Guidelines for Designing a Mount for DuraBeryllium® X-ray Windows Technical Note

Figure 1 DuraBeryllium X-ray Window

Figure 2 DuraBeryllium Plus X-ray Window

Mounting Options

Moxtek offers these mounting services for DuraBeryllium windows.

- Epoxy adhesive (polymeric)
- Metal diffusion bond

Moxtek can supply mounts. Please provide a drawing with specific geometry and detail.

Moxtek® DuraBeryllium® windows are the highest performing beryllium x-ray windows available. DuraBeryllium windows are light tight, have high x-ray transmission, are vacuum tight, and corrosion resistant. DuraBeryllium windows can be attached with a high temperature metal diffusion bond or using a vacuum compatible epoxy. DuraBeryllium windows are used in a variety of applications including microanalysis, EDXRF, WDXRF, and XRD.

This Technical Note provides general guidelines for designing frames for Moxtek DuraBeryllium windows.

Table 1 Standard Window Sizes

Standard window sizes are shown in the following table:

Thickness (µm)	Diameter (mm)
8.0	4.9
8.0	5.7
8.0	7.9
8.0	9.2
8.0	12.0
12.5	12.0
12.5	16.0
25.0	9.2
25.0	16.0

For custom window sizes please contact Moxtek.

Mounting

Moxtek offers a mounting service for DuraBeryllium windows. Two types of bonding are used for mounting DuraBeryllium windows: epoxy adhesive and metal diffusion bond. Typical attachment of windows for both methods are shown in Figure 3 and 4 respectively.

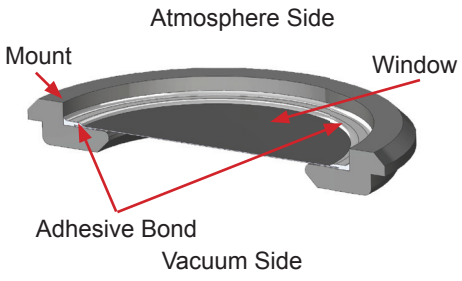

Figure 3 Typical Epoxy Adhesive Attachment of Beryllium Window

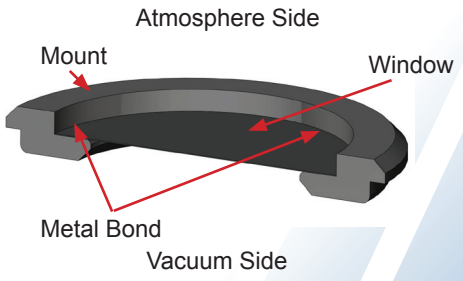

Figure 4 Typical Metal Diffusion Bond Attachment of Beryllium Window

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Window Mount Design Guidelines

Please use the recommended design guidelines when designing a window mount for DuraBeryllium windows. See Table 2 when designing a mount for metal diffusion bonding and Table 3 when designing for epoxy bonding.

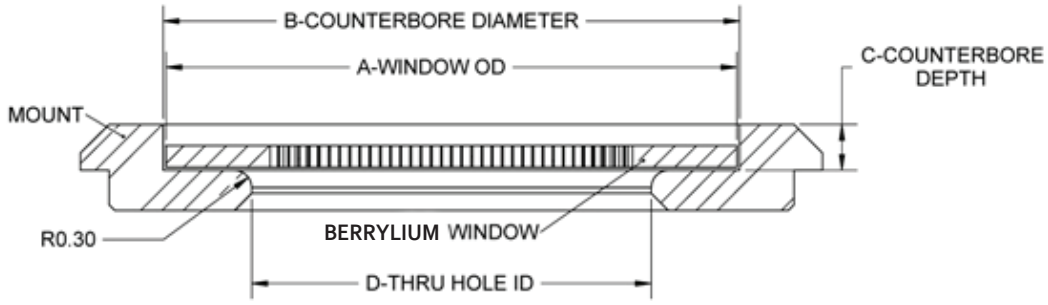

Figure 5 Recommended Window Frame Design Guidelines

Table 2 Design Guidelines for Metal Diffusion Bonding

WINDOW OD		COUNTERBORE DIAMETER (mm)- B X.XX ±.05	COUNTERBORE DEPTH- C		MAXIMUM THRU HOLE ID (mm)- D
Thickness (µm)	Diameter (mm)- A		MAXIMUM (mm)	MINIMUM (mm)	
8.0	9.20	9.45	0.70	0.50	7.00
8.0	12.00	12.25			
12.5	12.00	12.25			8.00
12.5	16.00	16.25			
25.0	9.20	9.45			7.00
25.0	12.00	12.25			9.00
25.0	16.00	16.25			13.00

Table 2 Design Guidelines for Metal Diffusion Bonding

Table 3 Design Guidelines for Epoxy Bonding

Foil Dimensions		COUNTERBORE DIAMETER (mm)- B X.XX ±.05	MINIMUM COUNTERBORE DEPTH (mm)- C	MAXIMUM THRU HOLE ID (mm)- D
Thickness (µm)	Diameter (mm)- A			
8.0	4.90	5.90	1.00	4.00
8.0	5.70	6.70		5.00
8.0	7.90	8.90		7.00
8.0	9.20	10.20		
8.0	12.00	13.00		
12.5	12.00	13.00		8.00
12.5	16.00	17.00		
25.0	9.20	10.20		7.00
25.0	12.00	13.00		9.00
25.0	16.00	17.00		13.00

Table 3 Design Guidelines for Epoxy Bonding

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