

Abstract Submitted
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Linear attenuation coefficient and build up factor of MCP-96 alloy for radiation shielding and protection DEIDRE HOPKINS, MUHAMMAD MAQBOOL, MOHAMMED ISLAM — Build-up factors and linear attenuation coefficients of MCP-96 alloy are determined for radiation shielding and protection, using ^{60}Co and ^{137}Cs gamma emitters. A narrow collimated beam of γ -rays is passed through various thicknesses of MCP-96 alloy and the attenuation in the intensity of the beam is determined. The thickness of the $4 \times 4 \text{ cm}^2$ blocks varies from 0.5 cm to 6 cm. Plotting the thickness of the alloy and the corresponding intensity of the beam allowed us to determine its linear attenuation coefficient. The narrow beam geometry is then replaced by broad beam geometry by removing the collimator and the radiation beam is able to interact with the MCP-96 alloy at all possible positions facing the radiation source. Additional radiations obtained by the detector as a result from the scattering of radiation develops the build-up factor. The buildup factor is then calculated using the attenuated beam received by the detector in the broad beam geometry and in the narrow beam geometry. The buildup factor is found to be dependent on the thickness of the MCP-96 attenuator, the beam energy and the source to attenuator distance. These values are providing ways for dose correction in radiation oncology and radiation shielding and protection when MCP-96 is used as tissue compensator or for radiation protection purposes.

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