



ÅNGSTRÖM *Link*TM KEY FEATURES

- Compatible with CMOS & NIL fabrication techniques
- Fast UV cure
- Very low shrinkage
- Very low, stable dielectric
- Excellent chemical and thermal stability
- Low moisture absorption

ÅngströmLink AL-33xx-200 series polymers are optically clear, with excellent stability and processing capabilities. The polymers feature a siloxane backbone with epoxy functional groups. This combination provides for extremely stable mechanical, electrical and optical properties at, or after exposure to, high temperature.

The AL-33xx-200 polymers are 100% solids. At room temperature these materials have long pot life. They are UV curable and when cured have excellent chemical and solvent resistance. These polymers have good release properties from PDMS; a fluorinated version (AL-3349-200) offers added release properties.

These materials are supplied in light-sensitive protected bottles in 20g to 1kg quantities. Service temperature range for the cured polymer is -40°C to +350°C (+400°C for short periods of time).

Applications

UV Nanoimprint lithography

Roll-to-roll nanoimprint processes

Benefits

Low viscosity

Photoimageable

Fast (UV) Cure

Fluorinated (non-stick) version

Good adhesion to silicon dioxide, copper and aluminum

Thermally stable, up to 350°C
(400°C for short periods of time)

Excellent chemical resistance

(revision 06/2013)

For more information on this or other products and their availability, please contact us at:
1-800-IS-FIBER (473-4237); (508) 992-6464; Fax us at (508) 991-8876, or via email at sales@focenter.com
Please visit us on the web at WWW.FOCENTER.COM

Property (at 25°C unless noted)	Test Method	Typical Value
Cure Processing Characteristics		
Uncured mixed viscosity	ASTM D-1084	200 cP typical
Cure Time / UV Cure (see schedule below)	Visual	700mJ for a 15-20µ film
Cured Mechanical Properties		
Appearance	Visual	Clear
Physical Consistency	Visual	Glassy Solid
Hardness	Shore D	70-75
Modulus	-	5 GPa (@ 20nm nanoindent)
Shrinkage	-	0.2%, typ
Specific Gravity	ASTM D-1217	1.15
Cured Thermal Properties		
Glass Transition	DSC	330°C, Slowly degrades above 400°C
Coefficient of Thermal Expansion	-	$55 \times 10^{-6} \text{ cm/}^\circ\text{C}$ (0-300°C)
Moisture absorption	85/85	< 0.5%
Thermal decomposition point	TGA	> 400°C
Cured Electrical Properties		
Leakage	-	$< 10^{-8} \text{ A/cm}^2$ @ 2 – 4 MV
Volume Resistivity	ASTM D-257	$> 10^{15} \text{ ohm-cm}$, est.
Dielectric Constant	-	2.4 - 2.8

Recommended Cure Schedules

UV Cure

Exposure Type	Broadband UV Exposure System (365nm)
Dose	120mJ/cm ² , 30 minute rest

UV plus Thermal

Exposure Type	Broadband UV Exposure System (365nm)
Dose	20mJ/cm ² , minimum
Post Exposure Bake (PEB)	1 minute @ 135°C (hotplate)

Recommended Solvents

MEK, PMA or Mesitylene

Typical Adhesion Promoters

HMDS and AP-3000 (See paragraph on Substrate Preparation)

Recommended Etchant

CF₄/O₂ reactive ion etching. Wall smoothness can be controlled by adjusting etching parameters.

Substrate Preparation

Oxide grown layers typical of CMOS fabrication techniques are frequently used as substrates. Clean substrates using suitable industrial techniques for cleaning electro-optics. If hydrocarbon solvent cleaning (e.g. acetone, toluene) is used, a final rinse with reagent grade isopropanol is recommended. If aqueous detergent cleaning is used, multiple final rinses with de-ionized water or a single rinse with reagent grade isopropanol is recommended. Improved adhesion to some substrates may be obtained using suitable primers such as HMDS and AP-3000. Surface chemistry and surface coatings make it difficult to know which adhesion promoter will work best. It is recommended to try a few.

