

# CdWO<sub>4</sub>



## DESCRIPTION

Scintillator is a photoelectric functional material, which refers to a material that stimulates pulsed light under the function of energetic particle(eg,x-rays,γ-rays,etc). Scintillation detectors with the core of scintillators have found utility for a variety of applications ranging from X-ray imaging to high-energy physics. The CdWO<sub>4</sub> crystal is the core component of nuclear instrument detection,γ camera, XCT tomography imager and other photoelectric detection equipment. CdWO<sub>4</sub> single crystal is a monoclinic crystal system with good comprehensive scintillation performance, belonging to wolframite-type structure. Compared with other inorganic scintillation crystals, CdWO<sub>4</sub> single crystal has high luminous efficiency, short afterglow time, large X-ray absorption coefficient, strong resistance to radiation damage, high material density, and absence of hygroscopicity. Due to these excellent scintillation properties of CdWO<sub>4</sub>, it has been widely used in nuclear medicine imaging, security inspection, industrial computer tomography (CT), petroleum logging, high-energy physics and other technical fields, especially in the field of medical X-ray CT, container inspection system has very important applications.

## FEATURES

- Excellent thermal and chemical stability
- Low radiation damage
- Low afterglow to luminescence
- High average refractive index
- High density
- High X-ray absorption coefficient
- Low level of intrinsic radioactivity

## APPLICATIONS

- Humidity sensor materials
- Medical computed tomography (CT)
- Phase-change optical recording devices
- Positron emission tomography (PET)
- Oil well logging
- Industrial processing control
- Nuclear weapons and waste monitoring



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## PARAMETERS

### MATERIAL PROPERTIES

Property	Value
Materials	CdWO <sub>4</sub>
Density (g/cm <sup>3</sup> )	7.13
Melting point (°C)	1598
Hardness (Mohs)	4-4.5
Hygroscopicity	No
Cleavage plane	<110>
Thermal expansion (C <sup>-1</sup> )	7*10 <sup>-6</sup>

### SCINTILLATOR PROPERTIES

Property	Value
Wavelength(Max. emission) (nm)	490
Wavelength range (nm)	380-800 nm
Decay time (ns)	14000
Light yield (photons/keV)	12-15
Refractive index(Max. Emission)	2.2-2.3
Afterglow (%)	<0.1
Radiation length (cm)	1.06
Photoelectron yield [% of NaI(Tl)](for γ-rays)	50

## SPECTRA

