Tungsten Grating Blade

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Due to its high density, excellent absorption behaviour against radiation and environmental friendly characteristics, tungsten can be widely used to produce tungsten grating blade in multileaf collimators. Multileaf collimators consist of approximately 50–120 leaves of tungsten grating blade which slide into place to form the desired field shape.

Tungsten Grating Blade for Multileaf Collimators

Tungsten grating blades as the mainly component of multileaf collimators (MLCs) are used to further shape a beam to localize treatment fields in radiotherapy. Multileaf collimators help to shape the beam of radiation emerging from the machine, they can limit the maximum field size of a beam. For each multileaf collimator, two banks of independent tungsten grating blades face each other and travel linearly perpendicular to the beam central axis. Orthogonal to the direction of motion, the tungsten grating blade edge is parallel to the beam ray line from the target. A cross-sectional and front view of multileaf collimator. All details of the tungsten grating blade design were included in the tongue-and-groove used to reduce radiation leakage through interfaces between adjacent leaves and the complex rounded leaf tip.

The Advantages of Tungsten Grating Blade

The thickness 3mm of tungsten alloy shield can shield 95% of 150keV γ radiation. Tungsten alloy shield is suiting for high spatial resolution occasion, such as radiological Imaging array detectors. Tungsten alloy shield has high density, which is 60% higher than lead, could reach the same absorption radiation effective with the smaller size. Tungsten alloy shield has the ability of various high-ray shielding. Tungsten alloy Compared with lead, when they with the same performance of radiation shielding, the volume of tungsten alloy is 1/3 of lead. Tungsten radiation shielding is a kind of environmental protection material, which is less damage than lead. During design of shielding, tungsten alloy radiation shielding is calculated according to requirements of shield to abate the multiple shielding materials' thickness.

Formula: K = e0.693 d / 1/2
K: Shield weakened multiple
1/2: The tungsten alloy radiation shielding material of the half-value layer values