

# WAVELENGTH SHIFTING PLASTICS

## EJ-280, EJ-282, EJ-284, EJ-286

Four wavelength shifting (WLS) plastics are available. All are normally based on PVT but can also be provided based on PVT variants providing higher temperature characteristics. These products are also available in custom formulations. Please contact us regarding your specific requirements.

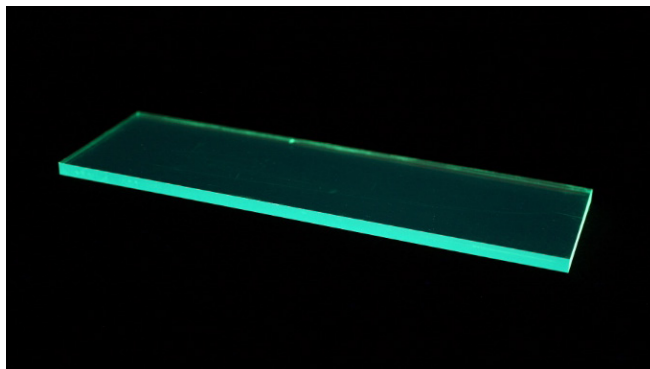
**EJ-280** is a green-emitting WLS plastic ideal for shifting the emission spectra of common blue scintillators. It is commonly used in the form of long narrow bars air-coupled to blue scintillators arrayed either in flat planes or in stacks. The bars provide a compact means of light collection. The green light is effectively turned 90° as a result of the isotropic re-emission and is transmitted by total internal reflection to photomultiplier tubes at both ends of the bar to achieve 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. Although not indicated in the spectrum on the following page, EJ-280 has also been shown to be particularly good for shifting wavelengths below 200 nm.

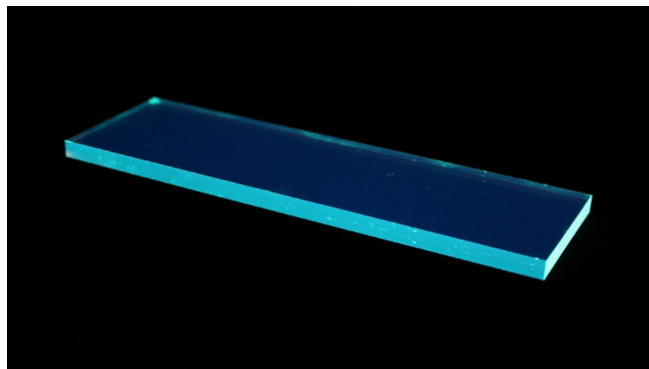
**EJ-282** is a green-emitting WLS plastic similar to EJ-280 but with a slightly shorter maximum emission wavelength making it suitable for use with blue-sensitive photomultiplier tubes.

**EJ-284** is a red-emitting WLS plastic ideal for shifting green-emitting scintillators such as CsI(Tl) into the red. There is also a useful absorption maximum in the blue, as indicated in the spectrum on the following page.

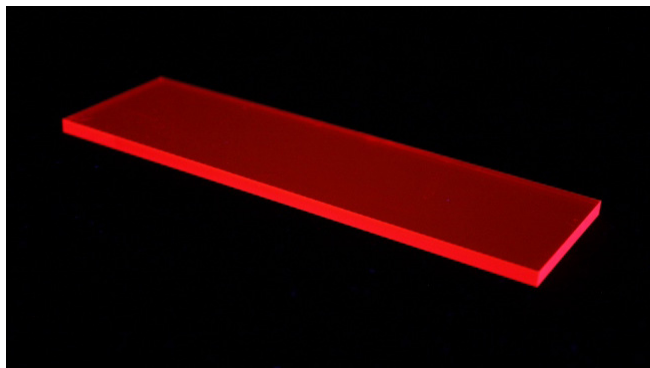
**EJ-286** is a blue-emitting WLS plastic with strong broad absorbance in the near-UV and formerly known as EJ-299-27. It is formulated to reduce the scintillation response by a factor exceeding 100x.



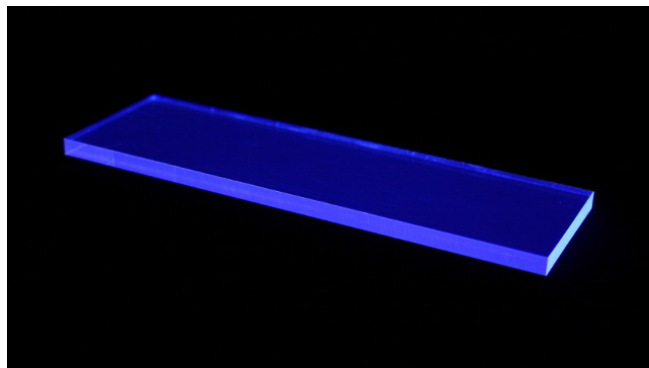
**EJ-280**



**EJ-282**



**EJ-284**



**EJ-286**

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PROPERTIES	EJ-280	EJ-282	EJ-284	EJ-286
Wavelength of Maximum Emission (nm)	490	481	608	425
Wavelength of Maximum Absorption (nm)	427	390	574	355
Decay Time (ns)	8.5	1.9	13	1.2
Quantum Efficiency (%)	86	93	95	92
Density (g/cm <sup>3</sup> )	1.023	1.023	1.023	1.023
Polymer Base	Polyvinyltoluene			
Refractive Index	1.58			
Softening Point	75°C			
Vapor Pressure	Vacuum-compatible			
Coefficient of Linear Expansion	7.8 × 10 <sup>-5</sup> below 67°C			

### CHEMICAL COMPATIBILITY

Attacked By: Aromatic solvents, Chlorinated solvents, Ketones, Solvent bonding cements, etc.

Stable In: Water, Dilute acids and alkalis, Lower alcohols, Silicone greases.

It is safe to use most epoxies with these plastics.