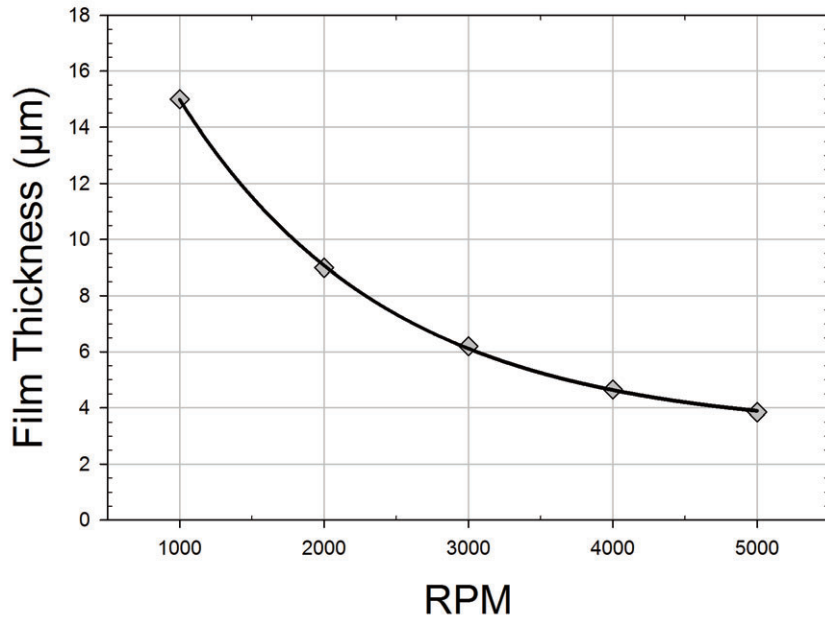
Cleanup

AL-33xx-200 materials may be removed from surfaces by first wiping off excess gel with a suitable dry lint-free wipe and then by wiping down the surface with a lint-free wipe soaked with acetone. If the surface material is incompatible with acetone (acetone can soften or crack some plastics) use isopropanol. If acetone residues are undesirable, the clean-up process should be completed with a final rinse with reagent grade isopropanol. The user is responsible for compliance with all applicable regulations governing disposal of waste materials as indicated in the MSDS.

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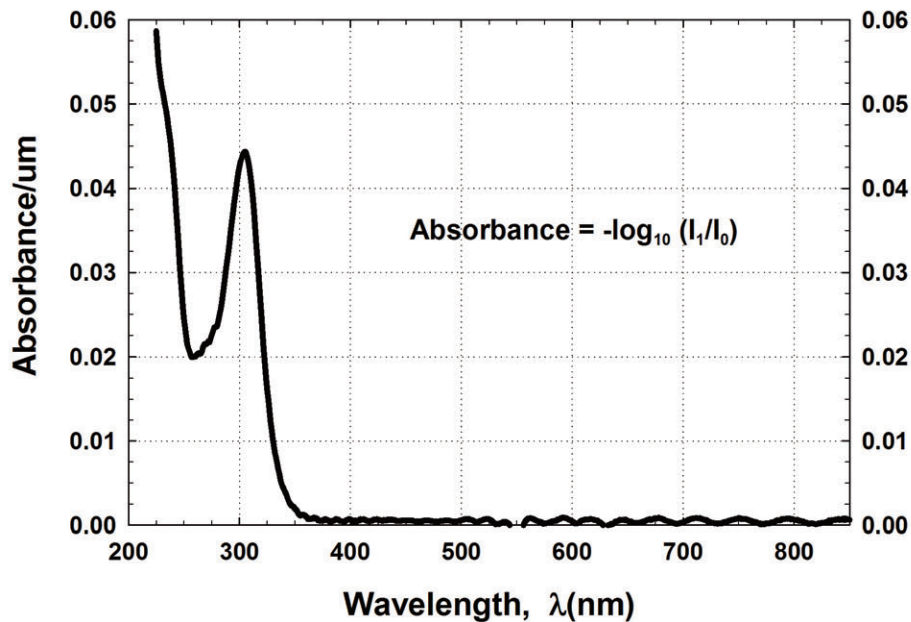
AL-3351-200S Thickness vs Spin Speed



Absorbance vs Wavelength

AngstromLink Epoxy Siloxane

AL-3351-200



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Packaging

AL-33xx-200 polymers are supplied in light-sensitive protected bottles. Standard quantities are 20g, 50g, 100g, 250g, 500g and 1kg. For other container options contact Fiber Optic Center.

Specifications

The typical properties quoted on this product data sheet should not be used as a basis for preparation of product specifications, and may change without notification. Because we cannot anticipate or control the many different conditions under which this information and our products may be used, we cannot guarantee the applicability of this information or the suitability of our products in any individual situation. Consult Fiber Optic Center for assistance with establishing specification limits and test conditions. Statements concerning the possible use of our products are not intended as recommendations to use our product in the infringement of any patent.

Shelf Life

AL-33xx-200 materials have a limited shelf life (6 months from date of manufacture when stored in its unopened original container under the storage temperature range noted on the product label). Use of a product after the expiration date shown on the package, or use of a product which has been improperly stored, may result in improperly cured material.

Warranty

AL-33xx-200 materials are sold without warranty, express or implied. Fiber Optic Center expressly disclaims any liability for incidental or consequential damages resulting from use of this product.

Safety

Consult the Material Safety Data Sheet (MSDS) for AL-33xx-200 materials before use. These materials are industrial products, designed for use only by qualified laboratory or production personnel.

For Special Quotes and Technical Consultations

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