

CleanVue™ PRO - Oleophobic/Hydrophobic Coatings

Vehicles • Displays • Windows • Panels • Portables

Glass Fabrication



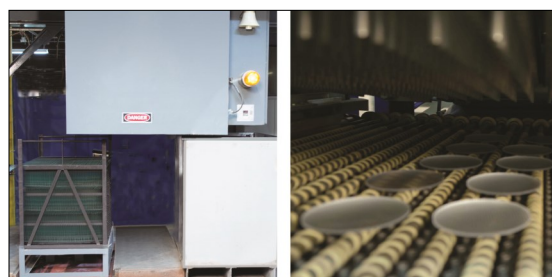
Coating Deposition



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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CVP 10_22



Your Total Solution Partner

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Clear Protective Coatings for Coated and Uncoated Glass and Ceramics

The CleanVue™ PRO Series of Protective, Repelling and Oleophobic products are optical abrasion resistant coatings that repel dirt, dust, water, grease and oil to enhance display glass performance and longevity. The resulting coated surfaces are easy-to-clean and maintain, do not stain, allow repeated removal of fingerprints, all while maintaining their optical properties.

The PRO-AR399 is a severe abrasion resistant coating from this series, with anti-reflective performance of < 0.5% photopic reflectance. It is ideal for harsh and heavy use environments and enhanced glass performance and longevity.

PRO-AR399 Key Benefits include:

- **Optically Clear:** Provides mechanical protection and repelling properties while achieving < 0.5% photopic reflection and high throughput.
- **Resistant to Severe Abrasion and Scratches:** Low coefficient of friction makes it rugged and durable, protecting the surface from scratches even in harsh or frequent use environments.

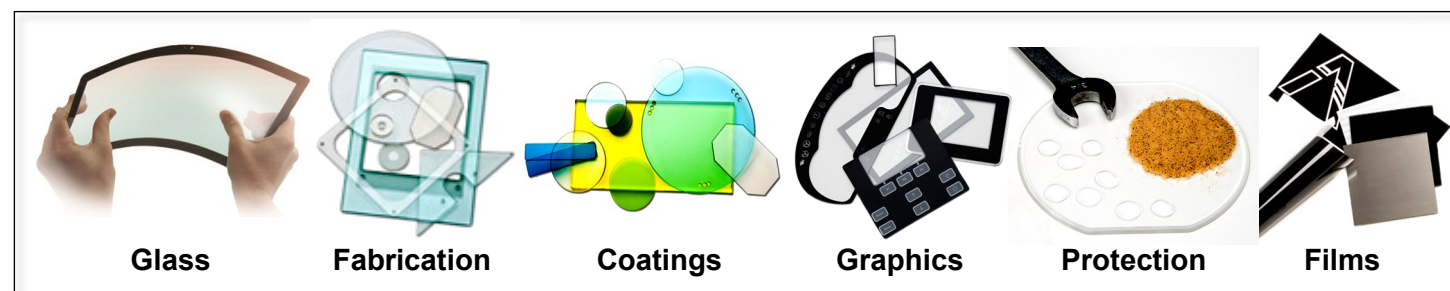


No Coating

PRO-AR399 Coated

- **Easy-to-Clean:** Non-stick surface resists picking up dust and dirt contamination from the surrounding environment and is easy to clean and maintain.
- **Fingerprint & Smudge Resistant:** Oil resistant (Oleophobic) coating reduces adherence of finger-prints and smudges to help maintain pristine image quality even after repeated cleaning.

The CleanVue™ PRO Series by Abrisa Technologies is ideal for industrial and commercial needs of OEMs (original equipment manufacturers) and CMs (contract manufacturers) where glass as soda-lime float, Borofloat®, mixed alkali silicate or fused silica are specified in heavy use or harsh environments.* CleanVue™ PRO products can be applied to substrates as thin as 0.2mm, and thicker than 100mm.



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Test Conditions for PRO-AR399: Test results are characterized by the retained water contact angle (WCA) after each test as a percentage of its WCA before each test. Testing included thermal cycling, abrasion and salt solubility testing. Performance was also compared to that of a commercially available industry standard alternative tested under the same test conditions.

