middleton research

PRODUCT SHEET
MRC-910-3200

Specular Reflectance Standard

Specular Reflectance Standard

Specular reflectance reference standards are usually evaporated metal surfaces that have high reflectance. Unfortunately the reflectance of such surfaces is not absolute, and can vary depending on the technology used to develop the surface. In addition, the evaporated films are sensitive to mechanical and chemical exposure and can, in practice, change over longer periods of time.

The Specular Reflectance Standard is made of a specially treated germanium element that acts as a single germanium reflective surface. The germanium is an ideal material for a reflectance standard, because its high refractive index provides a strong signal, and because it is known to be chemically inert within the 1-14 pH range. The chemical and mechanical stability of the Specular Reflectance Standard makes it uniquely suitable for monitoring instrument stability.

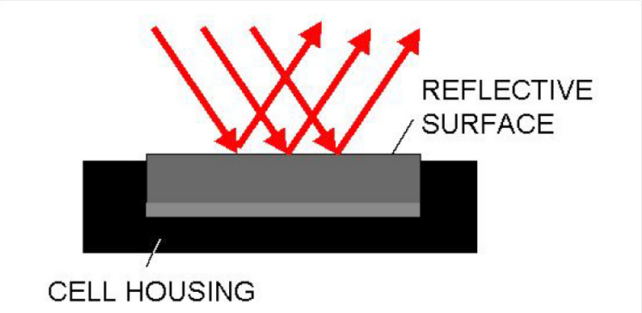
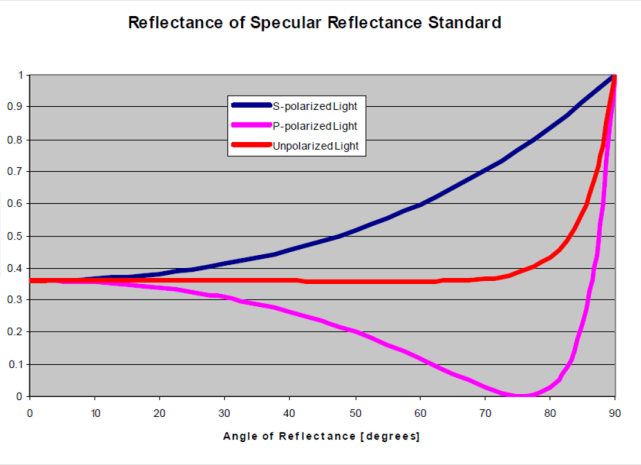
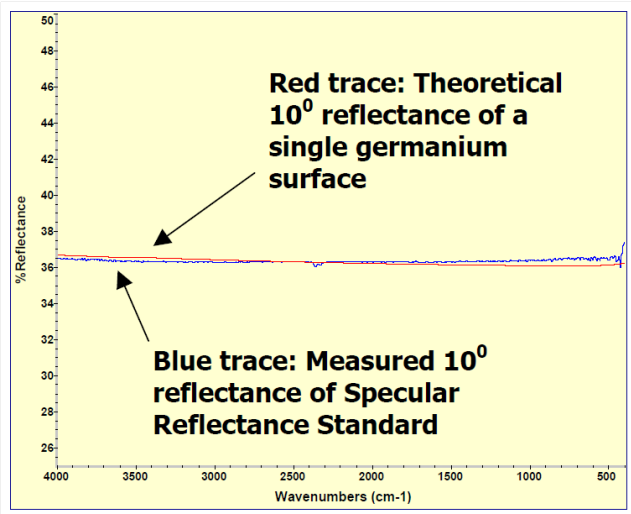


Diagram of Specular Reflectance Standard

The unique treatment of the germanium element in the Specular Reflectance Standard allows only reflection from the front surface of the element to reach the detector. Overall, the Specular Reflectance Standard behaves optically as a single germanium surface. The reflection of light off of a single optical surface is governed by the Fresnel equations. In a simple case of perpendicular illumination, assuming no absorbance of the media, the reflectance depends only upon the refractive index of the material.

The Specular Reflectance Standard has a nominal reflectance using polarized or unpolarized light. At normal incidence the reflectance of polarized and unpolarized light at 4000 cm-1 is shown below:





Specifications and Ordering Information

MRC-910-3200

Specular Reflectance Standard
Complete with Wood case, User Manual, and table of reference values