



LuxNIL® P290

High refractive index UV curable dispersion in PGMEA

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

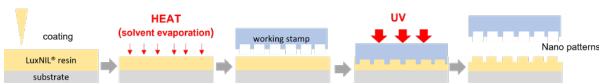
PRODUCT DESCRIPTION:

- LuxNIL® P290 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:

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

PROCESS FLOW



LuxNIL® P290 OPTICAL PROPERTIES

Properties	LuxNIL®P290
n_{589}	1.96
Transmission*	87%
Haze*	0.2%
Clarity	100%

*1 micron film on borosilicate glass.
No correction for surface reflection

TYPICAL PROPERTIES

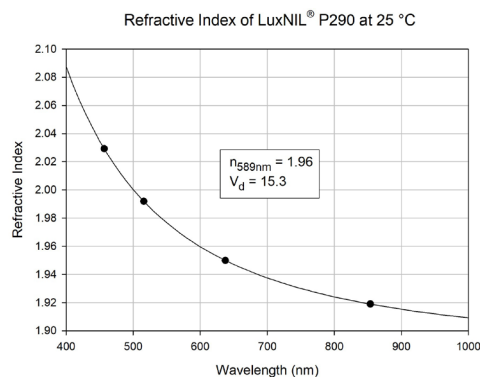
Uncured resin

Solid content:	50%
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	1.96 ± 0.01
Abbe No (V_d)	15
Operating temperature:	-40 to 100 °C

LuxNIL® P290 RI vs wavelength



APPLICATION NOTES:

PROCESS:

- 1) Coating step for film forming: LuxNIL® P290 is used as a nano imprint lithography resin. LuxNIL® P290 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 sec to remove PGMEA
- 3) Nano-imprint-lithography: replication of nano features with a working stamper is conducted. **Pressure might be required for imprint process.**
- 4) UV cure: UV cure to fix the nano features
- 5) Working stamp is removed

Coating thickness for LuxNIL® P290: 100 to 2000 nm

PRE-CURE (for solvent removal): 80 to 100 °C for 60 sec

UV CURING CONDITIONS:

*Metal halide/medium or high Mercury UV: UV-A (320-400 nm), intensity: 100-1,000 mW/cm²

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

LuxNIL® P290 should be cured between two substrates or in an inert atmosphere. If cured in air, the integrity of the film is reduced.

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.

GENERAL USAGE INFORMATION:

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

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