



North American Coating Laboratories Diamond-Like Carbon Coating Technical Data Sheet

North American Coating Laboratories Diamond-Like Carbon (DLC) coating is a super-hard and low friction coating of an amorphous form of carbon material with diamond bonds. Amorphous carbon is a material with properties that closely resemble those of a natural Diamond.

DLC coatings are widely used in environments where friction and abrasion to the base substrate is of primary concern. DLC coatings render most types of glass “scratch proof” due to their ability to create a hard, low friction, scratch resistant surface. Some typical applications are Barcode scanner windows, laser optics, optical mirrors, and infrared windows.

DLC coatings also offer benefits to optics that are deployed in extremely harsh environments where salt, sulfur dioxide, and acidic or corrosive spray is present. Because DLC is a chemically inert coating its resistance to chemicals and ability to form a hermetic barrier lends it to numerous medical applications, along with camera applications where glass lenses are exposed to harsh conditions.

In addition to these mechanical performance features, DLC coatings are inherently hydrophobic meaning they create 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 their clarity.

Ideal Diamond-Like Carbon Applications

- ✓ High wear surfaces
- ✓ Cutting tools
- ✓ Bar-code scanner windows
- ✓ Mold inserts
- ✓ Bio-medical applications
- ✓ Packaging

North American Coating Laboratories Diamond-Like Carbon (DLC) was rigorously tested and compared to competitive coatings. North American Coating Laboratories Diamond-Like Carbon (DLC) coating proved to be an excellent performer through rigors such as Vickers Hardness Test, as well as numerous Military Specification tests. For a full list of tests and results please see page #2 of this data sheet.

Another potentially beneficial characteristic of North American Coating Laboratories Diamond-Like Carbon (DLC) coating is deposited at or near room temperature, making it an ideal protective coating for substrates with a low threshold for exposure to high heat.



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North American Coating Laboratories Diamond-Like Carbon (DLC) coating has been tested and approved for the standard Military Specifications.

- Adhesion** -MIL-C-48497A, Par. 4.5.3.1
- Humidity** -MIL-C-48497A, Par. 4.5.3.2
- Abrasion** -TS1888, Par. 5.4.3
- Salt Spray** MIL-C-675C, Par. 4.5.9
- Solubility** TS1888, Par. 5.2.2.1

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 NACL 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 Diamond-Like Carbon coating please contact North American Coating Laboratories at 866-216-6225, or visit our website at www.nacl.com.

Diamond Like Carbon Material Properties	
Hardness (Vickers)	1,000-3,000 (formulation dependent)
Friction	<0.1 (as-deposited)
Max. Working Temp.	500 °C
Deposition Temp.	<50 °C
Chemical Resistance	Inert
Coating Finish	Identical to substrate
Refractive Index	1.5-2.1 (depending upon formulation/substrate)