

Turbulence Phase Plates

Lexitek's Turbulence Phase Plates are a unique product for adaptive optics (AO) systems engineering. Since wavefront sensor and deformable mirror degrees of freedom are expensive, most systems operate in a regime where system performance is a sensitive function of the wavefront aberration, especially for atmospheric propagation. The most accurate way to engineer, test and validate AO system performance is with well-characterized wavefront aberrators in the laboratory. Lexitek's Near-Index-Match™ pseudo-random phase plates offer that capability to the AO system engineer. Multiple phase plates with varying strengths can simulate distributed turbulent layers, each with its own pseudo-wind.

Phase plates are made of a sandwich of CNC machined acrylic and cast optical polymer. The surface is machined with the design optical path difference (OPD) scaled by $1/\Delta n$. Optical windows with AR coatings are typically bonded to the sandwich for improved surface quality and parallelism.

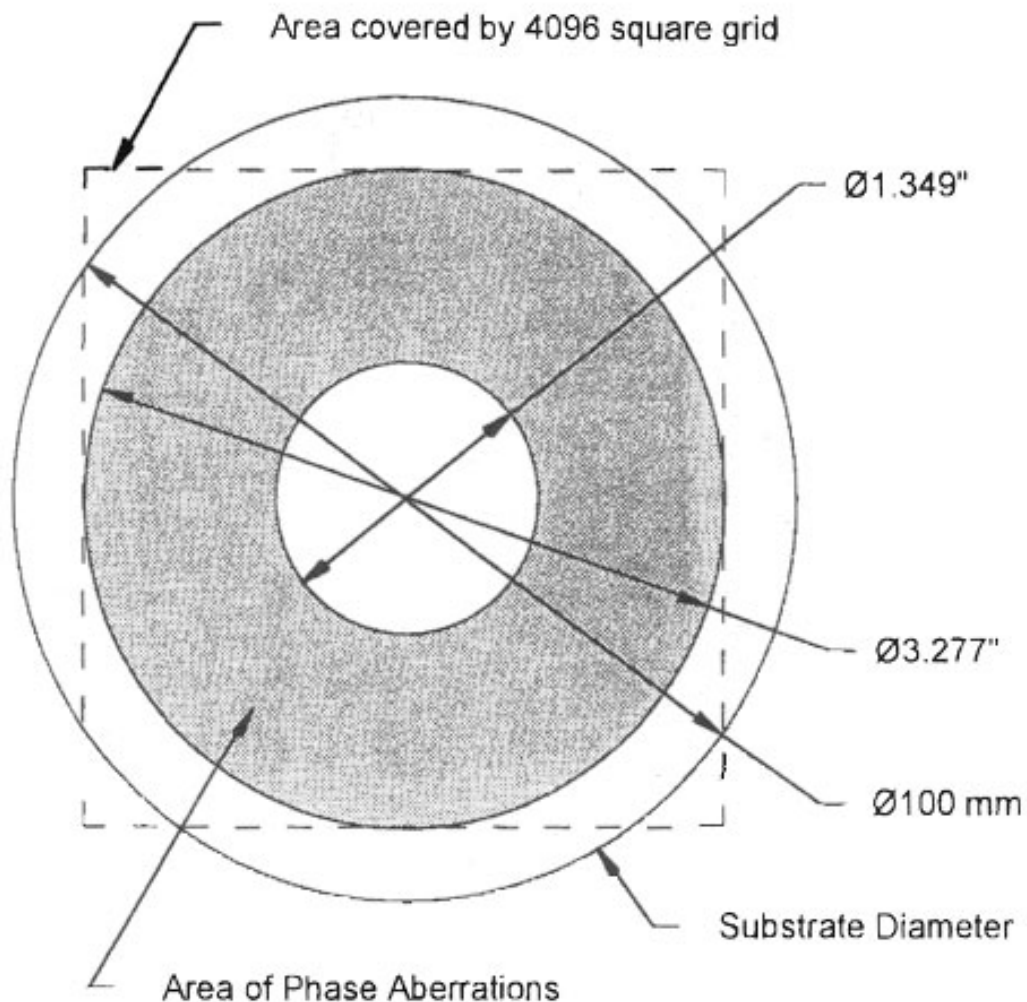
SPECIFICATIONS

- Transmission from 400-1600 nm
- Dimensions to 300x150mm, 150mm diameter
- Continuous phase surfaces machined with ball end mill, typically 1/32" diameter
- Discontinuous phases with flat end mill
- Surface height step 1.2 μm , 5 μm accurate
- Δn range 0.01-0.05
- Phase specified by numerical array provided by the customer or designed by Lexitek to your specifications (e.g., r_0 in mm)
- Unique phase for each part at no extra charge

TYPICAL PARAMETERS

- Continuous surface with BK7 windows
- 100 mm diameter, 83 mm active area
- 22 mm thickness
- 4096x4096 phase array
- ~20 μm phase grid
- $\lambda/10$ external surfaces
- Broadband AR coating <0.6% reflection
- 15 arcsec parallelism, 30 arcsec max
- OPD step 0.02 μm , 0.09 μm accurate
- OPD range 5-30 μm (min-max)

Lexitek, Inc.



Geometry of a standard 100 mm diameter phase plate.

Lexitek has supplied turbulence phase plates to university researchers, aerospace companies, and government laboratories. Typical turnaround from receipt of order to shipment is 4-6 weeks.

Related products: LS-100 Motorized Rotary Stage, Stepper Motor Controller

Please consult us if your requirements call for different specifications or if you need custom engineering of this product or related products.

LEXITEK Inc.

14 Mica Lane #6, Wellesley, MA 02481-1708

Tel: (781) 431-9604 Fax: (781) 431-9605

www.lexitek.com