BC-720
Fast Neutron Detector

BC-720 is a scintillator designed specifically for detecting fast neutrons while being insensitive to gamma radiation. It consists of ZnS(Ag) phosphor embedded in a clear hydrogenous plastic and functions by means of the proton recoil interaction in the plastic, the proton being detected by the ZnS.

The detector is a plastic disc 0.625″ (15.9mm) thick, which can be mounted directly to photomultiplier tubes or to light guides using a variety of optical greases or epoxies. It is best used with PMTs with high blue sensitivities such as those having bialkali, S-20 or S-11 type photocathodes.

Performance Characteristics

The gamma discrimination capability provided by the BC-720 is of particular value. The gamma pulse height is usually less than the neutron pulse height, and in gamma fields below 1R/hr, the gamma rays can be easily rejected by pulse height discrimination. However, due to the random generation of recoil protons throughout the detector, the neutron spectrum is quite broad. In high gamma fields, the simultaneous detection of two or more gammas could produce pulse heights falling within the lower energy portion of the neutron spectrum, and the use of a lower discriminator for gamma rejection would reduce the neutron detection efficiency. Gamma rejection may also be achieved by the use of time constants of a few microseconds.

Scintillation Properties	
Decay Time, μs	0.2
Wavelength of Max. Emission, nm	450
General Technical Data	
Maximum Operating Temperature	90°C

Standard Sizes				
Overall Diameter	1.5” (38.1mm)	2” (50.8mm)	3” (76.2mm)	5” (127.0mm)

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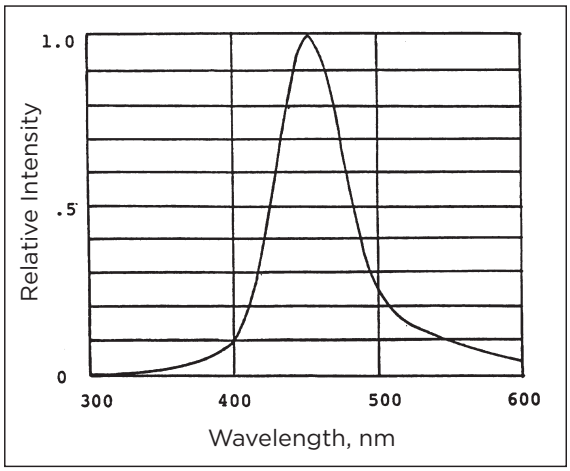
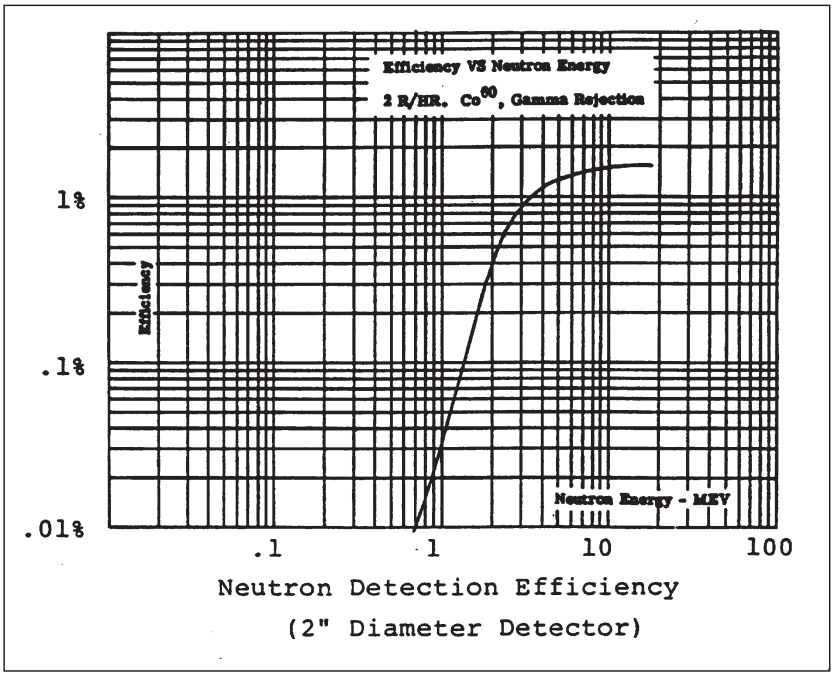
Emission Spectrum –



Neutron Detection Efficiency (*2" diameter detector*) **–**



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