



## LuxNIL® P288-U

High refractive index UV curable dispersion in PGMEA

**FEATURES:** High Refractive Index, EXCELLENT adhesion to plastic and glass substrates, OPTICALLY Clear

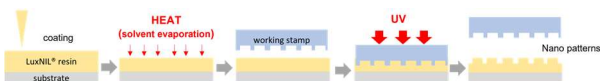
### PRODUCT DESCRIPTION:

- LuxNIL® P288-U is a UV-curable inorganic organic dispersion in PGMEA that is suitable for AR/VR/MR applications.
- Base chemistry: Inorganic nano particles in acrylate binder.

### PRODUCT USE:

- Diffraction Optical Elements (DOE)
- AR/VR/MR
- Photo Nano-Imprint Lithography (P-NIL)

### PROCESS FLOW



### LuxNIL® P288-U OPTICAL PROPERTIES

Properties	LuxNIL®P288-U
$n_{589}$	1.94
Transmission* <sup>§</sup>	86%
Haze*	0.2%
Clarity*	100%

\*1 micron film on borosilicate glass.  
<sup>§</sup>No correction for surface reflection

### TYPICAL PROPERTIES

#### Uncured resin

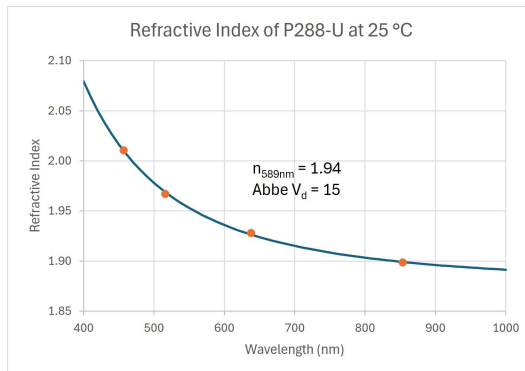
<b>Solid content:</b>	<b>47%</b>
Viscosity at 25 °C, mPa.s or cps	2-4
Shelf life (20 - 30°C):	6 months
Pot life or working life (20 - 30°C):	3 months

#### Cured film

Shrinkage (volume, %)	<1
Refractive index of cured film (25 °C) @589 nm	1.94

Operating temperature: -40 to 100 °C

### LuxNIL® P288-U RI vs wavelength



### GENERAL USAGE INFORMATION:

**Storage:** After receipt in amber HDPE bottles, room temperature storage (15-30°C) in the original container is required.

### APPLICATION NOTES:

#### PROCESS:

- Coating step for film forming: LuxNIL® P288-U is used as a nano imprint lithography resin. LuxNIL® P288-U can be applied by spin coat, roll coat, or gravure coat.
- Solvent removing step:** after coating, heat is applied at 70 to 90 °C for 60 sec to remove PGMEA. Due to high dispersion loading, for best imprints, solvent removal at 70 - 80 °C for 60 sec is suggested.
- Nano-imprint-lithography: replication of nano features with a working stamper is conducted. **Pressure might be required for imprint process.**
- UV cure: UV cure to fix the nano features.
- Working stamp is removed.
- Final heat conditions at 150 °C for 4 hrs after imprint step will help remove all residual solvent, and full refractive index can be obtained.

**Suggested coating thickness for LuxNIL® P288-U:** 1,000 to 2,000 nm

#### UV CURING CONDITIONS:

\*Metal halide/medium or high Mercury UV: UV-A (320-400 nm), intensity: 100-1,000 mW/cm<sup>2</sup>

\*or LED-365 nm, UV light intensity: 100 to 1,000 mW/cm<sup>2</sup>

LuxNIL® P288-U should be cured between two substrates or in an inert atmosphere.

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

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