



North American Coating Laboratories Super HydroSeal® Hydrophobic Coating Technical Data Sheet

North American Coating Laboratories Super HydroSeal® Hydrophobic lens treatment is designed to create a molecular bond with a bare polymer or glass substrate or an anti-reflective coated substrate using vapor deposition technology to create a barrier against fingerprint oils, dirt, dust, grease and liquid. When coupled with North American Coating Laboratories multi-layer superior optical coating on each optical surface the Hydrophobic lens treatment and broadband anti-reflective coating reduces up to 99% of glare and reflections. Super HydroSeal® is non-acidic and allows glass to be cleaned with a wiping cloth without a cleaning solution. This oil and water repellent coating is perfect for touch screens, anti-reflective coated windows, and most substrates that will endure a high end user “handling” life cycle.

Super HydroSeal® is a fusion of oleophobic & hydrophobic treatments that shed both moisture and oils so rain, salt, and fingerprints will not leave streaks and sheens that can compromise the end users viewing experience. Droplets ball up and bead off the surface at a high contact angle giving the substrate superior water shed capabilities when compared to a non-treated substrate.

Super HydroSeal® has oleophobic characteristics which make it easier to keep treated substrates clean. Fingerprints and dust are easily wiped away without leaving residue, so the end-user will not get a blurring of the thin-film which is common to ordinary AR treated substrates.

Super HydroSeal® prevents fingerprint oils, dirt, dust and other particles from clinging to the

substrate. A substrate can carry a static electrical charge that acts like a magnet for airborne particles. Super HydroSeal® is engineered to eliminate the charge, so particles aren't attracted to the lens surface.

With these three performance features, Super HydroSeal® oleophobic and hydrophobic technology creates an invisible barrier that easily sheds rain, skin oils, fingerprints, salt, dirt and dust. The substrates are easy to clean and they stay clean longer than ordinary untreated substrates, maintaining the highest level of clarity.

North American Coating Laboratories Super HydroSeal® was rigorously tested and compared to competitive coatings. Super HydroSeal® proved to be an excellent performer through rigors such as the Ease of Cleaning Test and Real Life Simulation Test from COLTS Laboratories.

COLTS Laboratories' Ease of Cleaning Test simulates cleaning by putting the lens surface through 100 wiping cycles. Then, a piece of tape is attached to the lens. Less force required to remove the tape means better hydrophobic properties. This test also confirms the adhesion of the coating per MIL-C-675 and MIL-14806A for anti-reflective and standard interference coatings.

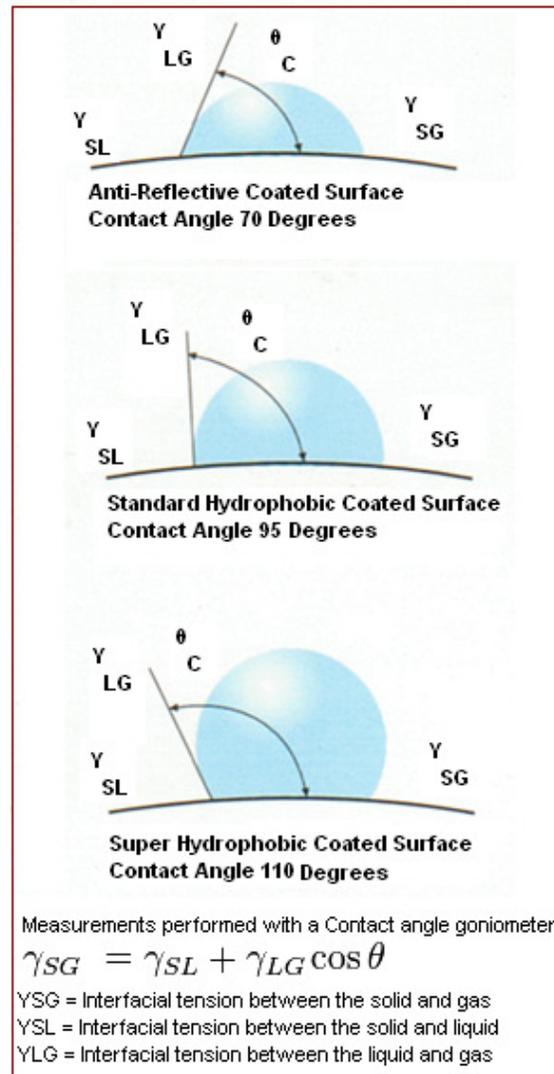
COLTS Laboratories' Real Life Simulation Test uses five tests, AR Cloth Rub, luminous transmittance and haze evaluations, the Tumble Test, and the CHOCA test, to determine the strength of coatings. Super HydroSeal® again proved to be an excellent performer when tested and compared to competitive coatings.

North American Coating Laboratories Super HydroSeal® Technical Data Sheet

North American Coating Laboratories Super HydroSeal® Hydrophobic lens treatment has also been tested and approved for the standard Military Specifications. MIL-STD 810E Method 506.3 (Rain) MIL-STD 810E Method 507.3 (Humidity) MIL-STD 810E Method 509.3 (Salt Fog) MIL-STD 810E Method 510.3 (Sand and Dust) MIL-STD 810E Method 521.1 (Icing, Freezing Rain).

As a sealing layer to a multi-layer broadband anti-reflective coating North American Coating Laboratories Super HydroSeal® Hydrophobic lens treatment also must exceed all durability requirements of: MIL-C-675C, MIL-C-14806A, MIL-C-48497A and MIL-F-48616. North American Coating Laboratories Super HydroSeal® Hydrophobic lens treatment conforms to the spectral requirements of the above listed military specifications.

The side diagram is a depiction of the contact angle achieved by North American Coating Laboratories Super HydroSeal® Hydrophobic lens treatment. These measurements are performed using a contact angle goniometer and calculations are tabulated via Thomas Young's qualitative theory of surface tension which expresses the contact angle analytically.



North American Coating Laboratories provides specialized optical coatings for a wide variety of customers in both the polymer and glass optics markets. Our specialized knowledge and experience in both dip-applied and vacuum-applied processes make NAACL one of the most respected and trusted organizations in the optical coatings field. Our coating competencies include Protective, Scratch-resistant, Reflective, Anti-reflective, Hydrophobic, Filter, Conductive, ITO, and Chemically Resistive coatings. North American Coating Laboratories is certified to ISO 9001:2000 quality standards and has been in business since 1974.

Currently North American Coating Laboratories services clients in the automotive, aeronautic, consumer electronic, military, medical, and ophthalmologic fields as well as many others. Our customers range from high end sunglass manufacturers to military attack planes. Because of the ubiquitous nature of our technology we are able to add value and increase the performance of virtually any optical element that light passes through or that images are viewed through.

For more information on North American Coating Laboratories Super HydroSeal® Hydrophobic lens treatment please contact North American Coating Laboratories at 866-216-6225, or visit our website at www.nacl.com.