

Low Reflection and Non-Glare Glass Solutions

Displays • Touch Panels • 2D-3D Scanners • Image Sensors

Glass Fabrication



Coating Deposition



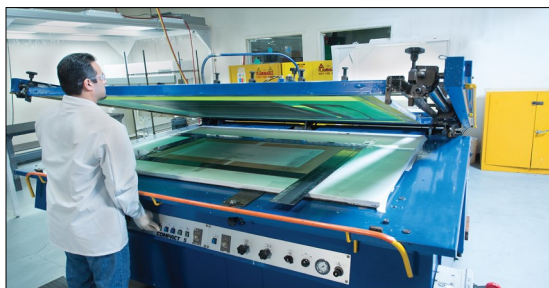
CNC Machining



Strengthening - Chemical & Heat



Screen Printing of Graphics



Abrisa Technologies, a member of HEF Photonics, is a globally recognized technology glass fabrication and optical thin film coating company with expertise in high volume manufacturing and engineering capabilities, delivering Total Solutions that provide excellent performance, fitness-for-use and economies of scale.

Our US based, state-of-the-art ISO 9001:2015 and ITAR registered facilities include Abrisa Industrial Glass in Santa Paula, CA and ZC&R Coatings for Optics in Torrance CA. These two divisions produce solutions from cut-to-order coated glass components to custom complex and ready-to-install fabricated, strengthened, optically coated, electronically enabled and branded sub-assemblies.

Our Total Solutions serve a variety of markets including Micro-Electronics, Defense and Avionics, Display, Industrial Automation, Optical Sensors, Imaging, Photonics, Medical & Dental, Life Science and more.



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Your Total Solution Partner

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Abrisa Technologies offers an expanded range of standard stock non-glare (NG), anti-reflection (AR) and anti-reflection coated non-glare (NG/AR) glass and custom solutions, ready to be fabricated to your exact specifications. The display designer and integrator now have 3 options from which to choose to best suit their needs for reduced reflection and glare, throughput efficiency for display brightness, and for maintaining image quality.

Ready-to-Fabricate Sheet Sizes Up To: 78" x 46"

Standard Non-Glare (NG) Soda Lime Glass

- 60 Gloss (Thicknesses 1.1, 1.9, 3.0mm)
- 90 Gloss (Thicknesses 1.1, 1.9, 3.0mm)
- 120 Gloss (Thicknesses 1.1, 1.9, 3.0mm)

Options for Non-Glare (NG) Glass

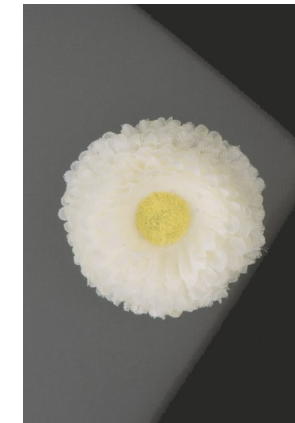
- 1 or 2 Sides NG
- Additional Values from 60 to 130 Gloss
- Anti-Reflection Coating, 1 or 2 Sides
- Low Iron, Low Sparkle
- HIE™ Aluminosilicate

AR Coated Sheet Sizes Up To 126" x 88"

- R < 0.5% Photopic (Thicknesses 0.7 to 3.0mm)

Options for Anti-Reflection (AR) Glass

- 1 or 2 Sides AR
- Oleophobic/Hydrophobic
- Low Expansion – SCHOTT Borofloat®
- Non-Alkaline – Corning® Eagle XG®
- Thin Glass – SCHOTT D263®, AGC EN-A1
- HIE™ Aluminosilicate - SCHOTT AS 87, Corning® Gorilla® Glass, AGC Dragontrail™

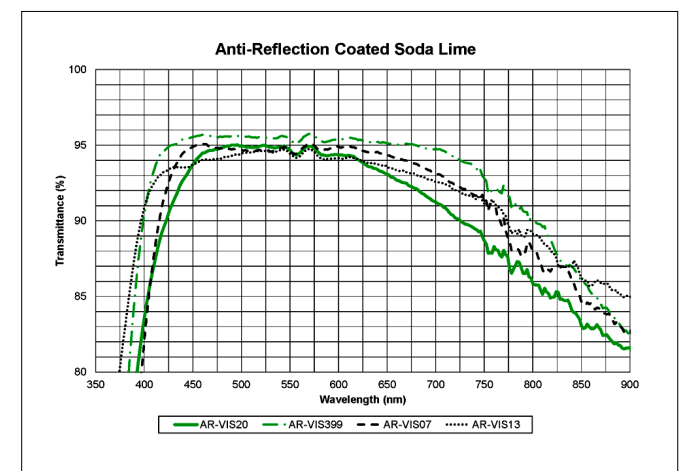
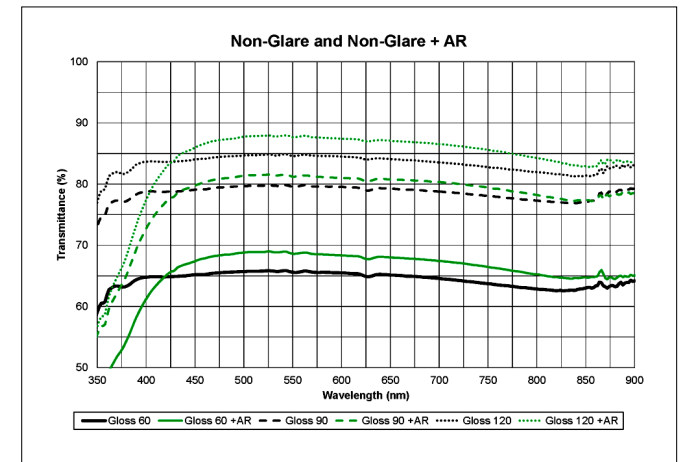


