

EJ-313 HYDROGEN-FREE LIQUID SCINTILLATOR

EJ-313 is based on highly purified hexafluorobenzene and, as it is almost free from hydrogen, it is relatively insensitive to fast neutrons. It is useful for gamma ray detection in a fast neutron flux. (1) According to Jupiter and Parez (2) the ratio of the relative gamma ray response to neutron responses for EJ-313 compared to a xylene-based liquid scintillator is 14.5 for 2.6 MeV neutrons and 8.5 for 1 MeV neutrons. Ewen and Gonsior (3) found that the gamma ray and neutron efficiencies of this hydrogen-free scintillator to be 25% and 0.4% respectively, relative to those of a NaI (Tl) detector.

EJ-313 is available in bulk or encapsulated in the ELJEN type VMF cells which consist of an aluminum body with a 6mm thick optical window and sealed under inert gas.

References

1. S. Homma & S. Takemoto, Rev. Sci. Instr. **32**, No. 9, 1055 (Sept. 1961)
2. C.P. Jupiter & J. Parez, IEEE Trans. Nucl. Sci., NS-13, (1) 692-703 (1966)
3. K. Ewen & B. Gonsior, Nucl. Instr. & Meth., **99**, 573-578 (1972)

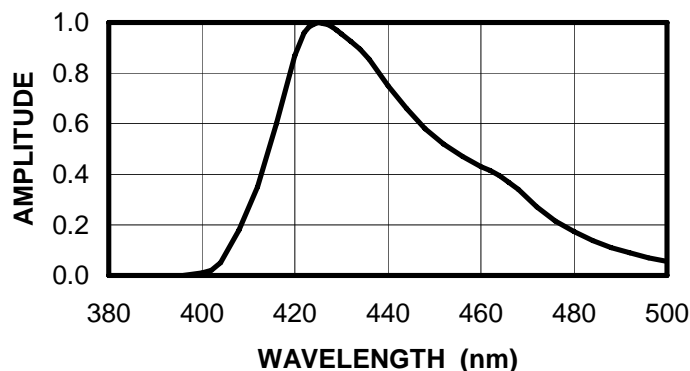
PROPERTIES

Light Output (% of Anthracene)	20%
Photons produced by a 1 MeV electron	3,060
Wavelength of Maximum Emission	425 nm
Decay Time, Short Component	~3 ns
Bulk Light Attenuation Length	>1 meter
Specific Gravity	1.619
Refractive Index	1.38
Flash Point	10°C (50°F)
Boiling Point	80°C

ATOMIC COMPOSITION

No. of F Atoms per cm ³	3.14 x 10 ²²
No. of H Atoms per cm ³	1.02 x 10 ²⁰
No. of C Atoms per cm ³	3.15 x 10 ²²
No. of Electrons per cm ³	4.72 x 10 ²³

EJ-313 EMISSION SPECTRUM



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