

Low Reflection and Non-Glare Glass Solutions

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

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™

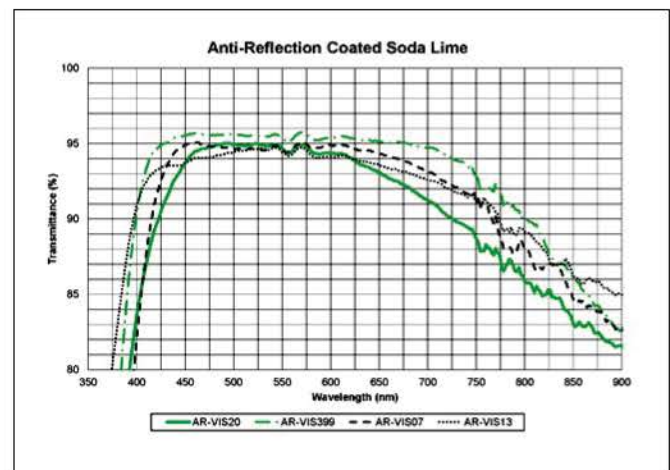
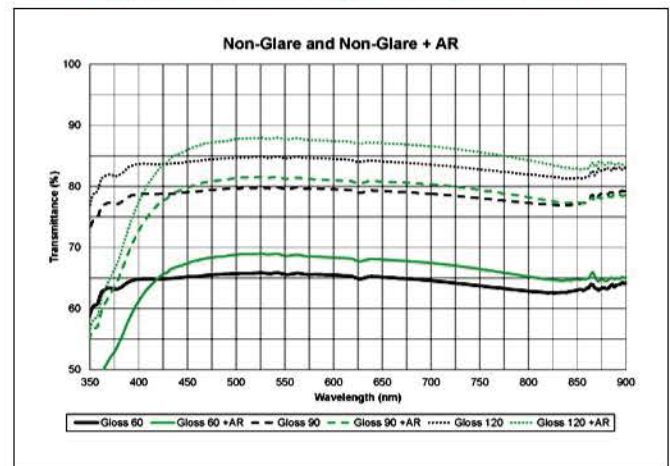


