BC-523A
Enriched Boron-loaded Liquid Scintillator

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.

General Technical Data –

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

Scintillation Properties

Light Output, % Anthracene	65
Decay time, short component, ns	3.7
Wavelength of maximum emission, nm	425
Bulk light attenuation, meters	>4

Atomic Composition –

No. of H Atoms per cc	4.98×10^{22}
No. of C Atoms per cc	2.86×10^{22}
No. of O Atoms per cc	0.811×10^{22}
No. of ^{10}B Atoms per cc	0.243×10^{22}
No. of ^{11}B Atoms per cc	0.027×10^{22}

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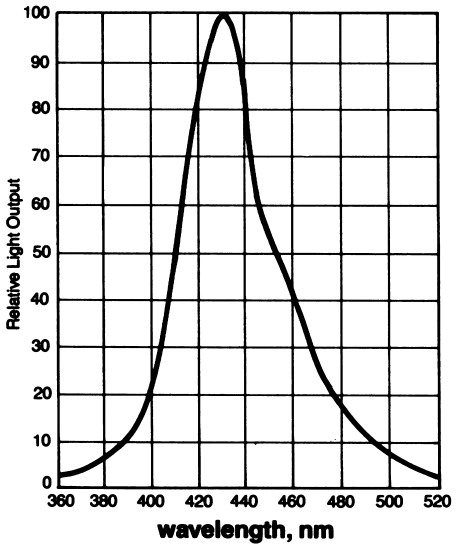
Scintillation Products
Organic Scintillators

SAINT-GOBAIN
CRYSTALS

BC-523A
Natural Boron-loaded Liquid Scintillator

Emission Spectrum –



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)

Manufacturer reserves the right to alter specifications.