



Addison Clear Wave Coatings Inc.
 very high refractive index, high transparency
 UV-curable LuxNIL[®] Resins

LuxNIL[®] RESINS

- UV-curable Resin
- Spin-coating, Gravure Coating, Ink-jet
- Optically Clear
- Refractive index: **1.65 – 1.92** at 589 nm
- Highly transparent

The image features three panels of corrugated metal profiles, each shown in a 3D perspective view. The profiles are light blue with a darker blue shadow on the top surface. Below each panel is a circular inset showing a close-up of the corrugation pattern. The text 'LuxNIL® P267, P276, P285, and P289' is centered over the three panels.

LuxNIL® P267, P276, P285, and P289

Properties:

	LuxNIL[®] RESINS
Solvent Type	PGMEA
Resin Type	Inorganic dispersion with acrylate binder
Refractive index @ 589 nm	1.65 to 1.92
Transparency	Optically clear

P267, P276, P285, and P289 for P-NIL Process

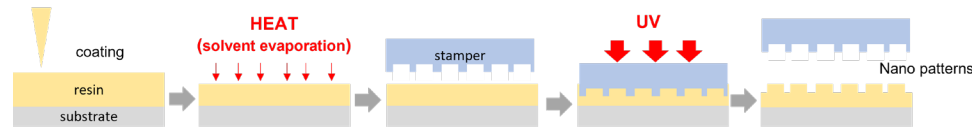
RESIN TYPE: UV-curable inorganic-organic dispersion in PGMEA

APPLICATION NOTES:

PROCESS:

- 1) Coating step for film forming: P267, P276, P285 and P289 are used as photo nano imprint lithography resins. These resins can be applied by spin coat, roll coat, ink-jetting, etc.
- 2) Solvent removing step: after coating, heat is applied at 80 to 100 °C for 60 seconds to remove PGMEA.
- 3) Nano-imprint-lithography: replication of nano features with a working stamp is conducted. Pressure might be required for P285, and P289.
- 4) UV cure: UV cure to fix the nano features.
- 5) Working Stamp is removed.

Coating thickness for P267, P276, P285 and P289 : 100 to 2000 nm



PRE-CURE (for solvent removal): 80 – 100 °C for 60 sec, IR heating is acceptable

UV CURING CONDITIONS:

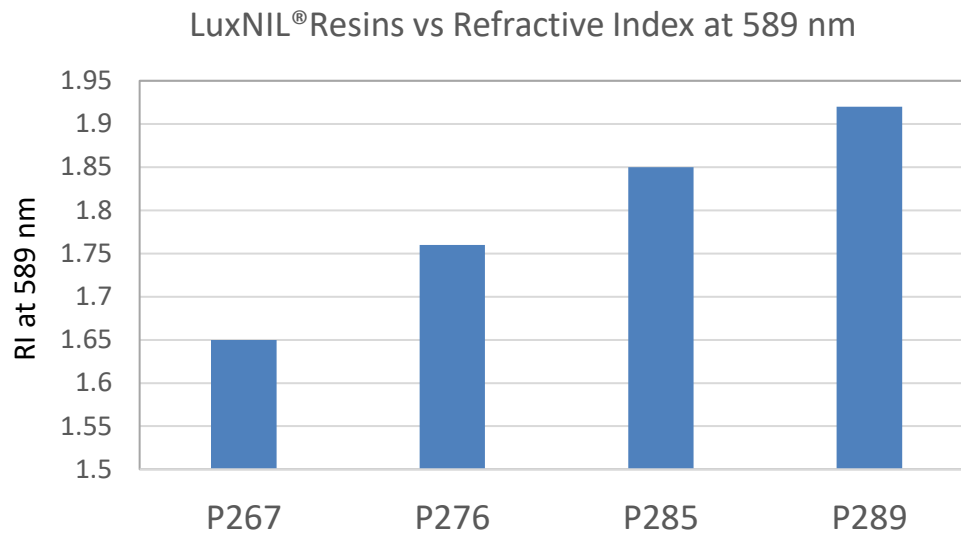
*Metal halide/medium or high Mercury UV: UV-A (320-400 nm), intensity: 50-1,000 mW/cm²

*or LED-365 nm, UV light intensity: 100 to 1,000 mW/cm²

RECOMMENDED UV Conditions: LED-365 nm, 250 mW/cm² x 100 to 200 sec. Cure is done between 2 substrates or in an inert atmosphere



LuxNIL[®] vs Refractive Index at 589 nm



ACW can tune RI in the range of 1.65 to 1.92 @ 589 nm per customer's requirements



P267, P276, P285, and P289 Optical Characteristics

	P267	P276	P285	P289
RI at 589 nm	1.65± 0.01	1.76 ± 0.01	1.85 ± 0.01	1.92 ± 0.01
Abbe No (V_d)	25	20	18	17
Haze (%)*	0.2	0.2	0.2	0.2
Transmission (%)* [§]	91	89	88	87
Clarity (%)*	100	100	100	100

*1 micron film on glass

[§] no correction for surface reflection

Methods

- Samples were coated on 120 μm borosilicate glass, soft heated at 100 $^{\circ}\text{C}$ for 60 seconds, and cured with LED 365 nm at 250 mW/cm^2 for 100 sec.
- Refractive index and film thickness were measured on a Metricon 2010M prism coupler at 25 $^{\circ}\text{C}$
 - Measured refractive index at Wavelengths: 457, 516, 638, 854 nm
 - The data was solved as a Cauchy function
- % Transmission, haze, and clarity were measured for the thin films coated on glass using a BYK haze-gard i

LuxNIL[®] Resins: P267, P276, P285, and P289

- *ACW very high refractive index products*
- *Refractive index: 1.65 to 1.92 at 589 nm*
- *Samples now available to customers for evaluations*
- *Contact ACW for details at LuxNIL@addisoncw.com*