

# Radiological Film Badge

The film holders were developed by the National Radiological Protection Board (NRPB).

The design of the holder is based on a six filter system which satisfies the requirement that the filters are large enough to minimize edge effects, as well as leakage, and that there are sufficient number of filters to enable a detailed and accurate dose assessment to be made.

The film badge can be opened to show the different types and thicknesses of metals.

The badge is supplied without film.

The badge has six filters:

1) An open window which allows all incident radiation that can penetrate the film wrapping to interact with the film.

2) A thin plastic film which attenuates beta radiation but passes all other radiations

3) A thick plastic filter which passes all but the lowest energy photon radiation and absorbs all but the highest beta radiation.

4) A dural filter which progressively absorbs photon radiation at energies below 65keV as well as beta radiation.

5) A tin/lead filter of a thickness which allows an energy independent dose response of the film over the photon energy range 75keV to 2Mev.

6) A cadmium lead filter where the capture of neutrons by cadmium produces gamma rays which blacken the film thus enabling assessment of exposure to neutrons.



## Specification

**Detection:** X, beta and gamma-ray personal dose equivalents at depths of 10 mm [written as  $H_p(10)$  or body dose] and 0.07 mm [written as  $H_p(0.07)$  or skin dose]. These quantities give estimates of the effective dose equivalent and the dose equivalent to the skin, respectively, which are the quantities incorporated into the Ionising Regulations 1985.

**Dose Range:** 0.1 mSv to 10 Sv for beta and hard gamma-rays. 0.1 mSv to 400 mSv for X-rays.

**Energy Range:** Photons - 20 keV to 7 MeV for  $H_p(10)$ , 10 keV to 7 MeV for  $H_p(0.07)$ :  
Beta - 0.5 to 3.5 Mev ( $E_{max}$ ) for  $H_p(0.07)$

**Period of Use:** Suitable for wear periods of up to eight weeks.

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