



P1020 & P1030 E-Beam Calibration Phantoms

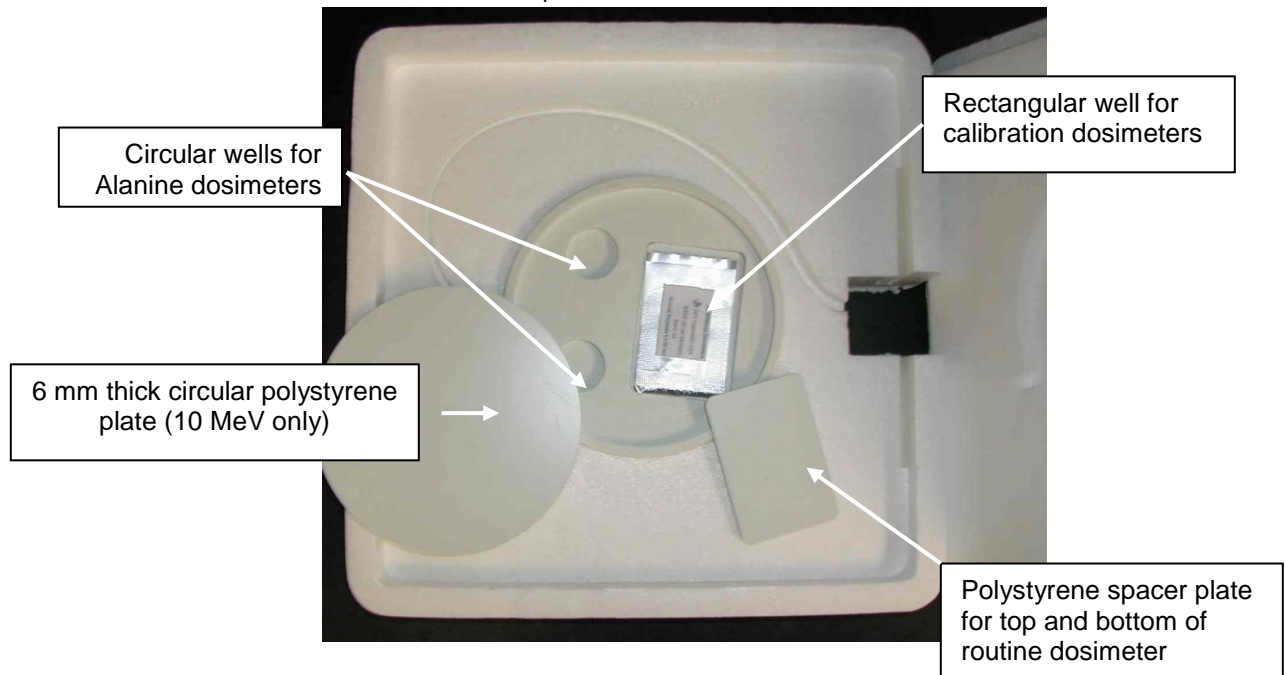
Technical and Usage Information

Electron beam calibration phantoms are used for performing in-plant batch calibration of dosimeters in electron beam irradiation facilities. These phantoms have been designed and built to provide a consistent method of presenting dosimeters to a radiation source as detailed in ISO/ASTM 51261. GEX Corporation recommends the utilization of the references listed at the end of this document.

Description:

P1020 - 10 MeV electron beam calibration phantom

P1030 - 5 MeV electron beam calibration phantom



Purpose

A fixture that ensures the routine dosimeters and reference dosimeters receive the same dose during irradiation.

Note: The phantom design alone cannot ensure that the dosimeters receive the same dose. The user should confirm that the dose distribution over the area of the phantom is uniform, and should select an optimal arrangement of the phantom in the irradiation zone to maintain this uniformity.

Instructions for Use:

1. Remove the foam top of the calibration phantom, then remove the round 6 mm thick circular polystyrene plate if using the P1020 (the P1030 dose not have this plate).
2. Place the alanine transfer dosimeter into one of the circular wells.
3. Sandwich routine dosimeters between the spacer plates using the same thickness spacer plates on both sides of the routine dosimeters. Plates of 1mm, 2mm, and 3mm are provided:
 - a. Choose spacer plates as thick as possible while still keeping the midline of the dosimeter thickness on the midline of the 6mm well depth.



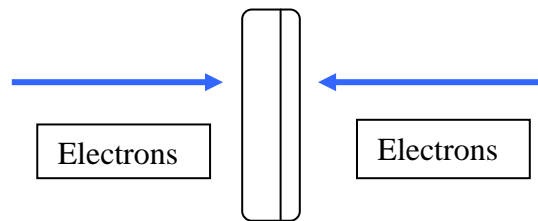
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- b. Use factory-packaged dosimeters and trim them if necessary to not overcrowd the routine dosimeter well with packaging material.
4. Secure all dosimeters in place with tape so that they do not shift during irradiation.
5. Place an irreversible temperature monitoring device (such as GEX item #P8003) in the calibration phantom between the alanine wells. Secure or tape it in place so that it does not shift during irradiation.

Note: The adhesive on the P8003 Irreversible Temperature Label is permanent. Do not stick them to the alanine transfer dosimeter cases or the phantom, rather keep the backer on and tape into place.

6. Replace the round polystyrene plate if using the P1020 securing it in place with tape, and then replace the foam top.
7. The calibration dosimeters and the transfer dosimeter should be oriented perpendicular to the electron beam while in the irradiation process in order to achieve the highest dose uniformity.



References:

ISO/ASTM 51261 - Standard Practice for Calibration of Routine Dosimetry Systems for Radiation Processing

NPL Report CIRM 29; Guidelines for the Calibration of Routine Dosimetry Systems for Use in Radiation Processing