BC-521
Gadolinium Loaded Liquid Scintillator

BC-521 is formulated to yield the highest light output possible as well as long term chemical stability. The standard gadolinium concentration is 0.5% by weight, but other concentrations up to 1.5% can be supplied. Since the liquid is normally used in large tanks containing several hundred liters, it employs a high flash point solvent for safety purposes.

The principal applications of BC-521 are for neutron spectrometry and neutrino research. It is ideal for use in large tanks for neutron multiplicity experiments.

Gadolinium has the highest thermal neutron capture cross-section of any element. The neutron capture reaction yields beta particles and several gamma rays having a total energy of about 8 MeV. Delayed coincidence and pulse shape discrimination techniques can be employed.

Scintillation Properties –

Light Output, % Anthracene	68
(for 1% Gd concentration), % Anthracene	57
Wavelength of Maximum Emission, nm	424
Decay Time, short component, ns	3.6
Bulk Light Attenuation, meters	>4

Atomic Composition –

No. of H Atoms per cc	5.25×10^{22}
No. of C Atoms per cc	4.00×10^{22}
Ratio H:C Atoms	1.314
No. of Electrons per cc	2.97×10^{23}

General Technical Data –

Gadolinium Content	0.5%, w/w
Density	0.89g/cc
Refractive Index	1.50
Flash Point	44°C

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Emission Spectrum –