- **Optical Performance:** When compared to the industry standard alternative with a broad band average Reflection of < 0.5%, **PRO-AR399** showed superior performance, and post testing, exhibited no measurable degradation of optical performance for reflection or transmission.
- **Thermal Performance:** **PRO-AR399** showed a <5% change in its WCA over 400 hours of elevated temperature of 121°C. During heating/freezing cycles (4 hrs at 71°C followed by 4 hrs at -54°C) it again showed negligible change in WCA after 4 cycles.
- **Mechanical Performance:** **PRO-AR399** was subjected to a number of mild to harsh abrasion tests to demonstrate robustness.
 - **Cheesecloth Abrasion** Testing per ISO 9211-4: After 500,000 cycles, PRO-AR399 retained > 95% of its WCA compared to the alternative which retained < 75% of its WCA.
 - **Eraser Severe Abrasion** Testing (30cpm, 2.2lb wt) per MIL-C-675C: PRO-AR399 out-performed the industry standard sample by retaining >90% of its WCA after 40 cycles, compared to the alternative's < 80% WCA under the same conditions.
 - **Steel Wool Extra-Severe Abrasion** Testing: (60cpm, 2.2lb wt, 0000 steel wool). Only the **PRO-AR399** maintained its original high WCA level performance for well over 12,000 cycles, out-performing the industry alternative which had dropped to less than 70% WCA by 8000 cycles.
- **Salt Solubility Testing** (per MIL-PRF-13830B paragraph C.4.5.7): **The PRO-AR399** sample showed no performance degradation after 72 hours of salt solubility testing.

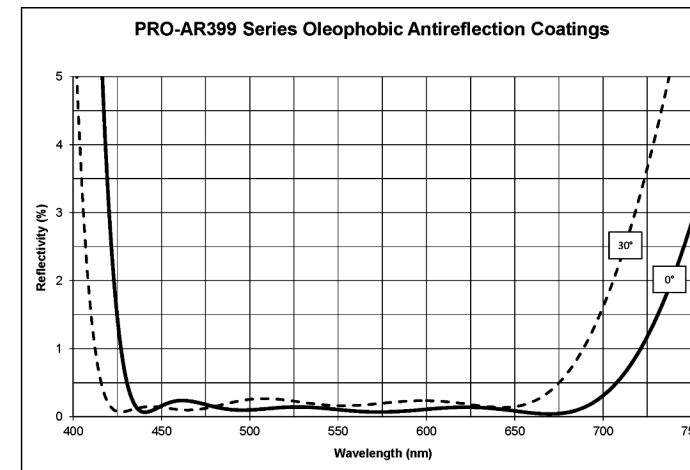
The PRO-AR399 is a more rugged and durable protection solution than the industry standard.

Abrisa Technologies' extensive testing of **CleanVue™ PRO** Series **PRO-AR399** concludes that the reflectance, transmittance, oleophobic and hydrophobic (water-repelling) and severe abrasion resistance performance of the **CleanVue™ PRO** product is superior to the performance of the industry standard alternative product and able to maintain its WCA performance for >12,000 cycles of severe steel wool abrasion testing, over twice that of the alternative.

*Not suitable for high UV exposure environments.

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Typical applications include:

- LCD cover glass
- Vehicular instrument control panels
- Control room display panels
- Projected capacitive (PCAP) touch screens
- Portable handheld devices
- Industrial equipment control panels
- Biometric measurement devices
- Public space and retail digital signage
- Teleprompter and projector optics
- Virtual reality devices
- In-flight and vehicular entertainment screens
- Indoor kiosks and dispensers

Options

Coatings:

- Custom V-Coat, Multi-band, Broadband AR
- AR Coatings to MIL-C-14806 A
- ITO/IMITO for EMI Shielding, Heater, LC Devices
- Custom SWP, LWP, Bandpass, UV & NIR Blocker
- Broad/Narrowband Scanning Mirror Coatings
- Deposition onto Filters, Silicon & Other Materials
- Autoclavable, Bio or Chemically Compatible

Substrates:

- **Fabrication to Shape & Size**
 - Cut & Seam or Circle Ground to Size & Shape
 - Precision CNC - Holes, Bevels, Steps, Notches
- **Damage Resistant Substrates**
 - HIE™ Aluminosilicates
 - AGC Dragontrail™
 - Corning® Gorilla®
 - SCHOTT AS 87
 - Chemically Strengthened Soda Lime Float
- **Low Expansion Chemically Resistant Substrates**
 - SCHOTT Borofloat® 33
- **Ultra Thin and Wafer Substrates**
 - AGC EN-A1
 - Eagle XG®
 - SCHOTT AF32, D263® & AS 87
- **Other**
 - Applied Films & Tints
 - Gasket Application
 - Edge Treatment/Blackening

Easy-to-Clean & Anti-Fog Solutions:

- Oleo/Hydrophobic Options
- ITO Heater, HTAF Anti-Fog Solutions

Graphics & Bus Bars:

- Color Matched Epoxy Ink
- Non-Conductive Ink
- High Temperature Frit Ink
- Deadfront Ink - Partially Transmissive
- Infrared IR Transmitting Ink
- Silver Epoxy, Silver Frit, CrNiAu Bus Bars