

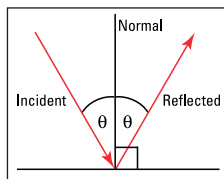
VeeMAX UV-Visible Variable Angle Specular Reflectance Accessory

For Evolution 300 and 600 spectrophotometers

The Thermo Scientific VeeMAX™ UV-Visible Variable Angle Specular Reflectance accessory is a high-performance analytical tool for measuring reflectance from glossy or mirrored surfaces. The variable angle of incidence can be optimized providing superior results for a wide variety of specular reflectance applications.



The VeeMAX UV-Visible accessory for the Evolution™ 300 and Evolution 600 UV-Visible spectrophotometers measures specular reflectance at user-selectable angles from 30° to 80°. Specular reflectance is “mirror like” reflectance off a surface, i.e., the angle of reflectance is the same as the angle of the incident beam.



The specular reflectance properties of coatings on transparent and opaque surfaces help define accuracy of the coating procedure and the performance of coated materials.

Whether your coating is:

- an anti-reflective coating on eyeglasses or binocular lenses
- a UV mirror on a cockpit window
- a solar reflective window for sky-scrapers
- a metal first surface mirror for research laser tables
- a gloss paint
- the rear reflector for a spot-lamp
- an anti-reflective coating for stacks of *stepper* lenses for photolithography
- a military pilot's helmet visor
- or any other research, military or production reflector

...the reflectivity at critical angles and wavelengths helps define its performance and commercial success. The VeeMAX UV-Visible accessory offers the versatility and accuracy needed to make these measurements.

Sophisticated Design for Measuring Advanced Coatings

Measure advanced coating performance at the angles that matter to you. Plate and automotive glass may be treated with coatings to enhance reflection of UV or IR wavelengths for interior safety and climate control. Optical elements are often *anti-reflective* (AR) coated to enhance performance. Laser table mirrors must be highly reflective at the laser wavelength to prevent beam energy loss and substrate heating. How well do your specialty glasses and coatings perform at the angles that matter to you or your customer?

Measure at Brewster's Angle for any Substrate, Coating or Wavelength

$$\theta_B = \arctan\left(\frac{\eta_2}{\eta_1}\right)$$

Scottish physicist Sir David Brewster (1781-1868) discovered that *p*-polarized light does not reflect off a surface at an angle given by θ_B where η_1 is the refractive index of air (≈ 1) and η_2 is the refractive index of the surface. For glass, $\eta_2 \approx 1.5$ making Brewster's angle approx 56°. Refractive index changes with wavelength, so Brewster's angle does as well. Only the VeeMAX UV-Visible accessory gives you the ability to tune your measurement angle to hit Brewster's condition for any material or wavelength.



Kinematic Mount for Reproducible Installation

The VeeMAX UV-Visible accessory installs directly into the kinematic mount of the sample compartment for a secure and reproducible fit. Align the accessory once and enjoy optimized performance at every subsequent installation.

Sealed Optics Permit Large Samples

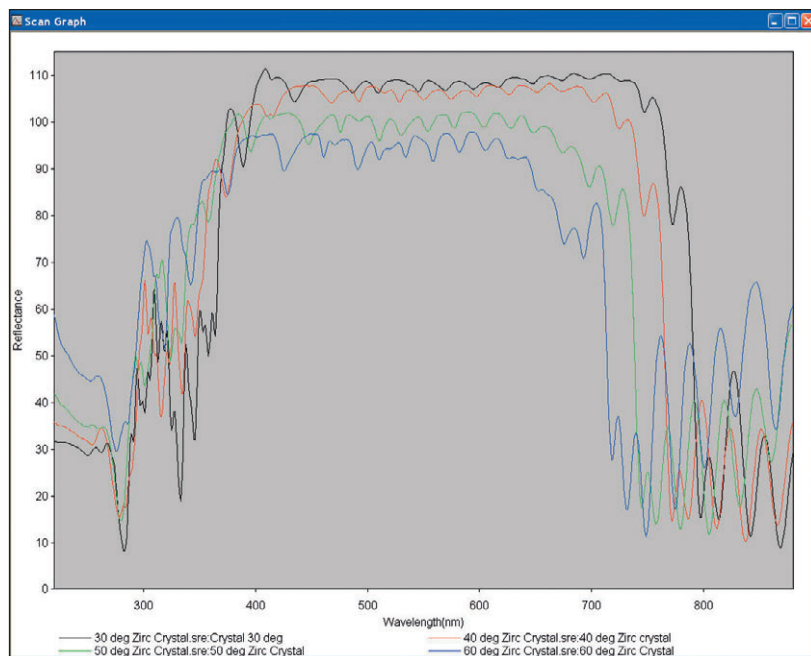
You can measure oversized or very thick samples with the VeeMAX UV-Visible accessory. A light sealing tube fits into the reference beam, sealing the optical path to allow you to operate with the sample compartment open. Simply choose and insert a mask with an appropriate aperture, place your sample on top of the VeeMAX UV-Visible accessory, and record the spectrum.

Flexibility to Choose Specific Angles for Special Applications

- Mirrors operating at 45° on laser tables are required to direct the beam through experiments in research applications.
- Hot mirrors, cold mirrors and bandpass mirrors have different *cut-on* and *cut-off* wavelengths depending on the angle of incidence. How does a shift from 30° to 45° affect your product?
- For chemists and surface scientists, grazing angle (80°) measurements give the longest possible path through adsorbed or chemically fixed thin films on a surface.
- Calculate refractive indices of surface films by measuring at two angles using the same accessory.
- Film thickness measurements can be performed at any *known* angle. The VeeMAX UV-Visible accessory allows you to choose the angle that gives the best data for your sample.

Feature Packed Software for Control and Calculation

VISION^{pro}™ software packaged with the PC-control instrument gives the user complete control of the instrument for alignment and method development. Optional VISION^{lite}™ MaterialsCalc software presents a simplified scanning interface and access to a suite of calculations for materials and color applications.



VISION^{pro} software shows measurements taken on the VeeMAX UV-Visible accessory. The spectra show how the cut-on and cut-off wavelengths of a Zirc Crystal Mirror dental mirror change at different reflection angles. Note: The 100%T baseline was recorded using a Newport AL2 UV enhanced aluminum mirror that is less reflective than the dental mirror in the visible range.

Specifications

Mask apertures	7 mm, 13 mm, and 25 mm x 4 mm
Optics	MgF ₂ -coated aluminum flat mirrors and aluminum-coated nickel concave mirrors

Wavelength Measurement Range

Evolution 300	190 – 1100 nm
Evolution 600	190 – 900 nm

Product Information

	Part Number
Evolution 600 PC-controlled spectrophotometer	10600XXX
Evolution 300 PC-controlled spectrophotometer	10300XXX
VeeMAX UV-Visible variable angle specular reflectance accessory	222-239600
Specular Reflectance Standard	222-219900

Software Packages

	Part Number
VISION ^{pro} software	10040101
VISION ^{lite} MaterialsCalc software	869-124500
REPORTER SPX software	869-127400