



Expect Service

Radiation Products Design Inc

INSTRUCTIONS

RPD INFORMATION

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RPD PRODUCT INFORMATION

Item Number	Tungsten Eye Shield with Aluminum Caps
936-583	11.6mm Inside Diameter x 2mm Thick
936-585	13.3mm Inside Diameter x 2mm Thick
936-587	15.0mm Inside Diameter x 2mm Thick
936-589	16.7mm Inside Diameter x 2mm Thick
936-591	18.4mm Inside Diameter x 2mm Thick
936-596	11.0mm Inside Diameter x 3mm Thick
936-598	12.7mm Inside Diameter x 3mm Thick
936-601	14.4mm Inside Diameter x 3mm Thick
936-623	16.1mm Inside Diameter x 3mm Thick
936-627	17.8mm Inside Diameter x 3mm Thick

OVERVIEW

Tungsten eye shields have less transmission than other eye shields

The Tungsten Eye Shield can use either the 0.5 mm or 1 mm thick anodized aluminum cap (both are included with each tungsten eye shield) to reduce the electron backscatter to the eyelid. The eye shield can be used without the aluminum cap when placed superficially.

Recommendations Based on Transmission Values:

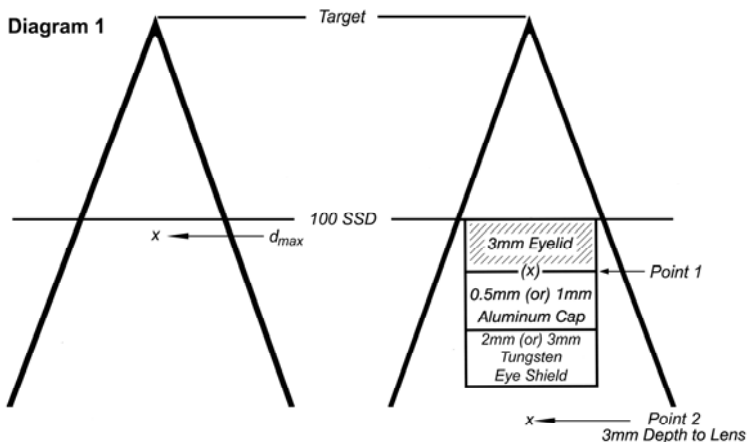
The 2 mm tungsten eye shield should be used for 6 MeV, and the 3 mm tungsten eye shield should be used for 9 MeV. **These tungsten eye shields are not recommended for use above 9 MeV.**

Specifications:

Tungsten Density: 17 g/cm³

Aluminum Density: 2.718 g/cm³

The user will have to determine an acceptable amount of backscatter to decide whether to use the 0.5 mm or 1 mm aluminum cap. See diagram 1 and table 1.



The doses are normalized to d_{max} without the eye shield (Diagram 1) using a 10 x 10 cone. When 1.00 Gy is delivered to d_{max} using 6 MeV with the shield, you get 1.08 Gy to the undersurface of the eyelid (Point 1) and 3.4% transmission to the lens (Point 2) (See table 1).

Table 1

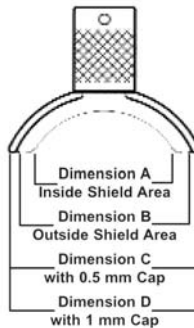
TRANSMISSION USING XV-2 FILM*		DOSE IN Gy When 1.00 Gy is Delivered to d _{max}			
		AT 3mm DEPTH*** USING TLD'S**			
6 MeV	9 MeV	6 MeV	9 MeV		
		0.72	0.77	Surface, No Shield	
		0.79	0.81	No Shield, Dose at Interface	Point 1
3.4%	5.6%	1.08	1.11	2mm Tungsten	Point 1
3.0%	4.8%	1.03	1.06	2mm Tungsten + 0.5mm Aluminum	Point 1
3.0%	4.4%	0.95	1.02	2mm Tungsten + 1.0mm Aluminum	Point 1
2.5%	3.3%	1.12	1.13	3mm Tungsten	Point 1
2.4%	2.9%	1.02	1.05	3mm Tungsten + 0.5mm Aluminum	Point 1
2.5%	2.8%	0.97	1.06	3mm Tungsten + 1.0mm Aluminum	Point 1

Unreferenced data on this product is preliminary findings of Radiation Products Design, Inc. and is not to be used as a technical reference.

*XV-2 Film placed under/below tungsten eye shield at 3 mm depth (anterior surface of lens).

**TLD Micro cubes placed under simulated eye lid using tungsten eye shields.

DIMENSIONS



Item #	Thickness	Dimension A	Dimension B	Dimension C	Dimension D
936-583	2 mm	11.6 mm	15.7 mm	17.8 mm	18.8 mm
936-585	2 mm	13.3 mm	17.4 mm	19.5 mm	20.5 mm
936-587	2 mm	15.0 mm	19.1 mm	21.1 mm	22.1 mm
936-589	2 mm	16.7 mm	20.8 mm	22.9 mm	23.9 mm
936-591	2 mm	18.4 mm	22.5 mm	24.6 mm	25.6 mm
936-596	3 mm	11.0 mm	17.4 mm	19.5 mm	20.5 mm
936-598	3 mm	12.7 mm	19.1 mm	21.2 mm	22.2 mm
936-601	3 mm	14.4 mm	20.8 mm	22.9 mm	23.9 mm
936-623	3 mm	16.1 mm	22.5 mm	24.6 mm	25.6 mm
936-627	3 mm	17.8 mm	24.2 mm	26.3 mm	27.3 mm

SPECIAL PRECAUTIONS

Immediately remove the eye shield if the patient has any of the following problems:

- Unusual eye secretions
- Eye pain such as: stinging, burning, itching, excessive watering, etc.

