BC-414
Premium
Plastic Scintillator

This PVT-based plastic scintillator is formulated for use with wavelength shifter (WLS) bars having short decay times. The traditional green WLS (wavelength shifting) plastics, intended for use with many common blue emitting scintillators, have long decay times – typically ~15ns. To meet the need for scintillator-WLS systems with faster time response, we developed BC-414 and also the WLS plastic BC-484.

While having a relatively short emission spectrum for optical compatibility with BC-484, BC-414 is still sufficiently transparent to its scintillation light to be used in plate sizes up to 50cm (20") on a side. Shorter wavelength scintillators, with emission peaks typically at 375nm, have extremely short light attenuation lengths (<10cm) which limit their useful sizes.

Scintillation Properties –

Light Output, Anthracene	68%
Rise Time, ns	0.7
Decay Constant, main component, ns	1.8
Pulse Width, FWHM, ns	2.7
Wavelength of Maximum Emission, nm	392
Bulk Light Attenuation Length, cm	100

Atomic Composition –

Ratio H:C Atoms	1.10
No. of Electrons per cc ($x10^{23}$)	3.37

General Technical Data –

Base	Polyvinyltoluene
Density (g/cc)	1.032 g/cc
Refractive Index	1.58
Expansion Coefficient (per°C,<67°C)	$7.8X10^{-5}$
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.

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Scintillation Products
Organic Scintillators

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Emission Spectrum–