



# Wafer-Level Optic Solutions

## Applications

- Micro-optics and substrates
- Refractive and diffractive optical elements (ROEs & DOEs)
- 3D sensors, optics, spacers, heat sinks, and camera optics
- Beam shaping elements
- Homogenizers and optical sensors
- RF components
- Nanoimprint lithography substrates
- Hard disk masters and molds
- Blazed-wavelength and sub-wavelength diffraction gratings

## Benefits of Corning Wafer-Level Optic Solutions

- Various melting and forming methods enable significant volume supply of high-precision wafers with lowest thickness variation: part to part and batch to batch
- Compatible with wafer-level optic and semicon manufacturing processes and legacy equipment and tools
- Supporting capabilities include ceramics, automated laser glass-cutting, photostructuring, bonding, dicing, and coatings
- Best-in-class metrology minimizes reliability risks and enables fine resolution data across the full wafer
- Fracture mechanics glass strength experts available to train and consult on many applications

## Multiple Compositions\* for Diverse Applications

Glass/CTE	Abbe Value $v_D$	Refractive Index $n_D$
SG 0.5	67.8	1.459
SG 5.1	65.0	1.487
SG 7.1	60.7	1.492
SG 7.8	61.7	1.496
SG 3.4	62.7	1.510
SG 3.6	62.7	1.510
SG 8.2	64.2	1.517
SG 9.3	58.9	1.523
SG 9.5	57.1	1.523
SG 3.8	61.9	1.523
SG 3.7	61.1	1.527
SG 9.0	55.6	1.530
SG 10.0	41.6	1.601

\*Active glasses shown here; Others available upon request

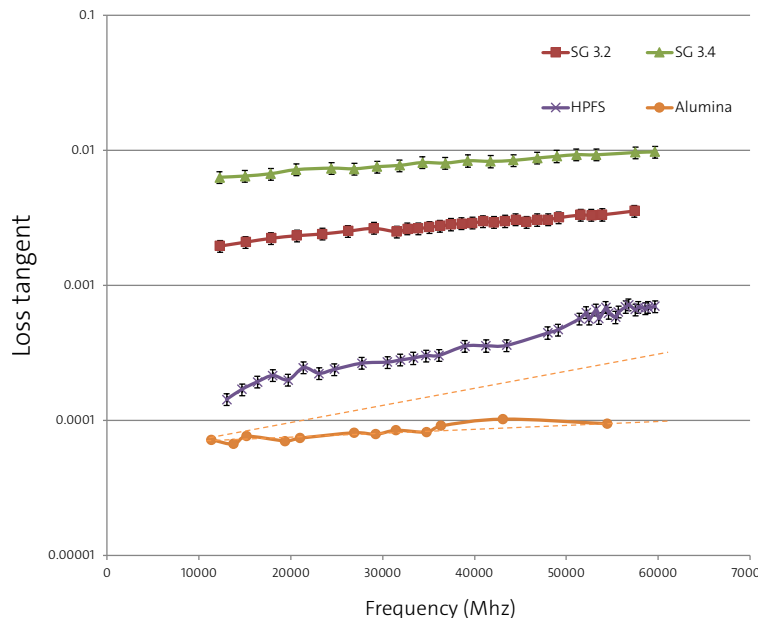
## Material Properties and Attributes

- Diameters: 100/150/200/300 mm
  - Diameter tolerance\*: +/- 0.200 mm
  - Thickness range: 0.10-5.0 mm
  - Thickness tolerance\*: +/- 0.020 mm
  - Available upon request: Various sizes/shapes/features, semi notch/flat specifications, laser serialization, laser processing, structuring, holes, bonding, coatings
  - Large volume capacity: up to 60k WPM
  - Typical lead-time: 2-12 weeks
  - Polish scratch/dig: 20/10 to 80/50 per military spec
  - World-class Tropel® FlatMaster® MSP metrology
- \*Other tighter tolerances available upon request

## Typical Properties and Attributes

TTV	$\leq 1 \mu\text{m}$ to $\leq 5 \mu\text{m}$
Bow	$\leq 5 \mu\text{m}$ to $\leq 30 \mu\text{m}$
Warp	+/- $20 \mu\text{m}$ to $\pm 40 \mu\text{m}$
Surface roughness (Ra)	$\leq 10 \text{\AA}$
SORI	$\leq 0.5 \mu\text{m}$ to $\leq 1.5 \mu\text{m}$

## Low-loss, High-frequency Electrical Performance



Precision Glass  
Solutions

CORNING

Superior  
Standards

## Wafer-Level Optic Solutions

Corning's unique combination of capabilities enable customizable solutions for emerging 3D sensing applications.

Corning works closely with customers to identify the ideal set of solutions for wafer-level optics applications. We offer multiple glass and ceramic compositions, various coatings, bonding and structuring techniques, and world-class measurements to provide our customers with optimized solutions for wafer-level optic applications.

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