Optical SolutionProvider

TECHNICAL DATA SHEET

EFIRON Polymer Clad Series

PC-452L AP

LUVANTIX SSCP

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CONTENTS

Rev. F
Revised Date : 22th February 2014
The Term of Validity : 22th February 2014 ~ 21th February 2016

A. MATERIAL DESCRIPTION

PC-452 coating is a radiation curable acrylate useful for polymer cladding making processes.

PC-452 coating has suitable glass 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-452 for complete cure is 1000 mJ/cm^2 under a nitrogen environment. However, the minimum dosage is heavily dependent upon the thickness of the PC layer.

2. STORAGE

PC-452 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℃ to 30℃.

3. PRECAUTION

PC-452 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 PROPERTY

1. LIQUID

Viscosity	at 25ºC	4675 cPs
Density	at 20ºC	1.29 $g \cdot cm^{-3}$
Refractive Index at 25ºC, 589nm		1.442
Surface Tension		18 mN/m

2. CURED

Refractive Index @ 852 nm	1.452
Glass Transition Temperature	
At Tan delta Max	76.6 ºC
Secant Modulus	
At 2.5% Strain	22.3 kgf/mm^2
Tensile Strength at Break	1.73 kgf/mm^2
Elongation at Break	25 %
Water Sensitivity (24 Hour, 50 ºC)	
Weight Change	1.92 %
Extractable	0.67 %
Coefficient of Expansion	
Glassy Region	In testing
Rubbery Region	In testing
Thermal Weight Change (10 Hrs / 200ºC)	96.74 %
Shrinkage on Cure	10.52 %

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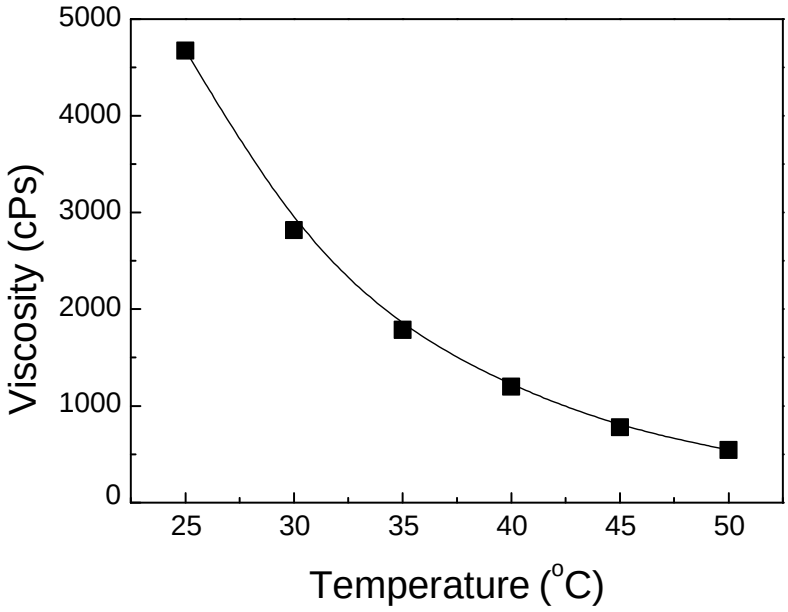
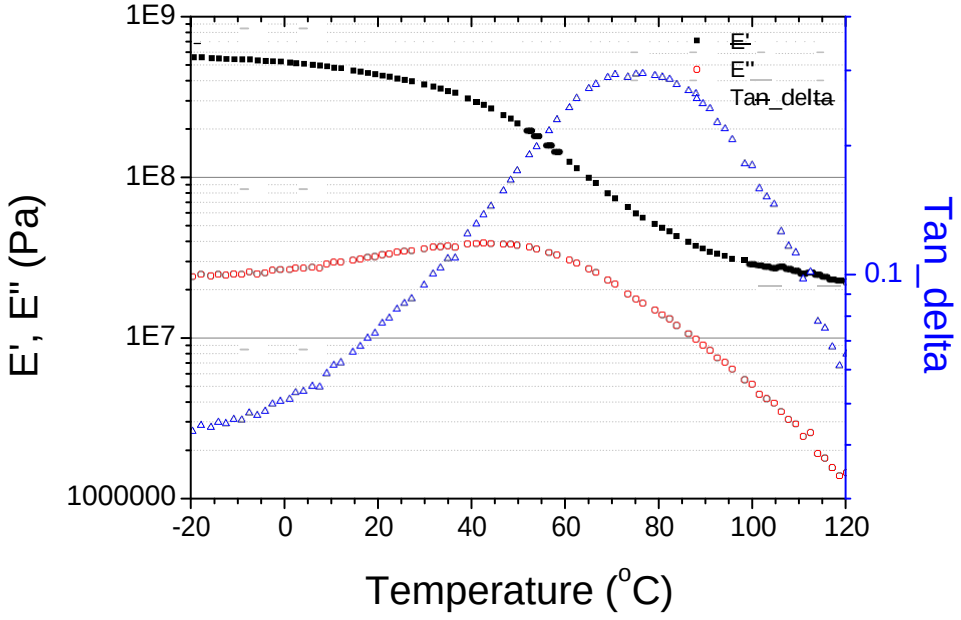
C. GRAPH & TABLE RELATED