**Bare Glass,
>4% Reflection**



**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

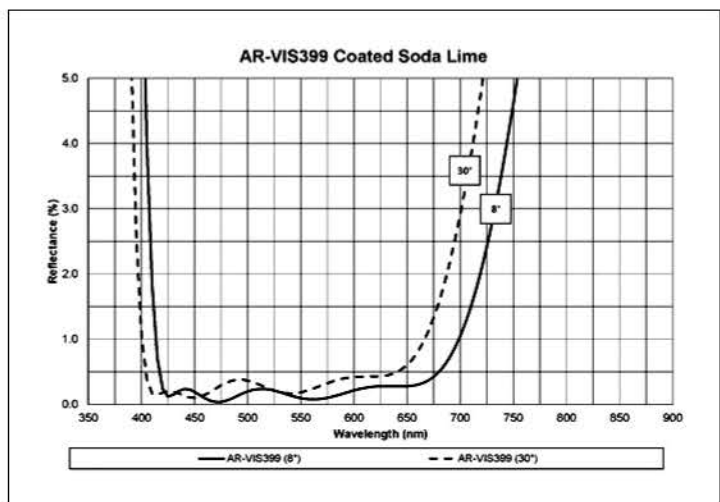
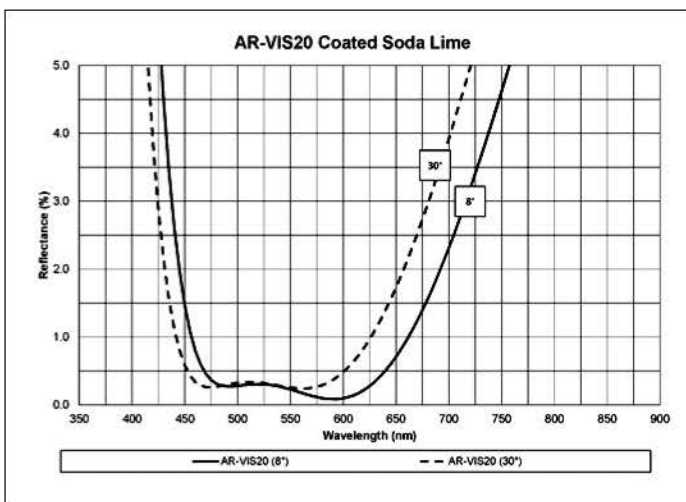
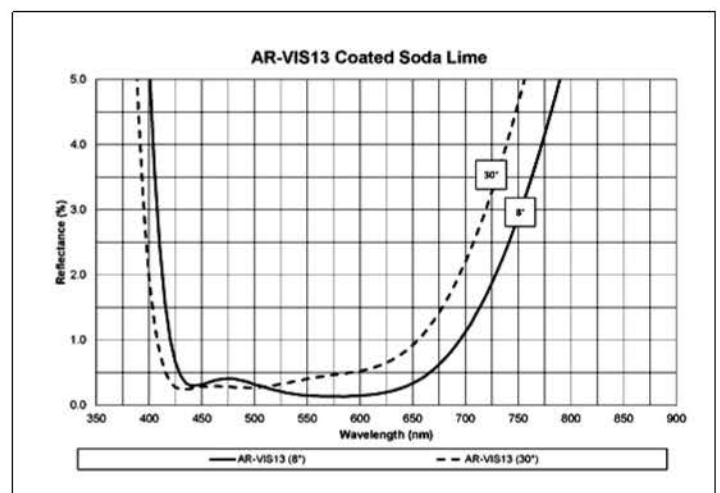
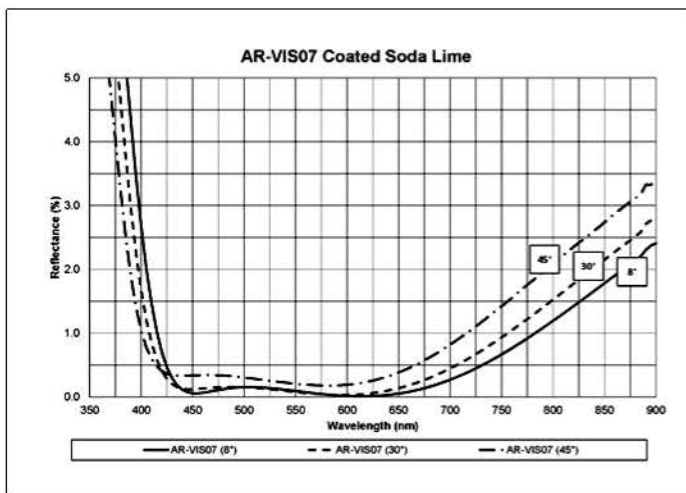
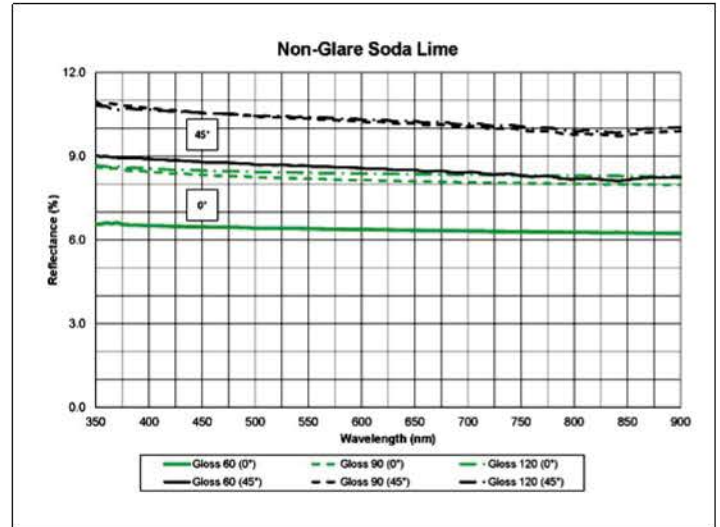
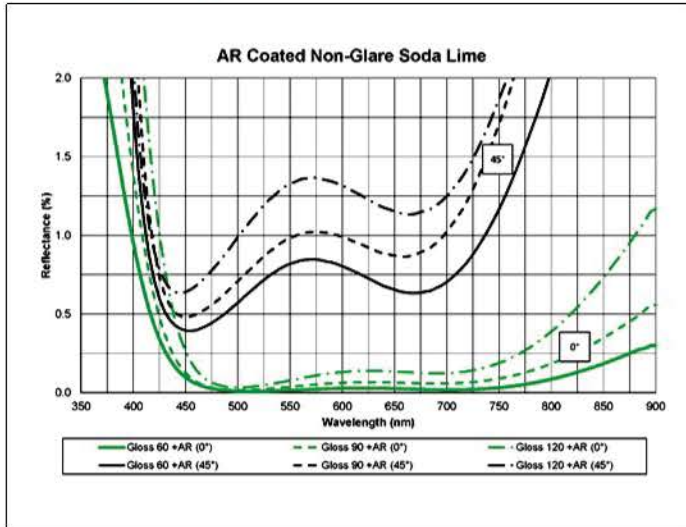
Gloss 90 Level - No AR

Gloss 60 Level - No AR

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



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Glass Fabrication



Coating Deposition



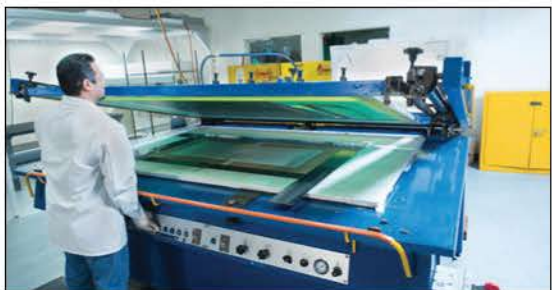
CNC Machining



Strengthening - Chemical & Heat



Screen Printing of Graphics



Abrisa Technologies is a recognized global supplier of high quality, fabricated glass components, optical thin film coatings, and custom glass solutions for a wide variety of industries.

US based, Abrisa Industrial Glass fabrication facility in Santa Paula, CA and ZC&R Coatings for Optics facility in Torrance, CA serve diverse industries such as microelectronics and displays, semiconductor, military, automotive, aerospace, medical, biomedical and scientific R&D.

We provide custom specialty flat glass and coating products for applications such as: flat panel display, touch and gesture recognition; visible to IR imaging and surveillance; entertainment, indoor and outdoor lighting; advanced instrumentation; and photonics.



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