

TABLE OF PHYSICAL CONSTANTS OF SCINTILLATORS

	Scintillator Material	Type	Light Output Percent Anthracene	Wavelength of Maximum Emission nm	Decay Constant Main Component ns	Loading loading Element (% by wt.)	Typical Light Attenuation Length cm	H : C Atomic Ratio	Refractive Index	Softening or Flash Point °C	Density	Principal Applications	Commercial Equivalents	
													Saint Gobain	NE
PLASTIC	EJ-200	Plastic	64	425	2.1	.....	380	1.104	1.58	75	1.02	Best overall general properties, TOF Counters, Large Area	BC-408	Pilot F
	EJ-204	Plastic	68	408	1.8	.....	160	1.107	1.58	75	1.02	Good general properties, Use with green WLS	BC-404	NE-104
	EJ-208	Plastic	60	434	3.3	.....	400	1.104	1.58	75	1.02	Good general Properties, Large area, protons, electrons.	BC-412	NE-110
	EJ-212	Plastic	65	423	2.4	.....	250	1.103	1.58	75	1.02	General Purpose, Thin Films, alpha, beta, gamma, and fast neutrons	BC-400	NE-102A
	EJ-228	Plastic	67	391	1.4	.....	N/A	1.107	1.58	75	1.02	Ultra fast timing, High pulse pair resolution	BC-418	Pilot U
	EJ-230	Plastic	64	391	1.5	.....	120	1.104	1.58	75	1.02	Variant EJ-228, optimized for detector dimensions ≥10cm	BC-420	Pilot U2
	EJ-232	Plastic	55	370	1.4	.....	N/A	1.102	1.58	75	1.02	Ultra fast timing, use with blue WLS	BC-422	NE-111A
	EJ-240	Plastic	41	435	~230	.....	240	1.109	1.58	75	1.02	Long decay time, Phoswich detectors	BC-444	NE-115
	EJ-244	Plastic	56	435	3.3	.....	270	1.104	1.58	99	1.02	Elevated temperatures, Analog to EJ-208, General purpose	BC-440	
	EJ-248	Plastic	60	425	2.1	.....	250	1.104	1.59	99	1.049	Elevated temperatures, Analog to EJ-200, General purpose	BC-448	
	EJ-252	Plastic	46	423	2.4	.....	N/A	1.098	1.58	75	1.037	Dosimetry, Water-equivalent	BC-470	NE-105
	EJ-260	Plastic	60	490	9.2	.....	350	1.109	1.58	75	1.02	Green Emitting Scintillator	BC-428	NE-103
	EJ-280	Plastic	.....	490	9.2	.....	350	1.11	1.58	75	1.02	Green Wave Length Shifter	BC-482A	
	EJ-284	Plastic	.....	608	14	.....	N/A	1.11	1.58	75	1.02	Red Wave Length Shifter	BC-482A	
EJ-290	Resin	60	423	2.4	.....	N/A	1.103	1.58	75	1.02	Scintillator Casting Resin, General Purpose, beta, gamma, and fast neutrons	BC-490	NE-120	
LIQUID	EJ-301	Liquid	78	425	3.2 ³	.....	.....	1.212	1.505	26	0.874	PSD Liquid, Fast neutron-gamma discrimination	BC-501A	NE-213
	EJ-305	Liquid	80	424	2.5	.....	.....	1.331	1.505	47	0.877	High light output, Fast neutron and gamma rays, Cosmics	BC-505	NE-224
	EJ-309	Liquid	75	424	3.5 ³	.....	.....	1.25	1.57	144	0.964	PSD Liquid, Fast neutron-gamma discrimination, High Flash Point, Low Chemical Toxicity, compatibility with acrylic plastics.		
	EJ-313	Liquid	20	424	3.1	F	.....	0.0035	1.377	10	1.61	Hydrogen-free, Neutron studies, Fast neutron and gamma rays	BC-509	NE-226
	EJ-315	Liquid	60	425	3.5	D	.....	0.99 (D:C)	1.498	-11	0.954	Deuterated benzene, Neutron studies	BC-537	NE-230
	EJ-321L	Liquid	39	424	2	.....	>5 meters	2.01	1.47	102	0.86	Mineral oil based, Standard efficiency, Large tanks, Fast neutron and gamma rays, Cosmic rays	BC-517L	NE-235L
	EJ-321H	Liquid	52	424	2	.....	>5 meters	1.89	1.48	81	0.86	Mineral oil based, High light output, Fast neutron and gamma rays, Cosmic rays, Large tanks	BC-517H	NE-235H
	EJ-325	Liquid	60	424	4	.....	.....	1.73	1.49	74	0.875	Mineral oil based, Pulse shape discrimination, Fast neutron and gamma discrimination, Large tanks	BC-519	NE-235C
LOADED	EJ-254	Loaded Plastic	48	425	2.2	B (5%)	120	1.169	1.58	60	1.026	Boron Loaded	BC-454	
	EJ-256	Loaded Plastic	32	425	2.1	.....	N/A	1.134	1.58	75	1.08	Lead loaded (≤5% standard), X-rays, Dosimetry	BC-452	NE-142
	EJ-331	Loaded Liquid	60	424	4	Gd (to 1%)	.....	1.31	1.5	44	0.89	Highest light output Gd loaded, Neutron spectrometry, Neutrinos	BC-521	NE-323
	EJ-335	Loaded Liquid	56	424	3.8	Gd (to .5%)	.....	1.57	1.49	64	0.88	Mineral oil base, Gd loaded for large tanks, Neutron spectrometry, Neutrinos	BC-525	
	EJ-339A	Loaded Liquid	65	424	3.7	¹⁰ B (5%)	.....	1.67	1.411	8	0.98	¹⁰ B loaded, Pulse shape discrimination, Neutron spectrometry, Thermal neutrons	BC-523A	NE-321A
	EJ-351	Dioxane Based	65	425	3.8	.....	.....	1.65	1.44	12	1.036	Dioxane based cocktail for Aquauous samples	BC-220	NE-220

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

¹ **Liquid**- 1 MeV of energy deposited in EJ-301 from an energetic electron produces approximately 12,000 blue photons

³ The mean decay times of the first 3 components are 3.16, 32.3, and 270 ns.