SCIONIX

# CLLBC Scintillation Detectors

## Dual-mode CLLBC scintillators for gamma rays and neutrons

CLLBC gives a gamma resolution below 3.5% FWHM at 662 keV and also detects thermal neutrons thanks to lithium enriched to 95% $^{6}$Li, with a sharp peak at 3.1–3.2 MeV. Neutrons and gamma rays are separated by pulse shape discrimination (PSD).

| Energy resolution at 662 keV | Thermal neutron peak | $^{6}$Li enrichment |
|---|---|---|
| **< 3.5% FWHM** [1] | **Sharp peak at 3.1–3.2 MeV** [1] | **95%** [1] |

## Specifications

| | | |
|---|---|---|
| **DETECTOR** | | |
| Scintillator | CLLBC – cerium-doped caesium lithium lanthanum bromochloride | [1] |
| **PERFORMANCE** | | |
| Energy resolution at 662 keV | < 3.5% FWHM | [1] |
| Typical resolution by energy | 30 keV ($^{129}$I) 15%; 59.5 keV ($^{241}$Am) 10%; 122 keV ($^{57}$Co) 6.4%; 662 keV ($^{137}$Cs) 3.2%; 1,332 keV ($^{60}$Co) 2.3%; 2,600 keV ($^{228}$Th) 1.8% | [1] |
| Thermal neutron peak | Sharp peak at 3.1–3.2 MeV | [1] |
| **ELECTRONICS & SIGNAL** | | |
| Pulse shape discrimination | Excellent neutron/gamma discrimination using PSD | [1] |
| **GENERAL** | | |
| $^{6}$Li enrichment | 95% | [1] |
| Density | 4.08 g/cm³ | [1] |
| Emission maximum | 420 nm | [1] |
| Decay time | 120 ns and 500 ns (average approx. 150 ns) | [1] |
| Refractive index | 1.90 | [1] |
| Photoelectron yield (NaI(Tl) = 100) | 70 | [1] |
| Light yield | Approx. 30,000 photons/MeV | [1] |
| Hygroscopic | Yes | [1] |

## Sources

[1] **High resolution Dual Mode CLLBC scintillators – data sheet**
Scionix · datasheet · p. 1; p. 2, table · checked 2026-11-26
https://scionix.nl/wp-content/uploads/2022/09/CLLBC-datasheet.pdf

Every value is taken from the manufacturer's own document; the number after the value refers to the source list. Always check against the latest datasheet before ordering.

The data comes from the manufacturer's published documents. Manufacturers may change specifications; the current configuration and performance are confirmed in the quotation.