WAVELENGTH SHIFTING PLASTICS
EJ-280 (Green) EJ-284 (Red)

Two wavelength shifting (WLS) plastics with long emission maxima are available. Both are normally based on PVT but can also be provided PVT variants providing higher temperature characteristics. WLS bars and discs absorb light at one wavelength and emit it isoropically at longer wavelengths to provide useful modes of light collection.

The green-emitting EJ-280 is ideal for shifting the emission spectra of common blue scintillators. The quantum efficiency of the fluorescent dopant in EJ-280 is 0.86, and its decay time under laser excitation is 8.5 ns.

Red-emitting EJ-284 is ideal for shifting green-emitting scintillators such as CsI(Tl) into the red with a quantum efficiency near 95%. There is, however, as indicated in the spectrum below, a useful absorption maximum in the blue. Its fluorescence decay time under laser excitation is 13 ns.

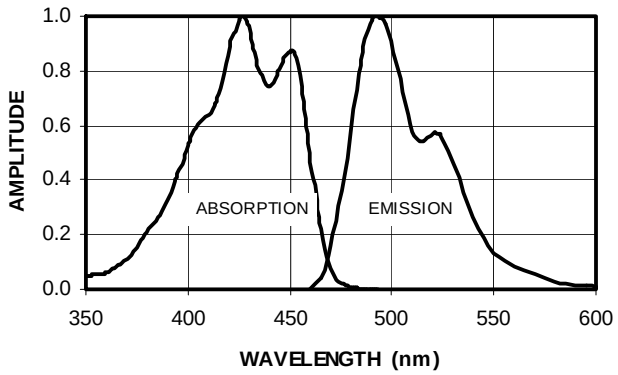
The most common use for green WLS plastics is in the form of long narrow bars air-coupled to blue scintillators arrayed either in flat planes or in stacks. The bars provide a compact means of light collection. The green light is effectively turned 90^{O} as a result of the isotropic re-emission and transmitted by total internal reflection to phototubes at both end of the bar to achieve a highly uniform light collection. While there is a typical 75% loss of signal amplitude in these systems, they can provide advantages over conventional light collection methods.

While there are standard formulas for these two WLS materials, ELJEN Technology is happy to make up custom formulations for your specific needs.

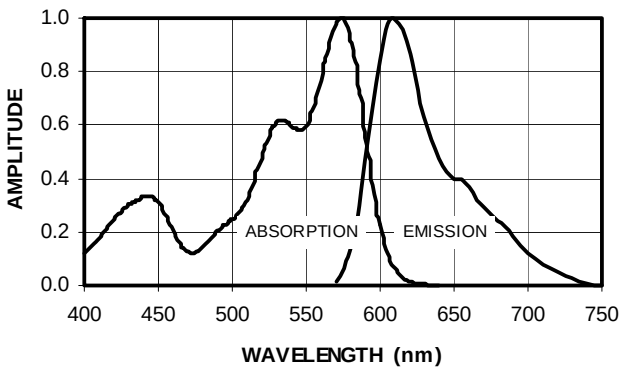
Polymer Base: …… Polyvinyltoluene
Refractive Index: ……1.58
Density, g/cc: **……**1.023
Vapor Pressure: …… Is vacuum-compatible
Coefficient of Linear
Expansion: …… 7.8×10^{-5} below +67°C

Chemical Compatibility: Is attacked by aromatic solvents, chlorinated solvents, ketones, solvent bonding cements, etc. It is stable in water, dilute acids and alkalis, lower alcohols and silicone greases. It is safe to use most epoxies and "super glues" with these plastics.

EJ-280 OPTICAL SPECTRA



EJ-284 OPTICAL SPECTRA



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