

# High Durability AR (HDAR)/ High Efficiency AR (HEAR)

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

**Description:** Xtreme Hi-Dur BBAR coatings withstand humidity, salt fog, and severe abrasion and are an alternative to DLC in situations where passing the windshield test is not required.

**Substrate Material:** Ge

**Polarization:** Averaged polarization (S+P) / 2

**Spectral range:** 8-12 $\mu$ m (LWIR)

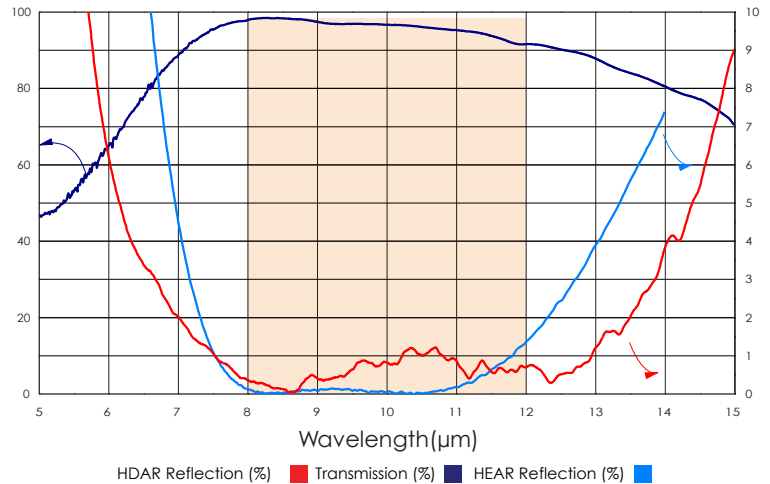
**Averaged Reflectance:** Averaged Reflectance in entire spectral range (Ravg)

**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 thru 25.4mm dia. 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. HDAR 8-12 $\mu$ m on External Surface

ITEM	CONDITION	REQUIREMENT
1.1 Reflectance	0-15° AOI	Ravg ≤ 1.5%, Rmax ≤ 2.0% per surface
1.2 Transmission	0° AOI	Tavg ≥ 95%, Tmin ≥ 90% on HDAR/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-C-675

## 2. HEAR 8-12 $\mu$ m on Internal Surface

ITEM	CONDITION	REQUIREMENT
2.1 Reflectance	0-15° AOI	Ravg ≤ 0.5%
2.2 Transmission	0° AOI	Tavg ≥ 97.0% on HEAR/HEAR
2.3 Humidity	24hrs, 95-100%RH, 120+/-4°F	MIL-F-48616 / MIL-C-48497C
2.4 Temperature	-80°F to 160°F for 2 hrs at each temperature	MIL-F-48616 / MIL-C-48497C
2.5 Solubility and Cleanability	Immersion test in Acetone and Alcohol for 1 hour instead of using Trichloroethylene	MIL-F-48616 / MIL-C-48497C
2.6 Adhesion	Adhesion (Cellophane tape test with quick removal)	MIL-F-48616 / MIL-C-48497C
2.7 Abrasion	Moderate abrasion	MIL-F-48616 / MIL-C-48497C

For Reference Only

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