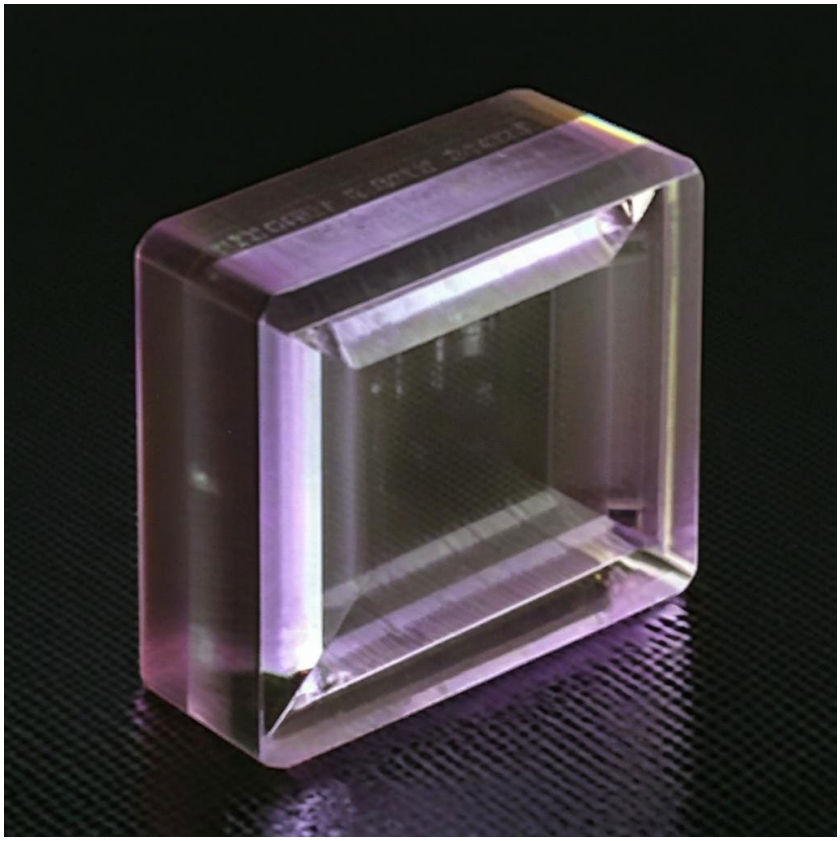
Photonics On Crystals

POC-OC-122503-Tl:Csl Crystal Datasheet

1 Main Features

- Broad emission spectrum (350nm to 700nm) suitable for SPD applications.
- High-performance scintillation properties for heavy particle detection.
- Stable performance under strong gamma-ray backgrounds.
- High optical transparency with efficient light emission.
- OEM services available for customization to user specifications.



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2. Material General Description

Thallium-doped Cesium Iodide (Tl:CsI) is a versatile and efficient scintillation crystal, renowned for its broad emission spectrum ranging from 350nm to 700nm. This property makes it highly compatible with SPD (Single Photon Detector) applications. Its ability to detect heavy charged particles under strong gamma-ray background conditions makes Tl:CsI an excellent choice for applications in nuclear physics, high-energy physics, and environmental monitoring. The crystal's exceptional luminescence efficiency combined with customizable design and dimensions enhances its usability across diverse fields.

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3. General Application and Examples

Tl:CsI crystals are utilized in various cutting-edge technologies and research fields, including:

- **Environmental Monitoring**: Used in detecting pollutants and radiation levels with high sensitivity.
- **Nuclear and High-Energy Physics**: Ideal for detecting charged particles and high-energy gamma rays.
- **Oil Well Logging**: Facilitates radiation monitoring during exploration and drilling.
- **Gamma Ray Detection**: Due to its strong performance in gamma-rich environments, it is widely employed in gamma-ray spectroscopy systems.
- **Scientific Instrumentation**: High compatibility with detectors for particle physics experiments and imaging systems.

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4. Chemical, Physical, and Structural Properties

Attribute	Value
Density (g/cm³)	4.53
Melting Point (°C)	621
Emission Peak (nm)	550
Decay Constant (ns)	1000
Light Output (%)	47%
Crystal Structure	Cubic
Cleavage Plane	(100)
Hygroscopicity	Yes

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5. Optical, Laser, and Nonlinear Optical Properties

- Broad spectral emission (350nm to 700nm) with peak output at 550nm.
- Suitable for high-energy radiation detection and photon counting.
- High optical transparency for efficient photon emission.

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6. Spectrum Transmission Curves

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7. Coating Specification

- Anti-reflection (AR) coatings available upon request for optimized performance.

- Options for wavelength-specific coatings (e.g., 350–700nm range) to improve light collection efficiency.

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8. Standard Fabrication Specifications

Specification	Range/Details
Clear Aperture	>90%
Surface Flatness	λ/10 @ 550nm
Parallelism	<10 arcseconds
Surface Quality	20-10 Scratch/Dig
Dimensions	Customizable

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9. POC Strengths and Capabilities

Photonics On Crystals (POC) offers extensive expertise in custom manufacturing and processing Tl:CsI crystals. With a strong emphasis on quality assurance, POC delivers crystals tailored to specific applications, including customized dimensions, coatings, and designs. Advanced fabrication techniques ensure precise optical and structural properties to meet industry and research demands.

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10. Standard Products

Face Dimensions	Length	Orientation	SKU	Price (USD)
20x20mm	1.0mm	[100]	8001	$500
25x25mm	1.5mm	[100]	8002	$550
30x30mm	2.0mm	[100]	8003	$600
Customizable	As needed	As required	-	Quote available