These problems are usually caused by soap residue on the eye shield.

- Note:**
- DO NOT** soak tungsten eye shields in Betadine Solution, as this will cause corrosion.
 - DO NOT** assemble damp/wet eye shield parts because an electrolysis effect will take place between two dissimilar metals causing parts to pit.
 - DO NOT** store in liquid - store dry and disassembled.
 - DO NOT** use or store in saline (sodium chloride) solution.

INSPECTION

Before each use and prior to sterilizing, examine eye shields and caps for burrs or rough edges, which could have occurred through normal use. Tungsten normally oxidizes over time, causing a discoloration of the eye shield. This does not effect performance of the eye shield.

CLEANING

Washing can be done with soap and water. Be sure to rinse thoroughly to remove all soap residue from eye shield.

STERILIZATION METHODS

CidexPlus: Separate parts prior to sterilization. Wash with soap and water at temperatures not exceeding 140°F. Soak in CidexPlus for minimum of 10 hours and follow instructions provided with CidexPlus. Immediately remove the eye shield if the patient has any of the following problems: eye pain such as: stinging, burning, itching, excessive watering, etc. These problems are usually caused by residue on the eye shield.

DO NOT assemble damp/wet eye shield parts because an electrolysis effect will take place between two dissimilar metals causing parts to pit.

Autoclave (Steam) Separate all parts prior to sterilization. Autoclave wrapped parts for 5 minutes at 270°F (132.3°C).

DO NOT assemble damp/wet eye shield parts because an electrolysis effect will take place between two dissimilar metals causing pitting of the eye shield and the aluminum cap.

Sterrad 100NX (Gas) Separate all parts prior to sterilization. **DO NOT** assemble when wet or damp. Uses Hydrogen Peroxide solution; temperature must not exceed 140° F. This type of sterilization will cause discoloration of some materials. The blue aluminum caps will discolor and tungsten will darken. This will not affect the density of the aluminum caps or the tungsten.

Steris System 1 **Not recommended**
Separate all parts prior to sterilization. **DO NOT** assemble when wet or damp. This sterilization process uses Peracetic Acid solution and will cause oxidation of some metals including aluminum, brass, nickel or silver. **Aluminum caps may oxidize if this method of sterilization is used.**

INSTRUCTIONS

1. The physicist must do calculations to determine which aluminum cap to use (0.5 mm or 1.0 mm).
2. Clean the eye shield with soap and water. Be sure to rinse thoroughly to remove all soap residues from the eye shield.
3. Inspect eye shield and cap carefully for scratches.
4. Sterilize according to the sterilization instructions.
5. Install contact lens to prevent scratches to the cornea and iris.
6. Hold eyelids open and insert the eye shield. Note: Ask patient if they are experiencing any burning sensation in the eye. If so, remove the eye shield immediately and rinse thoroughly to remove all soap residues.
7. The hole through the knob on the eye shield can be used with suture string to secure the eye shield to the patient's forehead using tape. Tape can also be used to hold the eyelid over the top of the eye shield.
8. After use, separate parts, wash with soap and water, then rinse thoroughly.
9. Store eye shields dry with parts disassembled.
10. The eye shields must be sterilized between patients.

Wax is not necessary to coat the eye shields. A soft contact lens can be used to protect the eye.

ELECTRON OR SUPERFICIAL SHIELDING

Purpose To protect the lens and cornea of the eye when treating the eyelid with electrons, we designed a tungsten and aluminum eye shield that protected both the lens and cornea, and also limited the amount of backscatter to overlying eyelid when using electron beam therapy.

Applications

Protection of the Eye

- A non-prescription soft contact lens in the eye may be used.

- Place tungsten eye shield directly on eye or over soft contact lens
- Use aluminum cap (.5mm or 1mm-included with eyeshield) for reduction of backscatter. Aluminum cap thickness used for treatment is to be determined by radiation physicist.
- The hole through the knob on the eye shield can be used with suture string to secure the eye shield to the patient's forehead using masking tape. Masking tape can also be used to hold the eyelid over the top of the eye shield.

External Shield of Eye or Superficial Shield

- Tungsten eye shields may be placed over the eyelid for external shielding during facial treatments.
- The aluminum cap is not used during this type of treatment.

WARRANTY

1 year from date of purchase.

REFERENCE

Evaluation of Eye Shields made of Tungsten and Aluminum in High-Energy Electron Beam - Randi D. Weaver B.S. Fairview - University Med. Ctr. PO Box 494, 420 Delaware St. SE, Mpls., MN 55455 Int. J. Radiation Oncology Biol. Phys, Vol. 41 Nal, pp 233-237-1998.

ACCESSORIES

Item #	Description
937-700	Soft Contact Lens Covers, 6/PKG