



LuxNIL® P73

High refractive index UV curable dispersion in PGMEA

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

PRODUCT DESCRIPTION:

- LuxNIL P73 is an UV-curable inorganic-organic dispersion in PGMEA that is suitable for AR/VR/MR applications.
- Base chemistry: Inorganic nano particles in acrylate binder.
- Nano particles size: 10 nm
- **PRODUCT USE:**
- Diffractive Optical Elements (DOE)
- AR/VR/MR
- Nano-Imprint Lithography (P-NIL)

P73 has excellent reliability performances:

Property	Time Zero	1,100 hours at 85°C/85%RH
n_{405}	1.793	1.858
n_{589}	1.728	1.773
Transmission*	90.2%	88.4%
Haze*	0.0%	0.5%
Clarity*	99.9%	99.8%

*1.0 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 required.

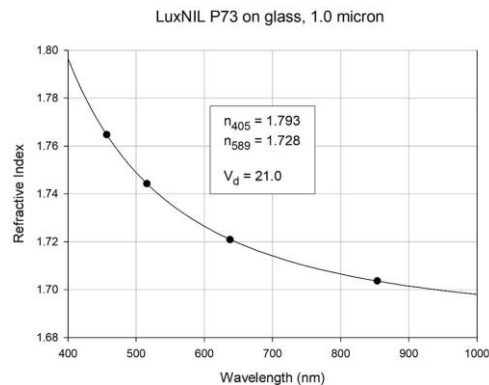
TYPICAL PROPERTIES

Uncured resin

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)	
@405 nm	1.79
@ 589 nm	1.73
Abbe No (V_d)	21
Clarity (%)	99.9
Haze (ASTM D1003), 1 micron thickness	0%
Operating temperature, °C :	-40 to 100
Refractive index vs wavelength	

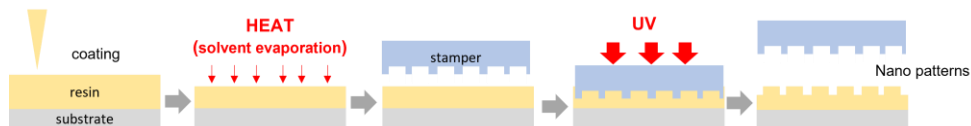


APPLICATION NOTES:

PROCESS:

- 1) Coating step for film forming: LuxNIL® P73 is used as a nano imprint lithography resin or as a coating resin. LuxNIL® P73 can be applied by spin coat, roll coat, ink-jetting, etc.
- 2) Solvent removing step: after coating, heat is applied at 70 to 80 °C for 30 to 90 sec to remove PGMEA
- 3) Nano-imprint-lithography: replication of nano features with a stamper is conducted
- 4) UV cure: UV cure to fix the nano features
- 5) Stamper is removed

Coating thickness for LuxNIL® P73: 100 to 3000 nm



PRE-CURE (for solvent removal): 70 – 80 °C for 30 – 90 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

LuxNIL® P73 should be cured between two substrates or in an inert atmosphere. If cured in air, the integrity of the film is reduced.

RECOMMENDED UV DOSE (mJ/cm²): 300 to 500 mJ/cm² LuxNIL® P73 is required to be cured between stamper and substrate.

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