Directive 2005/618/EC amending Directive 2002/95/EC
<b>REACH- Registration Evaluation and Authorization of Chemicals (EU Directive 1907/2006/EC)</b>	Limits set forth in Directive 1907/2006/EC Article 7 (2)
<b>Halogens- Restriction use of Halogen (IEC 61249-2-21)</b>	Limits set forth in International Electrochemical Commission

**Key to Tables on page 2**

- All SI units are mathematically derived from U.S. conventional units.
- Labels printed with recommended thermal transfer ribbon. Labels printed with 6.7 mil X dimension bars at 2:5 ratio. Labels exposed to indicated environments.
- <sup>1</sup>PCS - Print Contrast Signal. PCS determined with Quick Check 650, 0.005" aperture, 660 nm wavelength.
- Quick Check 650 manufactured by: Photographic Sciences Corp.
- <sup>2</sup> Read rate determined using PSC 850 laser scanner.

**Trademarks:**

XJN+ & Aquanox SSA-™ is a trademark of Kyzen Corporation. Inc.  
EC-7R™ is a trademark of Petroferm Inc.  
RE-ENTRY™ is a registered trademark of Environsolv Inc.

**References:**

ASTM: American Society for Testing and Materials (U.S.A.)  
SI: International Systems of Units



**WARRANTY-LIMITATION**

Polyonics' products are sold with the understanding that the Buyer will test them in actual use and determine for him/herself their adaptability to his/her intended uses. Polyonics warrants to the Buyer that its products are free from defects in material and workmanship, but limits its obligation under this warranty to replacement of the products shown to Polyonics' satisfaction to have been defective, provided that the Buyer has complied with the handling, storage and shelf life requirements as specified by Polyonics in applicable materials specifications.

The above warranties extend solely to Buyer and all warranty claims must be made by Buyer. Rework or Replacement shall neither extend nor decrease the original warranty period. The term of all warranty periods shall not exceed thirty (30) days from the date of the original shipment.

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