

Physical properties of the most common scintillation materials

Material	Density (g/cm ³)	Emission Maximum (nm)	Decay Constant (1)	Refractive Index (2)	Photo-electron yield (3)	Hygroscopic
NaI(Tl)	3.67	415	0.23 μs	1.85	100	yes
CsI(Tl)	4.51	550	0.6/3.4 μs	1.79	45	slightly
CsI(Na)	4.51	420	0.63 μs	1.84	85	yes
CsI(Undoped)	4.51	315	16 ns	1.95	4-6	no
Cs ₂ LiYCl ₆ :Ce (CLYC)	3.31	370	1/50/1000 ns	1.81	30-40	yes
CaF ₂ (Eu)	3.18	435	0.84 μs	1.47	50	no
Cs ₂ LiLaBr _{4.8} Cl _{1.2} :Ce (CLLBC)	4.08	420	120 ns 500 ns	1.90	70	yes
SrI ₂ (Eu)	4.60	450	1-5 μs	1.85	120-140	yes
LaBr _{2.85} Cl _{0.15} :Ce (LBC)	4.90	380	35 ns	1.90	140	yes
⁶ Li-glass	2.6	390	60 ns	1.56	4-6	no
⁶ Li(Eu)	4.08	470	1.4 μs	1.96	35	yes
BaF ₂	4.88	315 220	0.63 μs/ 0.8 ns	1.50 1.54	16 5	no
CeBr ₃	5.23	370	18-25 ns	2.09	130	yes
YAP(Ce)	5.55	350	27 ns	1.94	35-40	no
Gd ₃ Al ₂ Ga ₂ O ₁₂ :Ce (GAGG)	6.60	520	100 ns (average)	1.85	35-40	no
LYSO:Ce	7.20	420	50 ns	1.82	70-80	no
BGO	7.13	480	0.3 μs	2.15	15-20	no
CdWO ₄	7.90	540	20/5 μs	2.3	25-30	no
PbWO ₄	8.28	420	7 ns	2.16	0.20	no
Plastics(*)	1.023	375-600	ns range	1.58	25-30	no

(1) Effective average decay time for γ-rays.

(2) At the wavelength of the emission maximum

(3) Relative scintillation signal at room temperature for γ-rays when coupled to a photomultiplier tube with a bi-alkali photocathode.

(*) approximate data

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