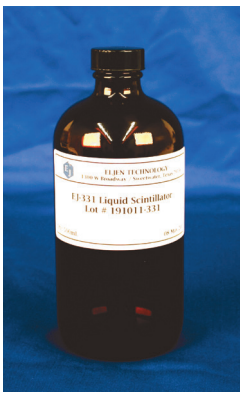
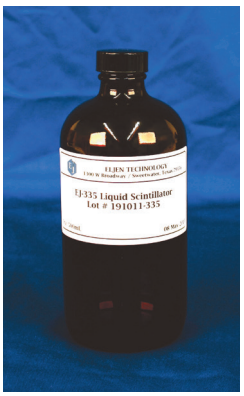
GADOLINIUM LOADED LIQUID SCINTILLATOR
EJ-331, EJ-335

The principal applications of these liquid scintillators are neutron spectrometry and neutrino studies. The neutron capture reaction in gadolinium produces a multiplicity of gamma rays with a total energy of about 8 MeV. Delayed coincidence and pulse shape discrimination techniques are commonly employed with these liquids. Also, because they are often employed in large volumes, both are formulated with high flash point solvents.

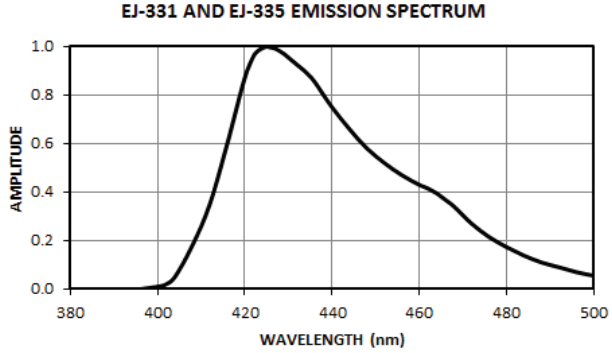
EJ-331, based on a fully aromatic solvent, provides the maximum light output consistent with long-term stability. The standard gadolinium loading is 0.5% by weight, but it is also available with gadolinium loadings from 0.1% to 1.5%.

EJ-335 contains mineral oil substituted for some of the aromatic solvent for purposes of higher hydrogen content and higher flash point for use in very large tanks. The maximum gadolinium content is 0.5%, and loadings down to 0.1% are used in very large volume detectors.





PROPERTIES	EJ-331-0.5%	EJ-335-0.25%
Gadolinium Content (% w/w)	0.5	0.25
Light Output (% Anthracene)	68	55
Wavelength of Maximum Emission (nm)	424	424
Bulk Light Attenuation Length (m)	> 4	> 4.5
Specific Gravity	0.90	0.89
Refractive Index	1.50	1.49
Flash Point (°C)	44	64
H Atoms per cm³ ($\times 10^{22}$)	5.27	6.16
C Atoms per cm³ ($\times 10^{22}$)	4.00	3.93
Electrons per cm³ ($\times 10^{23}$)	2.98	3.06



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