

BC-400,BC-404,BC-408,BC-412,BC-416 Premium Plastic Scintillators



The premium plastic scintillators described in this data sheet include those with the highest light output, as well as the most economical (BC-416).

The dimensions of the scintillator, timing properties, and light transmission requirements determine the scintillator selection.

If the scintillator is thin (<2mm) and read out across this dimension, then the best choices are BC-400 and BC-404.

For anything thicker than 2mm, BC-408 is probably the best choice, because it combines good light yield, good light transmission, and a short decay time. If the scintillator is very long, then BC-412 can be considered because of its better transmission length.

	BC-400	BC-404	BC-408	BC-412	BC-416
Principal Uses/Applications	general purpose	fast counting	TOF large area	large area	large area economy
Scintillation Properties					
Light Output, %Anthracene	65	68	64	60	38
Rise Time, ns	0.9	0.7	0.9	1.0	-
Decay Time (ns)	2.4	1.8	2.1	3.3	4.0
Pulse Width, FWHM, ns	2.7	2.2	~2.5	4.2	5.3
Wavelength of Max. Emission, nm	423	408	425	434	434
Light Attenuation Length, cm*	160	140	210	210	210
Bulk Light Attenuation Length, cm	250	160	380	400	400
Atomic Composition					
No. H Atoms per cc (x10 ²²)	5.23	5.21	5.23	5.23	5.25
No. C Atoms per cc (x10 ²²)	4.74	4.74	4.74	4.74	4.73
Ratio H:C Atoms	1.103	1.100	1.104	1.104	1.110
No. of Electrons per cc (x10 ²³)	3.37	3.37	3.37	3.37	3.37

*The typical 1/e attenuation length of a 1x20x200cm cast sheet with edges polished as measured with a bialkali photomultiplier tube coupled to one end.

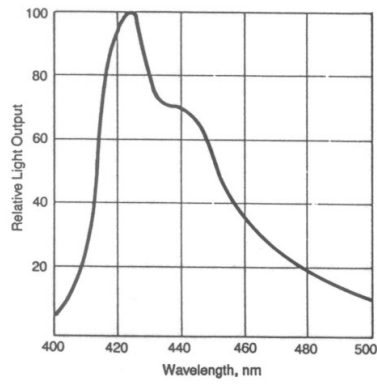
General Technical Data -

Base	Polyvinyltoluene	Vapor Pressure	May be used in vacuum
Density [g/cc]	1.023	Light Output	At +60°C = 95% of that at +20°C. Independent of temperature from -60°C to +20°C
Expansion Coefficient (per°C, <67°C)	7.8X10 ⁻⁵	Solubility	Soluble in aromatic solvents, chlorinated solvents, acetone, etc. Unaffected by water, dilute acids, lower alcohols, alkalis and pure silicone fluids or grease.
Refractive index	1.58		
Softening Point	70°C		

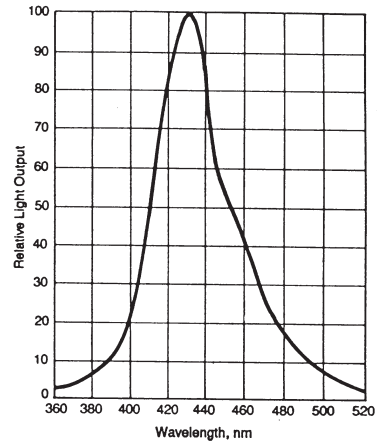
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Emission Spectra

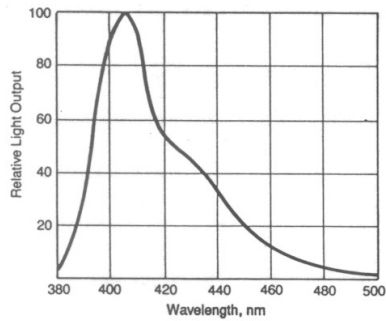
BC-400



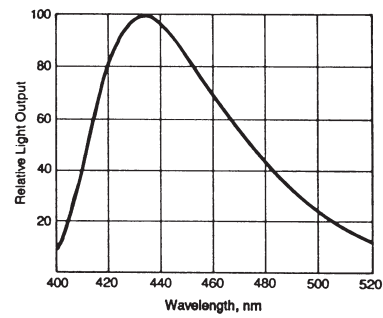
BC-408



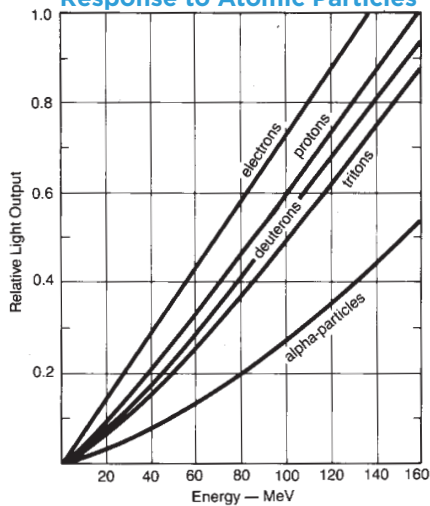
BC-404



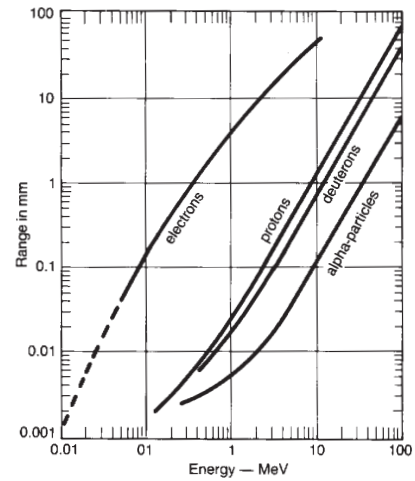
BC-412 & BC-416



Premium Plastic Scintillator
Response to Atomic Particles



Range of Atomic Particles in
Premium Plastic Scintillator



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