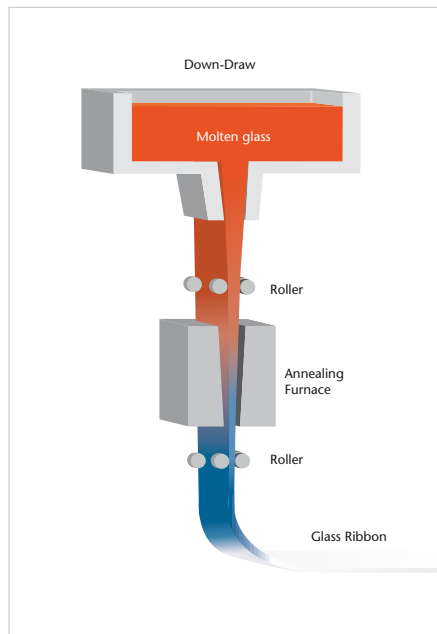


# Ultra-Thin Glass for Electronics Applications

SCHOTT is offering a portfolio of glass types in the thickness range of 25–210 µm

## Product Information

SCHOTT ultra-thin glass is available in different glass types with different chemical and physical properties. It is produced with the untouched surface of our continuous down-draw process.



## Supply Formats and Geometrical Tolerances

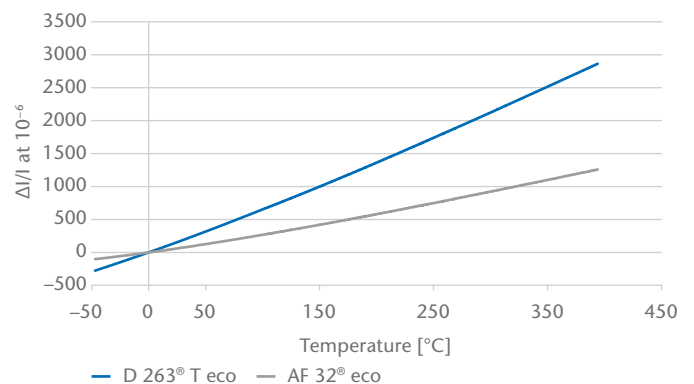
Thickness	25, 30, 50, 70, 100, 145, 175 and 210 µm
Sheet size	up to 500 x 500 mm <sup>2</sup>
Wafer size	50, 100, 150, 200 and 300 mm Ø
Surface roughness Ra	< 1 nm
Total thickness variation	≤ 5 µm
Thickness tolerance	± 10 µm
Format tolerance	± 200 µm

## Applications

- Semiconductor IC Packaging and 2.5D Interposer
- Electronic and Optical Sensors
- Energy Storage Devices
- Organic Electronics incl. Oxygen and Moisture Barrier
- High Strength, Scratch Resistant Touch & Cover Glass

Mechanical Properties	D 263® T eco	AF 32® eco
Density	2.51 g/cm <sup>3</sup>	2.43 g/cm <sup>3</sup>
Knoop hardness	470 @ 0.1/20	580 @ 0.1/20
Young's modulus	72.9 KN/mm <sup>2</sup>	74.8 KN/mm <sup>2</sup>

## The CTE of AF 32® eco and D 263® T eco Over Temperature



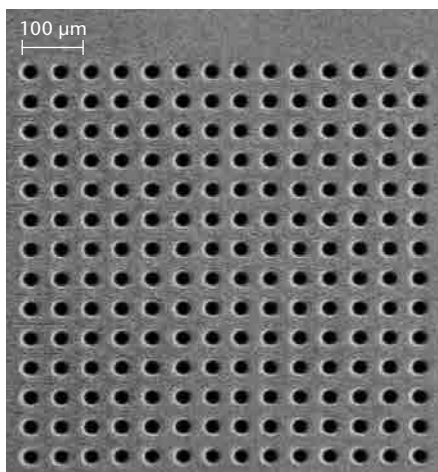
**SCHOTT**  
glass made of ideas

Thermal Properties	D 263® T eco	AF 32® eco
Tg	557°C	717°C
CTE (20°C – 300°C)	7.2 10 <sup>-6</sup> · K <sup>-1</sup>	3.2 10 <sup>-6</sup> · K <sup>-1</sup>
Thermal conductivity	1.06 W/mK @ 90 °C	1.16 W/mK @ 90°C

