



HEA[®]

High Efficiency Anti-Reflection Coating



Key Features

- **Unsurpassed AR coating at affordable prices**
- **Low reflectance (<0.2% brightness)**
- **Highly durable coating**
- **Controlled reflected color and transmission**

Applications

- **Avionics displays**
- **Touch screens**
- **Ruggedized displays**
- **Digital signage & kiosks**
- **GPS displays**
- **Handheld instruments**
- **Medical displays**

MAC Thin Films **High Efficiency Anti-Reflection**, HEA[®] coating forms the building block for higher performing displays by offering crisp images, bright colors, unparalleled viewability, and glare reduction.

This coating was initially used on the windows of the two-man Gemini spacecraft in 1964, and was employed on all subsequent NASA manned spacecraft from Apollo to the Space Shuttle program.

For demanding performance requirements with competitive pricing, MAC Thin Films HEA[®] coating, with photopic brightness of <0.2 percent photopic reflection, is the perfect solution to your AR needs.

MAC Thin Films HEA[®] coating is manufactured using rare & optically unique dielectric materials that are thermally evaporated and vacuum deposited, providing exceptional performance and high durability. Environmental attributes for each coating are referenced in MIL-C-675C and MIL-C-14806A.

MAC Thin Films HEA[®] coating is available on a variety of standard glass substrates:

| | | | | | | | | | | | |
|----------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Thickness (mm) | 0.55 | 1.00 | 1.10 | 1.25 | 1.60 | 1.90 | 2.30 | 3.00 | 4.00 | 5.00 | 6.00 |
| Size (in) | 16x25 | 25x32 | 25x32 | 25x32 | 25x32 | 25x32 | 32x50 | 32x50 | 32x50 | 32x50.7 | 32x50 |

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Product specifications and descriptions in this document are subject to change without notice.

HEA® Anti-Reflection Coating

In addition to producing exceptional low-reflectance, MAC Thin Films HEA® coating also controls reflected color.

The reflection curve in Figure 1 shows the performance of our HEA® coating. With this AR coating, MAC Thin Films offers a cost and performance package to meet an array of requirements.

Environmentally Tested Per MIL-C-675C & MIL-C-14806A

- 24 hour humidity
- Adhesion: Snap tape
- Abrasion: 20 eraser rub
- Salt solubility
- Temperature resistance

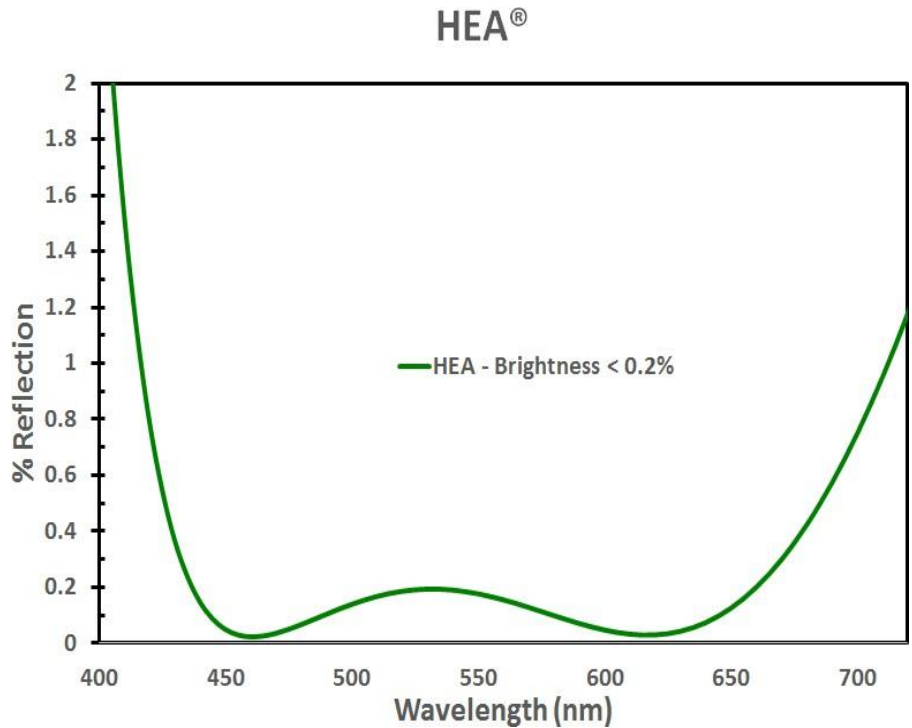
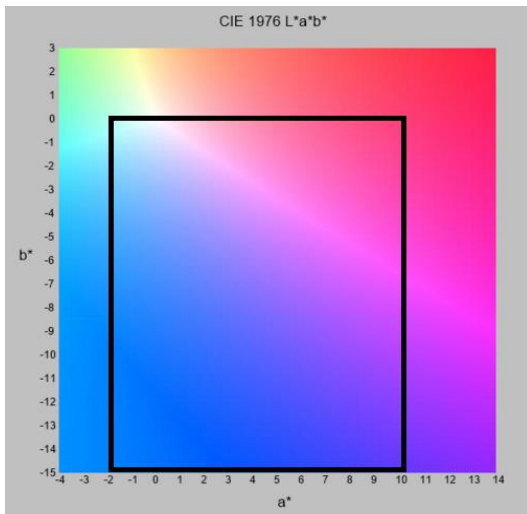


Figure 1

CIE 1976 UCS Chromaticity Diagram



| Glass Thickness (mm) | Photopic Transmission | |
|----------------------|-----------------------|------------------|
| | Single Sided HEA | Double Sided HEA |
| ≤ 1.1 | 94.0 | 96.9 |
| 1.2 - 2.2 | 93.5 | 96.4 |
| 2.3 - 2.8 | 93.0 | 95.9 |
| 3.0-3.2 | 92.7 | 95.6 |
| 4.0 | 92.2 | 95.1 |
| 5.0 | 91.6 | 94.5 |
| 6.0 | 91.0 | 93.9 |

The reflected color of the HEA® coated surface when measured at 10° incidence shall fall within the following color limits as defined by CIE 1976 L*a*b* color space using a 2 deg observer and illuminant D65. Color Coordinates: a* = -2 to +10 / b* = -15 to 0

For ordering or additional product information, please contact us at: www.macthinfilms.com