BC-523A
Enriched Boron-loaded Liquid Scintillators

BC-523A liquid scintillator contains boron enriched in ^{10}B to a minimum of 90%. The scintillator is useful in total absorption neutron spectrometry.

A fast neutron will produce a prompt recoil proton pulse with its initial scatterings in the liquid. Neutrons that are sufficiently thermalized within the scintillator are likely to undergo the ^{10}B (n, α) capture. The capture pulse is in delayed coincidence with the prompt pulse and is used to identify neutron events. For neutron energies below 200 keV, the capture time constant is determined solely by the ^{10}B concentration. The average capture time is about 0.5 microseconds.

The scintillator also exhibits excellent pulse shape discrimination properties for neutron-gamma separation. References dealing with the performance of boron-loaded organic scintillators are listed on the back.

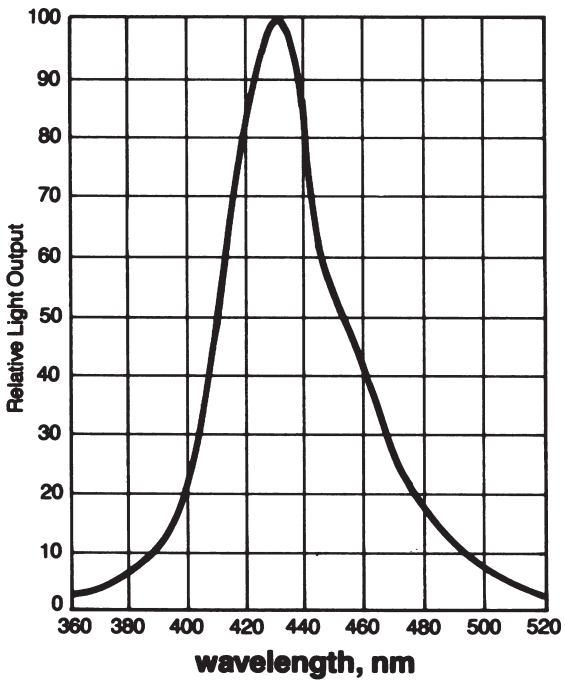
BC-523A is supplied sealed in ready-to use glass or metal cells. The liquid is sensitive to moisture, and you must take care to avoid exposing it to air if you perform your own encapsulation.

Scintillation Properties	
Light Output, %Anthracene	65
Wavelength of Maximum Emission, nm	425
Decay Time, short component, ns	3.7
Bulk Light Attenuation, meters	>4
Atomic Composition	
No. of H Atoms per cc ($x10^{22}$)	4.98
No. of C Atoms per cc ($x10^{22}$)	2.86
No. of O Atoms per cc ($x10^{22}$)	0.811
No of ^{10}B Atoms per cc ($x10^{22}$)	0.243
No of ^{11}B Atoms per cc ($x10^{22}$)	0.027

General Technical Data –

Density	0.916 g/cc
Refractive index	1.415
Flash Point	-8°C
^{10}B Content	4.41%

Emission Spectrum



CRYSTALS

SAINT-GOBAIN

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References –

1. L.W. Bollinger and G.E. Thomas, Rev. Sci. Instrum., 28, 489-496 (1957)
2. Von L. Sutterlin, Atomkernenergie, Vol. 12, NO. 7/8, 287,288 (1967)
3. L.R. Greenwood and N.R. Chellew, Rev. Sci. Instrum., 50 (4), 466-471 (April, 1979)
4. D.M. Drake, et al, Nucl. Instr. & Methods in Phy. Res., A274 576-582 (1986)

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