Electrical Properties	D 263® T eco	AF 32® eco
Dielectric constant ε <sub>r</sub>	6.7 @ 1 MHz	5.1 @ 1 MHz
	6.4 @ 1 GHz	5.1 @ 1 GHz
	6.3 @ 5 GHz	5.1 @ 5 GHz
Dissipation factor tan δ	0.006 @ 1 MHz	0.003 @ 1 MHz
	0.007 @ 1 GHz	0.004 @ 1 GHz
	0.010 @ 5 GHz	0.005 @ 5 GHz

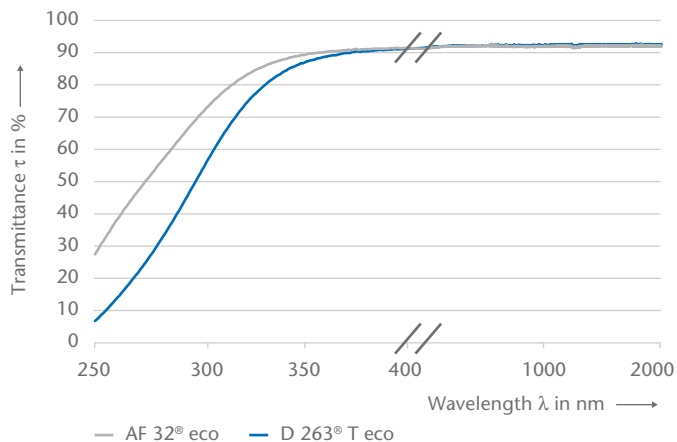
Chemical Properties	D 263® T eco	AF 32® eco
Glass type	Borosilicate	Alumino-borosilicate
Hydrolytic resistance	HGB 1	HGB 1
Acid resistance	S2	S4
Alkaline resistance	A2	A3
Alkaline free	no	yes

**Examples of Competencies to Modify Ultra-Thin Glass Structuring by Laser or Powder Blasting to generate vias or microchannels**



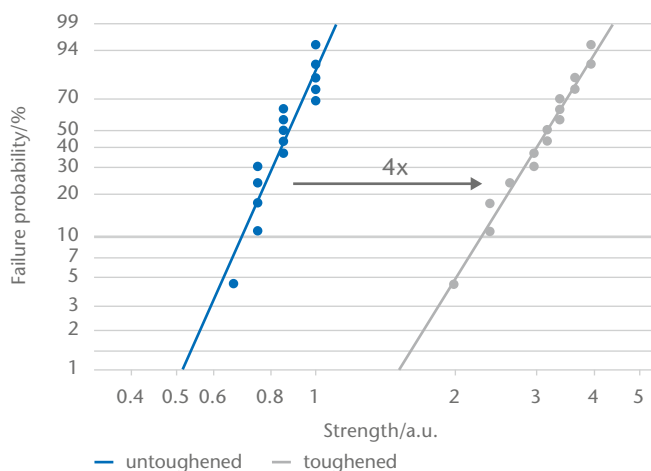
Example: laser structuring of SCHOTT AF 32® eco, 100 μm thickness, via diameter: 30 μm, pitch: 50 μm

**Optical Properties AF 32® eco and D 263® T eco**

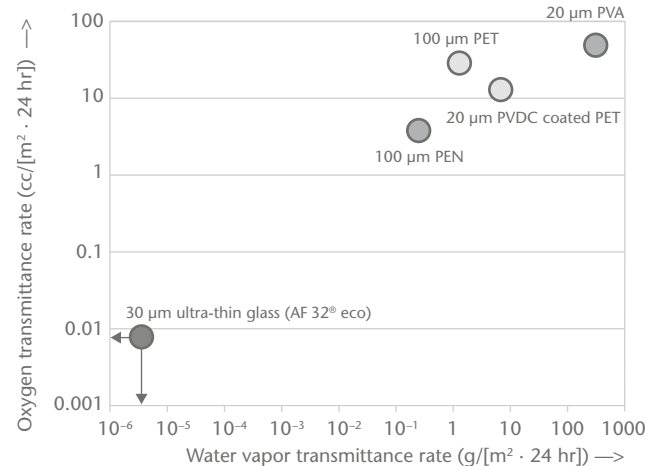


**Chemical Strengthening**

By chemical toughening the edge strength of D 263® T eco can be increased by a factor of 4



**Gas Barrier Properties of Ultra-Thin Glass**



Advanced Optics  
 SCHOTT North America, Inc.  
 400 York Avenue  
 Duryea, PA 18642  
 USA  
 Phone +1 570/457-7485  
 Fax +1 570/457-7330  
 info.optics@us.schott.com

www.us.schott.com/advanced\_optics

