

The water equivalency of polystyrene is tested by measuring the tissue maximum ratios for 12.5, 20, 30, and 40 mm diameter radiosurgery beams of 4, 6 and 10 MV, using a 0.02 cc ionization chamber from d_{\max} to 10 cm depth. The difference between the two sets of data, in general, is within 1%. For radiosurgery, off axis ratios and output factors are generally measured in polystyrene phantom, whereas the tissue maximum ratios are measure in water. Since for radiosurgery depths are to be very precise, based on the present results, tissue maximum ratios may also be measured in polystyrene. Since polystyrene is not subject to miniscus problems the thickness of it can be measured precisely. The data with a brief discussion will be presented.