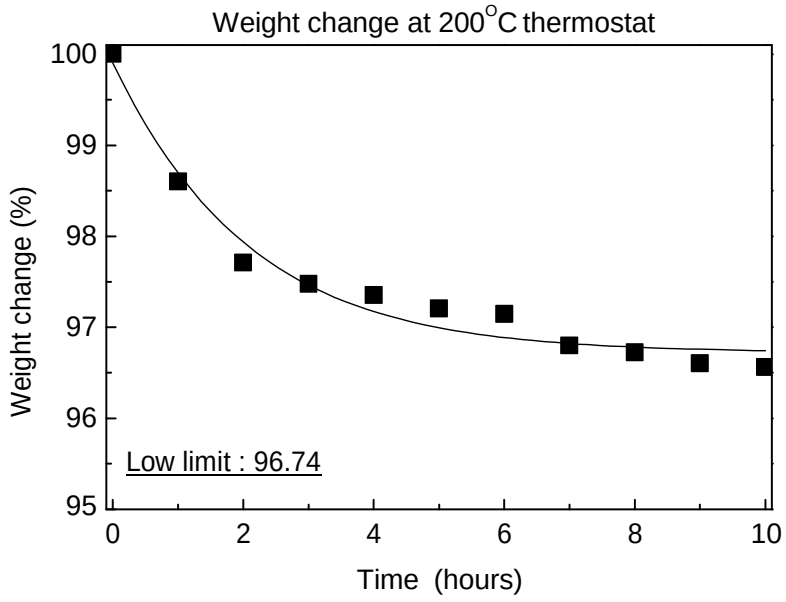
1. VISCOSITY PROFILE



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/cm^3)	Pycometer
Surface Tension	KRÜSS K100 Tensiometer
Refractive Index (cured)	Prism Coupler
Shrinkage on Cure	Pycometer
Secant Modulus (kgf/mm^2)	Instron 4443 UTM
Elongation (%)	Instron 4443 UTM
Tensile Strength (kgf/mm^2)	Instron 4443 UTM
Tg (^{o}C)	DMTA / DSC
Thermal Expansion Coefficient	TMA

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/cm^3)	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 (	ASTM D-638	
Elongation (%)	ASTM D-638	**(L – L$_0$) / L$_0$ X 100** L$_0$ = Length of initial L=Length at break point
Tensile Strength (	ASTM D-638	**P/ (T X W)** T = Film Thickness, P= Tensile pull to rupture W= Width of Film
Film Making	-	Thickness ; 75 Dose ; 2.0 J/cm^2
Tg (℃)	DMTA Test	Thickness ; 100 μm Dose ; 0.7
Thermal Expansion	TMA Test	Thickness ; 500 μm
Water Absorption	-	50 ^{o}C 24 hr aging **(W – Wo)/ Wo X 100** Wo = Initial weight W = Weight after aging