

BC-400/BC-404/BC-408/BC-412/BC-416

Premium Plastic Scintillators

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

General Technical Data

Base Polyvinyltoluene
 Density 1.032 g/cc
 Refractive Index 1.58
 Coefficient of Linear Expansion 7.8×10^{-5} , below 67°C
 Atomic Ratio, H/C ~1.1
 Light Output Temperature Dependence At +60°C = 95% of that at +20°C; independent of temperature from -60°C to +20°C
 Vapor Pressure May be used in a vacuum
 Solubility Soluble in aromatic solvents, chlorine, acetone, etc. Insoluble in water, dilute acids, lower alcohols, silicone fluid, grease and alkalis.

Radiation Detected	Scintillator
< 100 keV X-rays	BC-404
100 keV to 5 MeV gamma rays	BC-408
>5 MeV gamma rays	BC-400 BC-416
Fast neutrons	BC-408 BC-412
Alphas, betas	BC-400 BC-404
Charged particles, cosmic rays, muons, protons, etc.	BC-408 BC-412 BC-416

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
Light Attenuation Length, cm*	160	140	210	210	210
Wavelength of Max. Emission, nm	423	408	425	434	434
No. of H Atoms per cm ³ , (x10 ²²)	5.23	5.21	5.23	5.23	5.25
No. of C Atoms per cm ³ , (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 cm ³ , (x10 ²³)	3.37	3.37	3.37	3.37	3.37
Principal uses/applications	general purpose	fast counting	TOF counters, large area	large area	large area economy

*The typical 1/e attenuation length of a 1 x 20 x 200 cm cast sheet with edges polished as measured with a bialkali photomultiplier tube coupled to one end

(continued over)



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Emission Spectra

