

EJ-256 LEAD-LOADED PLASTIC SCINTILLATOR

EJ-256 is a homogeneous clear plastic scintillator in which lead has been incorporated by means of organometallic chemistry. Typical lead loading ranges from 1% to 5% by weight. Loadings up to 10% have been made but are not recommended. With increasing lead loading, there are corresponding losses in scintillation efficiency and optical clarity of the final plastic.

EJ-256 is best used for gamma detection at energies below 100 KeV where there is a significant impact of the lead on attenuation coefficients. This is most strongly evident at 60 KeV and lower where the photoelectric cross section is notably enhanced. At these energies, signal amplitudes from EJ-256 are commonly greater than those from an intrinsically brighter plastic scintillator have no loading with heavy atoms as a result of the photoelectric contribution in the detection process. Detection efficiencies are also notably increased.

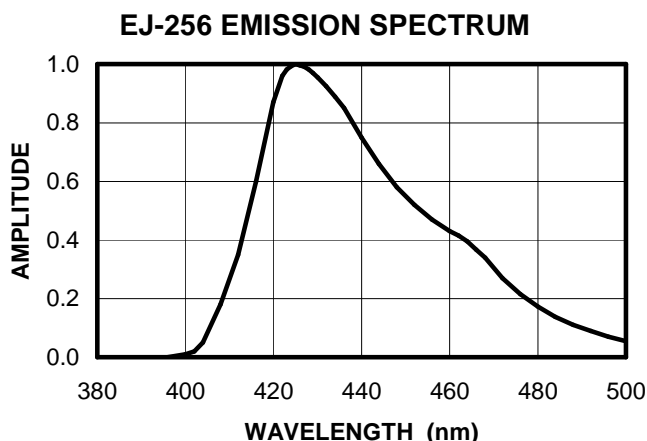
EJ-256 is also excellent for dosimetric detection applications. Lead concentrations in the 1-2% range impart a flatness in response down to at least 20 KeV.

<u>Physical and Scintillation Constants:</u>	<u>EJ200</u>	<u>EJ-256-5%</u>
Light Output, % Anthracene	64	34
Scintillation Efficiency, photons/1 MeV e ⁻	10,000	5,200
Wavelength of Max. Emission, nm	425	425
Decay Time, ns	2.1	2.1
No. of H Atoms per cm ³ , x 10 ²²	5.17	5.20
No. of C Atoms per cm ³ , x 10 ²²	4.69	4.62
No. of Electrons per cm ³ , x 10 ²³	3.33	3.48
Density, g/cc:	1.023	1.081

Polymer Base: Polyvinyltoluene
Refractive Index: 1.58
Vapor Pressure: Is vacuum-compatible
Coefficient of Linear Expansion: 7.8×10^{-5} below +67°C

Light Output vs. Temperature:
 At +60°C, L.O. = 95% of that at +20°C
 No change from +20°C to -60°C

Chemical Compatibility: Is attacked by aromatic solvents, chlorinated solvents, ketones, solvent bonding cements, etc. It is stable in water, dilute acids and alkalis, lower alcohols and silicone greases. It is safe to use most epoxies and "super glues" with EJ-256.



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