

Optical Solution Provider

TECHNICAL DATA SHEET

EFIRON Polymer Clad
Series

PC-414L AP

Resonance | **SSCP**

LUVANTIX SSCP

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Rev. F

Revised Date : 22th February 2014

The Term of Validity : 22th February 2014 ~ 21th February 2016

A. MATERIAL DESCRIPTION

PC-414 coating is a radiation-curable acrylate useful for polymer cladding manufacturing processes. PC-414 coating has suitable transition temperature, rapid cure property, non-yellowing, thermal resistance, high oxidative and hydrolytic (moisture) stability, which are required by optical fiber industry applications.

1. CURING CONDITION

Minimum UV dose of PC-414 for complete cure is 1000 mJ/cm^2 under a nitrogen environment. However, the minimum dosage is heavily dependent upon the thickness of layer.

2. STORAGE

PC-414 polymer cladding coating can polymerize under improper storage conditions. Store materials away from direct sunlight and presence of oxidizing agents and free radicals. Storage temperature range is between 10°C to 30°C .

3. PRECAUTION

PC-414 polymer cladding coating materials can cause skin and eye irritation after contact. Therefore, avoid direct contact with these materials. If contact occurs, immediately rinse affected areas copiously with water.

4. NOTES

The information contained herein is believed to be reliable but is not to be taken as representation, warranty or guarantee and customers are urged to make their own tests.

B. MATERIAL PROPERTIES

1. LIQUID

Viscosity	at 25 °C	8517cPs
Density	at 20 °C	1.43 g·cm ⁻³
Refractive Index	at 25°C, 589 nm	1.405
Surface Tension		17 mN/m

2. CURED

Refractive Index at 852 nm	1.414
Glass Transition Temperature	
At Tan_delta Max	81.4 °C
Secant Modulus	
At 2.5% Strain	29.2 kgf/mm ²
Tensile Strength at Break	1.74 kgf/mm ²
Elongation at Break	26.5 %
Water Sensitivity (24 Hour, 50 °C)	
Weight Change	1.92 %
Extractable	0.67 %
Coefficient of Expansion	
Glassy Region	In testing
Rubbery Region	In testing
Thermal Weight Change (10 Hrs / 200°C)	96.74 %
Shrinkage on Cure	10.52 %

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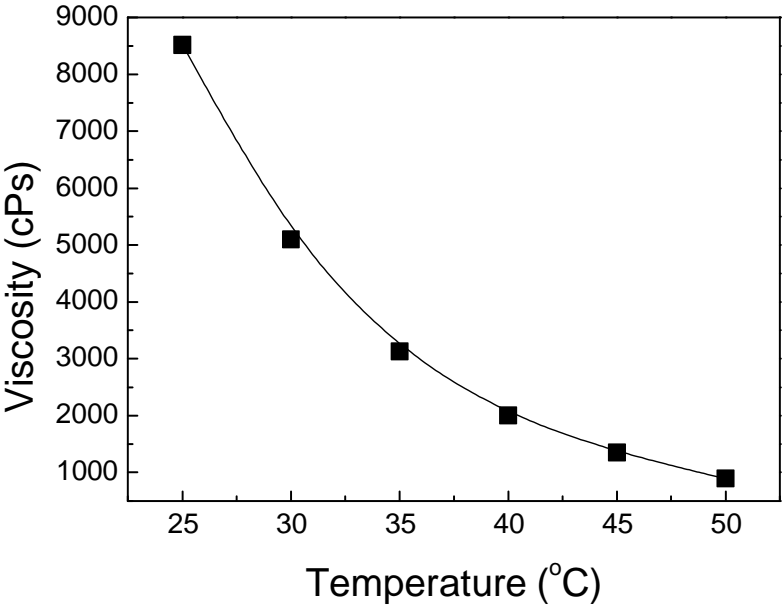
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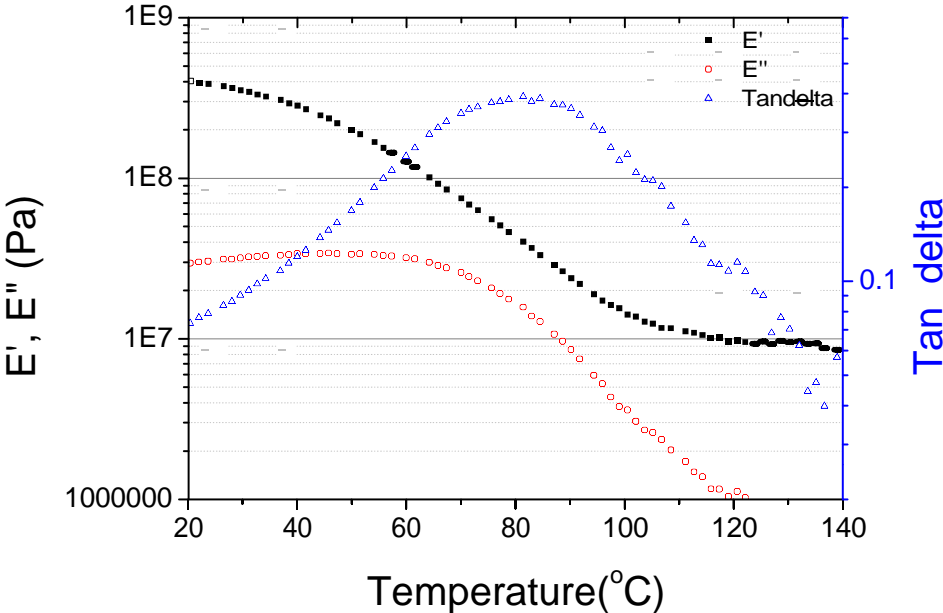
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C. GRAPH & TABLE RELATED DATA

