# LuxNIL® P285-U

## High refractive index UV curable dispersion in PGMEA

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

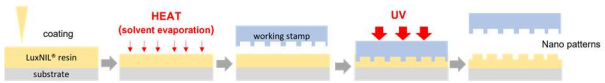
**PRODUCT DESCRIPTION**:

- LuxNIL® P285-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:**

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

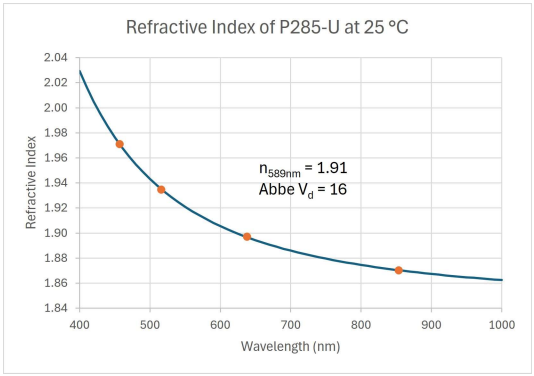
**PROCESS FLOW**




**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 | 1.91 |
| Operating temperature: | -40 to 100 °C |

**LuxNIL® P285-U RI vs wavelength**




**LuxNIL® P285-U OPTICAL PROPERTIES**

| Properties | LuxNIL®P285-U |
|---|---|
| $n_{589}$ | 1.91 |
| Transmission*§ | 88% |
| Haze* | 0.2% |
| Clarity* | 100% |

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

**GENERAL USAGE INFORMATION:**

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

## APPLICATION NOTES:

**PROCESS:**

1) Coating step for film forming: LuxNIL® P285-U is used as a nano imprint lithography resin. LuxNIL® P285-U can be applied by spin coat, roll coat, or gravure coat.
2) **Solvent removing step**: after coating, heat is applied at 70 to 90 °C for 60 sec to remove PGMEA.
3) Nano-imprint-lithography: replication of nano features with a working stamper is conducted.
4) UV cure: UV cure to fix the nano features.
5) Working stamp is removed.
6) 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® P285-U:** 1,000 to 2000 nm

**UV CURING CONDITIONS:**

*Metal halide/medium or high Mercury UV: UV-A (320-400 nm), intensity: 100-1,000 mW/cm$^2$
*or LED-365 nm, UV light intensity: 100 to 1,000 mW/cm$^2$
LuxNIL® P285-U 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 /cm$^2$ x 100 to 200 sec**. Cure is done between 2 substrates or in an inert atmosphere.



Addison Clear Wave Coatings, Inc., 3555 Legacy Blvd, St. Charles, IL 60174 USA
Tel: +1 630-444-1658, AddisonCW.com