

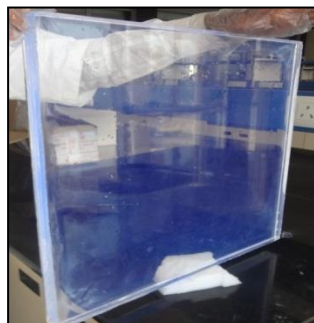
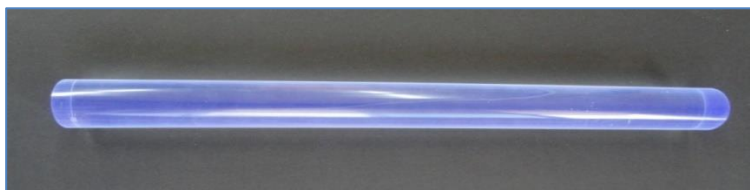
PLASTIC SCINTILLATOR SENSORS (ROD and SHEET)

Introduction: Plastic scintillator converts the energy dissipated by ionizing radiation into pulses of light. It consists of a solid solution of organic scintillating molecules in a polymerized solvent. Plastic scintillators are the most widely used organic scintillators for nuclear radiation detection. Polystyrene based plastic scintillator sensors of various dimensions have been developed. Plastic scintillator rods (length of 500 mm and diameter of 50 mm) and sheets (dimension 500 mm x 500 mm x 25 mm) have been successfully developed. Plastic scintillator sensors can be fabricated in large dimensions. They are more sensitive & fast and provide better area coverage as compared to GM tubes. Contamination monitoring systems based on plastic scintillator sensors requires very less sensors as compared to G.M. tube based systems e.g. a Laundry Monitor will require one or two large plastic scintillator sensors. Plastic scintillator based systems are more reliable and require very less maintenance.

Salient Features: Important features and parameters of the Plastic Scintillator sensor are as follows:

- Wide range of size flexibility based on applications (Disc, Rod, Sheet etc.)
- High sensitivity as compared to gas based sensors
- Fast response and better area coverage and Sufficiently high light output
- Relatively low cost

Parameter	Value/Range
Dimensions: Rod Sheet	Length 500 mm, diameter 50 mm 500 mm x 500 mm x 25 mm
Base Material	Polystyrene
Wavelength of maximum emission	420-425 nm
Light Output	~ 60% of Anthracene
Density	1.04 g/cc
Refractive index	1.58 ± 0.02
Softening temperature (Vicat A)	94-97 °C



Plastic Scintillator Disc, Rod and Sheet

Application: As a sensor in radiation contamination monitoring systems viz. Gamma Portal Monitor, Laundry Monitor, Hand Foot Contamination Monitor, Floor Contamination Monitor, Radiation Frisker etc.

Status: Tested and prototype systems for contamination monitoring based on the sensors are developed.