

**Description:**

POLYONICS XF-446 is a polyester film with a permanent pressure sensitive acrylic adhesive and a high opacity, gloss white finish specifically designed for thermal transfer printing. **XF-446 is deemed to be a STATIC SAFE product in accordance with EIA 625, EIA 541. The Test Methods employed were in accordance with EOS/ESD S11.11.**

**Properties:**

The XF-446 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**. Designed for cool side of the board, the print resists smearing, even when the board and label are directly removed from a reflow or wave solder environment. 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. **Moreover, when the label is peeled from its release liner, less than 25 volts per square inch of electrostatic charge is generated, making it safe to use in a static free work environment, per EIA 625 and 541.**

**Applications:**

- POLYONICS XF-446 is designed for barcode or alphanumeric identification of printed circuit boards, or related electronic components.
- It is the ideal label to withstand many surface mount board processes, but is not well suited for temperatures above 400°F (204°C).
- IC labeling for work in process, permanent ID & warranty labeling
- Product ID, asset tracking

**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-446 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



**Polyonics Material Specifications**

Properties	Test Methods	Average Results	
		USA Units	SI Units
<b>Thickness</b>	<b>ASTM D1000</b>		
-Face sheet		0.0002 inch	0.051 mm
-Adhesive		0.0008 inch	0.020 mm
-Total		0.0028 inch	0.071 mm
<b>Adhesion</b>	<b>Polyonics 80313</b>		
-Stainless Steel	<b>20 minute dwell</b>	≥ 27 oz/in	30N/100 mm
	<b>24 hour dwell</b>	≥ 30 oz/in	33N/100 mm
<b>Tack</b>	<b>Polyonics 80155</b>	≥ 1000 g/in	
<b>Weatherometer Testing</b>	<b>ASTM G 154</b>	No Visible Effect	
<b>Surface Resistivity</b>		EOS/ESD S. 11.11 Label Surface 10 <sup>7</sup> - 10 <sup>8</sup>	
<b>Peel Value (Volts/sq.in)</b>	<b>Polyonics 80313</b>	<25 volts	
<b>Temperature Rating:</b>		-40 to 400°F (-40 to 204°C)	
<b>Shelf Life</b>		<b>1 year below 80°F (27°C) and 60% R.H.</b>	
<b>UL File #</b>		PGJ12.MH19503	
<b>CUL File #</b>		PGJ18.MH19503	
<b>UL/CUL Approved Ribbons</b>		DNP R510, Ricoh B110CR, Union Chemicar US300	

**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 for the 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 is determined with Quick Check 650, 0.005" aperture, 600nm wavelength.
- Quick Check 650 manufactured by: Photographic Science Corp.
- <sup>2</sup> Read rate determined using PSC 850 laser scanner.

**References:**

ASTM: American Society for Testing and Materials (U.S.A.)



**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.

**THE ABOVE WARRANTIES ARE EXCLUSIVE OF AND IN LIEU OF ALL OTHER WARRANTIES, WRITTEN OR ORAL, EXPRESS OR IMPLIED, STATUTORY OF OTHERWISE. NO IMPLIED STATUTORY WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE SHALL APPLY. POLYONICS SHALL NOT BE LIABLE EITHER IN TORT OR IN CONTRACT FOR ANY LOSS OR DAMAGE, DIRECT, INCIDENTAL OR CONSEQUENTIAL, ARISING OUT OF THE USE OR INABILITY TO USE THE PRODUCT, OR FROM DELAY IN THE REPLACEMENT OR REPAIR OF PRODUCTS UNDER THE ABOVE WARRANTY.**

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