

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 chart below will direct you to the scintillator suitable for your energy application.

	BC-400	BC-404	BC-408	BC-412	BC-416
Radiation Detected					
<100keV X-rays			X		
100keV to 5MeV gamma rays				X	
>5MeV gamma rays	X				X
Fast neutrons				X	X
Alphas, betas		X	X		
Charged particles,cosmic rays, muons, protons, etc.			X	X	X
Principal Uses/Applications	general purpose	fast counting	TOF large area	large area	large area economy

Scintillation Properties –

	BC-400	BC-404	BC-408	BC-412	BC-416
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 –

	BC-400	BC-404	BC-408	BC-412	BC-416
No. H Atoms per cc ($\times 10^{22}$)	5.23	5.21	5.23	5.23	5.25
No. C Atoms per cc ($\times 10^{22}$)	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 ($\times 10^{23}$)	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
Density (g/cc)	1.032 g/cc
Refractive Index	1.58
Expansion Coefficient (per°C, <67°C):	7.8×10^{-5}
Softening Point	70°C
Vapor Pressure	May be used in vacuum
Solubility	Soluble in aromatic solvents, chlorinated solvents, acetone, etc. Unaffected by water, dilute acids, lower alcohols, alkalis and pure silicone fluids or grease.
Light Output	At +60°C = 95% of that at +20°C. Independent of temperature from -60°C to +20°C



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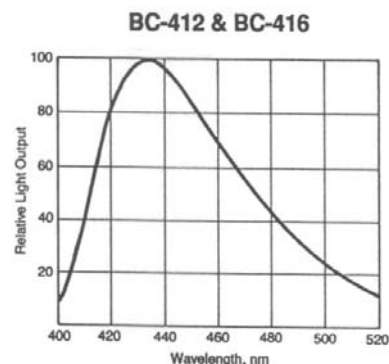
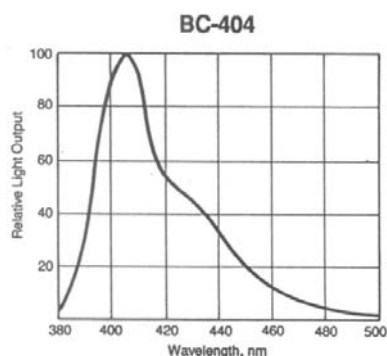
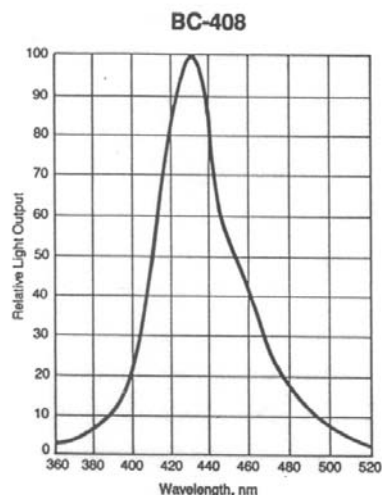
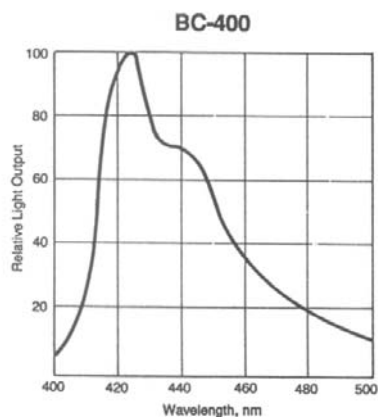
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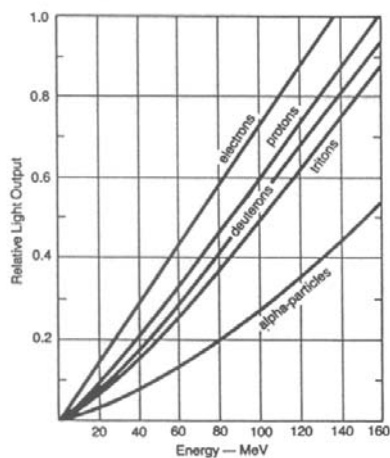
www.detectors.saint-gobain.com

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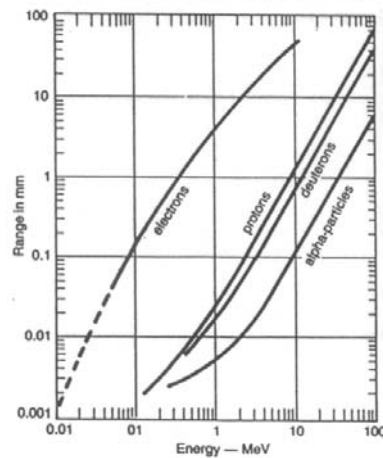
Emission Spectra



Premium Plastic Scintillators Response to Atomic Particles



Range of Atomic Particles in Premium Plastic Scintillators



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