Bare Glass,
>4% Reflection



AR Coated Glass,
<0.5% Reflection

Throughput Efficiency - Transmission



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Benefits of Non-Glare (NG) Anti-Reflection (AR) Glass and NG/AR Glass

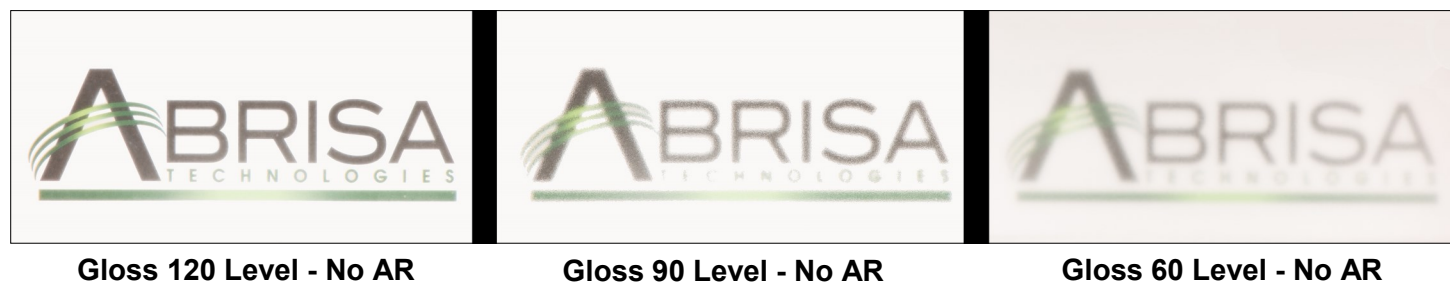
Anti-Reflection (AR) coated glass helps diminish surface reflections while increasing light throughput or brightness of the viewed image over moderate wavelength and angular ranges. Standard AR coated glass is not diffusive and is therefore able to maintain the highest levels of image resolution and clarity

Non-glare (NG) glass is etched to produce uniform and evenly diffusive surfaces that disperse reflected light, preventing glare even at extreme angles. The lower the gloss level, the more diffusive the surface and the less glare but with some sacrifice of resolution and throughput efficiency of the viewed image. Anti-reflection coated NG glass (NG/AR) combines a bit of both; improvement of throughput efficiency, reduction in photopic specular reflectance of NG glass alone and retention of diffusive surfaces for reduced glare over large angles. Abrisa Technologies offers all 3 options and custom solutions to fit your needs.

Comparison of Non-Glare (NG) and Anti-Reflection (AR) Glass ✓ Best Performer

Performance Feature	Non-Glare Soda Lime Glass	AR Coated Non-Glare Soda Lime	AR Coated Soda Lime
Throughput	Reduced throughput	Moderate throughput	Enhanced throughput ✓
Viewing Angle	Large angle 0 - 60° performance ✓	Good 0 - 30°, moderate @ 45°	Good 0 - 30°, custom for 0-50°
Reflectance per Side (Photopic Specular)	Typical 6 - 8% for 1 side NG	Typical 0.25 - 0.75% for 1 side NG ✓	Ravg < 0.5%
Spectral Usage Range	Photopic and 340 - 1800nm ✓	Photopic and 425 - 900nm	Photopic, 425 - 725nm and custom
Clarity and Resolution	Clarity trade-off by gloss level	Some trade-off by gloss level ✓	Retains clarity and resolution
Ghosting	Minimizes ghosting seen ✓	Minimizes ghosting seen ✓	Ghosting limited by % reflection
Touch Glide	Enhances "glide" response ✓	Enhances "glide" response ✓	Similar to uncoated glass
Material Availability	Soda lime, low iron, low sparkle	Soda lime, low iron, low sparkle ✓	On soda lime, low iron, low sparkle custom coating available
Strengthening	Chemical strengthening and heat tempering	Chemical strengthening and heat tempering before coating ✓	Specialty HIE™ chemical strengthening and tempering before coating

Image Comparison of Various Non-Glare (NG) Solutions



Gloss 120 Level - No AR

Gloss 90 Level - No AR

Gloss 60 Level - No AR

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Photopic Specular Reflectance for AR, NG and NG/AR Soda Lime Glass

