

VANTA Coating Method

The Olympus Vanta™ Coating Method

Olympus' Vanta VCR and VMR handheld XRF analyzers are now available with Coating Method functionality. The Vanta Coating Method can measure thicknesses in microns in seconds. Up to three layers of coatings can be measured on any type of substrate — metals, plastics, glass, and even wood.

A wide range of industries need to measure coating thicknesses. For example, zinc impedes corrosion and is moisture resistant, making it a useful coating for various metals. Thickness guidelines for zinc coatings need to be specified and verified for proper protection. Other common engineered coatings include nickel and chromium, both used for their corrosion resistance.

The Vanta Coating Method features:

Element configuration: The available elements are those with an atomic number greater than and including Ti. No element can be repeated in more than one layer, including the substrate. Elements with an atomic number less than Ti are not supported at this time.

Optional empirical one-point calibration: Customers can use an in-house certified sample to adjust the calibration.

Number of layers: The Vanta Coating Method can measure the thickness of up to three layers, however the layers must be thin enough that X-rays can escape to the detector from the bottom layer.

Maximum layer thickness: The chart to the right provides the approximate maximum thickness for the coating of a given element. It assumes no interference from inter-element effects. If the coating element and substrate element have similar X-ray energies, results may vary.

Substrate: Any substrate material can be analyzed as long as it does not contain elements in common with the coating layer.

Element*	Energy Line	Maximum Thickness (microns)
Titanium (Ti)	Ka	20
Vanadium (V)	Ka	20
Chromium (Cr)	Ka	25
Manganese (Mn)	Ka	25
Iron (Fe)	Ka	25
Cobalt (Co)	Ka	30
Nickel (Ni)	Ka	30
Copper (Cu)	Ka	30
Zinc (Zn)	Ka	30
Hafnium (Hf)	Lb	30
Tantalum (Ta)	Lb	30
Tungsten (W)	Lb	30
Rhenium (Re)	Lb	30
Lead (Pb)	Lb	35
Bismuth (Bi)	Lb	35
Zirconium (Zr)	Ka	35
Niobium (Nb)	Ka	40
Molybdenum (Mo)	Ka	40
Palladium (Pd)	Ka	40
Silver (Ag)	Ka	45
Tin (Sn)	Ka	45
Antimony (Sb)	Ka	45
Cadmium (Cd)	Ka	45
Gold (Au) (not in default regions)	Lb	30

* Elements listed in blue are commonly used for coatings