

# PHYSICAL CONSTANTS OF PLASTIC SCINTILLATORS

Scintillator	Light Output, % Anthracene <sup>1</sup>	Wavelength of Maximum Emission (nm)	Decay Time (ns)	Typical Light Attenuation Length (cm)	H:C Atomic Ratio	Refractive Index	Softening Point (°C)	Density (g/cm <sup>3</sup> )	Description and Applications
EJ-200	64	425	2.1	380	1.102	1.58	75	1.023	Best overall general properties
EJ-204	68	408	1.8	160	1.100	1.58	75	1.023	Good general properties, Use with green WLS
EJ-208	60	435	3.3	400	1.102	1.58	75	1.023	Good general properties, High attenuation length
EJ-212	65	423	2.4	250	1.102	1.58	75	1.023	Good general properties, Thin films
EJ-214	-	435	2	-	1.109	1.58	60	1.02	Ultra thin films (0.25 μm)
EJ-228	67	391	1.4	-	1.098	1.58	75	1.023	Very fast timing, High pulse pair resolution, Small sizes (< 10 cm)
EJ-230	64	391	1.5	120	1.098	1.58	75	1.023	Variant of EJ-228, Used for detector dimensions exceeding 10 cm
EJ-232	55	370	1.6	-	1.101	1.58	75	1.023	Very fast timing, Use with blue WLS, Small sizes (< 10 cm)
EJ-232Q (0.5%)	19	370	0.7	-	1.099	1.58	75	1.023	Variant of EJ-232, Quenched (0.5% - 5%) for ultra-fast timing
EJ-240	41	430	285	240	1.109	1.58	75	1.023	Long decay time, Phoswich detectors
EJ-244	56	434	3.3	270	1.104	1.58	99	1.023	Elevated temperatures, Analog to EJ-208, General purpose
EJ-244M	56	434	3.3	270	1.104	1.58	99	1.023	Variant of EJ-244, Crosslinked
EJ-248	60	425	2.1	250	1.104	1.58	99	1.023	Elevated temperatures, Analog to EJ-200, General purpose
EJ-248M	60	425	2.1	250	1.104	1.58	99	1.023	Variant of EJ-248, Crosslinked
EJ-254 (5%)	48	425	1.5	-	1.167	1.58	75	1.026	Boron loaded (1% - 5%), Neutrons
EJ-256 (5%)	34	425	2.1	-	1.126	1.58	75	1.081	Lead loaded (1% - 5%), X-rays, Dosimetry
EJ-260	60	490	9.2	350	1.109	1.58	75	1.023	Green-emitting, Solid-state sensors
EJ-262	57	481	2.1	250	1.109	1.58	75	1.023	Green-emitting, Solid-state sensors
EJ-290	58	423	3	-	1.107	1.58	75	1.023	Scintillator casting resin, General purpose
EJ-296	60	435	2.5	-	1.102	1.58	75	1.02	Scintillator paint, Used to make thin films
EJ-299-33A	56	420	13 <sup>2</sup>	-	1.056	-	-	1.08	PSD plastic, Fast neutron and gamma discrimination, Cylinders
EJ-299-34	56	420	13 <sup>2</sup>	-	1.056	-	-	1.08	PSD plastic, Fast neutron and gamma discrimination, Small bar arrays

1. 1 MeV of energy deposited in EJ-200 from an energetic electron produces approximately 10,000 blue photons.

2. The approximate mean decay times of the first 3 components for gamma excitation are 13, 35, and 270 ns.



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