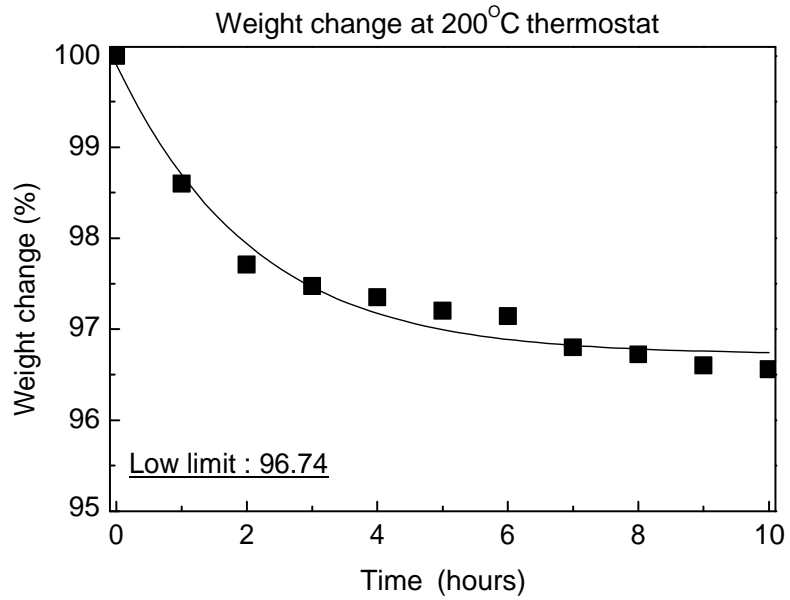
1. VISCOSITY PROFILE



2. DMTA ANALYSIS



3. THERMAL WEIGHT CHANGE



D. APPENDIX

1. TEST EQUIPMENT

	Test Equipment
Viscosity (cPs)	Brookfield DV II+ or DV III+
Refractive Index (uncured)	Abbe refractometer
Density (g/cm³)	Pycometer
Surface Tension	KRÜSS K100 Tensiometer
Refractive Index (cured)	Prism Coupler
Shrinkage On Cure	Pycometer
Secant Modulus (kgf/mm²)	Instron 4443 UTM
Elongation (%)	Instron 4443 UTM
Tensile Strength (kgf/mm²)	Instron 4443 UTM
Tgnsity (g/cm³)	DMTA / DSC
Thermal Expansion Coefficient	TMA

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2. TEST METHODS

Viscosity (cPs)	ASTM D-1084 Method B	V = fs V=Viscosity of sample in centipoises f=Scale factor furnished with instrument s = Scale reading of viscometer
Refractive Index	ASTM D 542 – 50	
Density (g/cm³)	ASTM 1475	D = (W – w)/V V =Volume of container(mL) W = Weight of the filled container w = Weight of the empty container D = Density (g/mL)
Surface Tension	ASTM D-1331-56	
Shrinkage On Cure	ASTM D-792	X = (a x d) / (b + a – m) % Shrinkage = (X-d)/d a = Sample Weight d = Specific Gravity of Uncured Sample b = Weight of Pycnometer and water m = Weight of Water and Sample in Pycnometer e = Weight of Pycnometer
Secant Modulus (kgf/mm²)	ASTM D-638	
Elongation (%)	ASTM D-638	(L – L₀) / L₀ X 100 L ₀ = Length of initial L=Length at break point
Tensile Strength (kgf/mm²)	ASTM D-638	P/ (T X W) T = Film Thickness, P= Tensile pull to rupture W= Width of Film
Film Making	-	Thickness ; 75 Dose ; 12.5 J/cm ²
Tg (°C)	DMTA Test	Thickness ; 75 Dose ; 12.5 J/cm ²
Thermal Expansion Coefficient	TMA Test	Thickness 500
Water Absorption	-	50 / 24 hr Aging (W – W₀) / W₀ X 100 W ₀ = Weight of initial W = Weight After Aging

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