

Diamond-like Carbon Films (DLC)/ High Efficient Antireflection (HEAR)

Part Number: DLC-AR-Ge-8-12

Description: Hydrogenated diamond-like coatings (DLC) are used when the environmental conditions are considered harsh. It provides the toughest coating surface available in optics.

Substrate Material: Ge

Polarization: Averaged polarization (S+P) / 2

Spectral range: 8-12 μ m (LWIR)

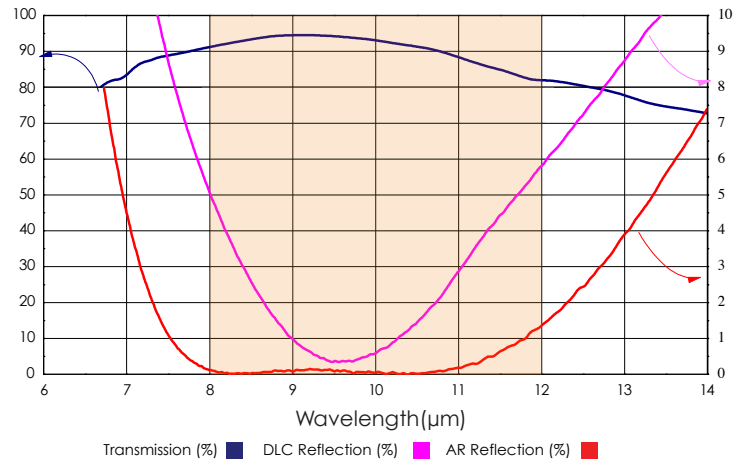
Averaged Reflectance: Averaged Reflectance in entire spectral range (Ravg)

Maximum Reflectance or transmission: Maximum Peak in entire spectral range (Rmax. or Tmax.)

Minimum Reflectance or transmission: Minimum Peak in entire spectral range (Rmin. or Tmin.)

Measurement: Transmission on 25.4mmdia. x 1mm thick window and reflectance on 6-8 degrees 25.4mm dia. wedged witness sample

Coating Material: Non-radioactive material to be used.



1. DLC AR 8-12 μ m on External Surface

| ITEM | CONDITION | REQUIREMENT |
|---------------------------------|---|---|
| 1.1 Reflectance | 0-15° AOI | Ravg \leq 3.0% and Rmax \leq 8% per surface |
| 1.2 Transmission | 0° AOI | Tavg \geq 90.0% and Tmin \geq 80% on DLC/HEAR |
| 1.3 Humidity | 24hrs, 95-100%RH, 120+/-4°F | MIL-F-48616 / MIL-C-48497C |
| 1.4 Temperature | -80°F to 160°F for 2 hrs at each temperature | MIL-F-48616 / MIL-C-48497C |
| 1.5 Solubility and Cleanability | Immersion test in Acetone and Alcohol for 1 hour instead of using Trichloroethylene | MIL-F-48616 / MIL-C-48497C |
| 1.6 Adhesion | Adhesion (Cellophane tape test with quick removal) | MIL-F-48616 / MIL-C-48497C |
| 1.7 Abrasion | Severe abrasion (20 cycles under 2 lb force) | MIL-F-48616 / MIL-C-48497C |
| 1.8 Salt fog | 72hrs+ | MIL-STD-810C, Para 509.1 |
| 1.9 Wind screen wiper test | In a mixture of sand and water. For 5min at 1000 rpm | TS 1888 , Para 5.4.3 |

2. HEAR 8-12 μ m on Internal Surface

| ITEM | CONDITION | REQUIREMENT |
|---------------------------------|---|----------------------------|
| 2.1 Reflectance | 0-15° AOI | Ravg \leq 0.5% |
| 2.2 Humidity | 24hrs, 95-100%RH, 120+/-4°F | MIL-F-48616 / MIL-C-48497C |
| 2.3 Temperature | -80°F to 160°F for 2 hrs at each temperature | MIL-F-48616 / MIL-C-48497C |
| 2.4 Solubility and Cleanability | Immersion test in Acetone and Alcohol for 1 hour instead of using Trichloroethylene | MIL-F-48616 / MIL-C-48497C |
| 2.5 Adhesion | Adhesion (Cellophane tape test with quick removal) | MIL-F-48616 / MIL-C-48497C |
| 2.6 Abrasion | Moderate abrasion(25 cycles under 1 lb | MIL-F-48616 / MIL-C-48497C |

For Reference Only

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