

Hermetic Waveguide and Sight Windows

Overview

Hermetic windows from Qnnect are reliable in the extreme conditions space & defense-related LADAR, laser designation/acquisition systems and medical endoscopic tools must operate in. We offer custom configurations as well as MIL-O-13830 Hermetic Windows.

Technical Advantages

Range of Sealing Options

Qnnect offers a variety of sealing options for custom hermetic windows. A direct glass-to-metal seal can be accomplished through the use of our Kryoflex polycrystalline ceramic. We also provide more traditional solder and active braze sealing options.

Variety of Glass/Frame Choices

Our optical windows can be configured with Corning 7056, BK10, 8337 Borosilicate, Soda Lime and sapphire glass. Fused silica, sapphire, Corning 7070 glass are options for waveguide windows. Titanium, stainless steel and Kovar are common frame materials.

Laser Weld Integration

Qnnect utilizes the latest state-of-the-art laser welding systems to integrate windows using the radiation from a focused, energy-dense, beam of infrared light. This non-contact welding process minimizes thermal and mechanical stresses, and provides an extremely small heat-affected zone, ensuring components or electronic packaging are exposed to the least-hostile welding environment possible.



Custom Hermetic Windows

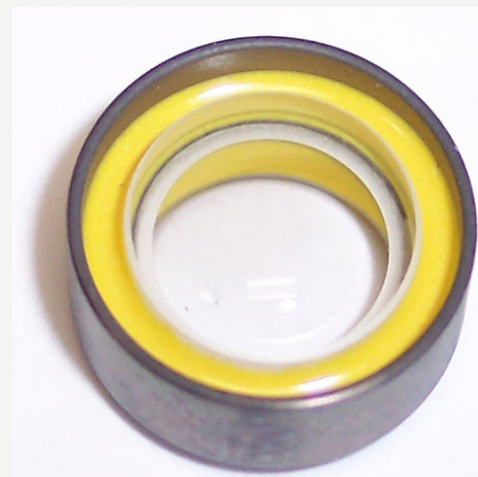
Our custom hermetic windows offer engineers additional advantages beyond high hermetic performance. They can be designed to be laser welded to a range of metals, including aluminum, titanium and iron/nickel alloys and accommodate a variety of optical glasses such as sapphire, quartz and BK10.

Ceramic-to Metal Sealing

Qnnect also offers a number of window sealing options including: proprietary active braze sealing; a patented direct sealing process; standard braze sealing solder sealing and a proven ceramic sealing process.

Qnnect's ceramic-sealed hermetic windows offer engineers additional advantages beyond high hermetic performance. Because Kryoflex seals at relatively low temperatures, they can now choose from a variety of optical glasses such as sapphire, quartz and BK10. Windows produced with this new process are extremely robust and reliable.

They provide a leak rate equal to or less than 1×10^{-9} cc/sec helium at 1 atmospheric differential pressure, even when subjected to extreme thermal and mechanical shock and, in medical applications, will maintain integrity after repeated (1,000+) autoclave sterilization cycles. Qnnect's ceramic-sealed windows have passed cytotoxicity testing so the materials are proven safe for use within the human body.



Ceramic-sealed hermetic windows require no metalization.

Custom Window Type	Window Material	Frame Material	Sealing Method
Optical	BK10	Iron/Nickel Alloy	Solder*
	Corning 7056		Direct Seal
	Sapphire	Titanium	Active Braze™
		Iron/Nickel Alloy	Kryoflex®
			Glass Frit, Solder*
Laser	Sapphire	Titanium	Active Braze
		Iron/Nickel Alloy	Kryoflex
			Glass Frit, Solder*
	Fused Silica	Iron/Nickel Alloy	Solder*
	Corning 7070	Iron/Nickel Alloy	Direct Seal

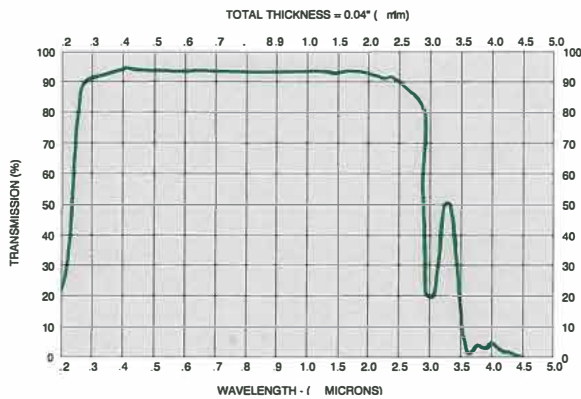
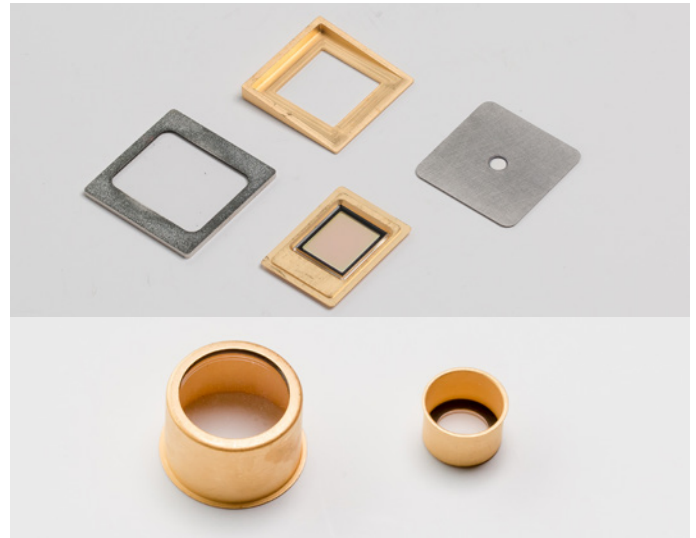
*Metalization required

MIL-O-13830 Hermetic Windows

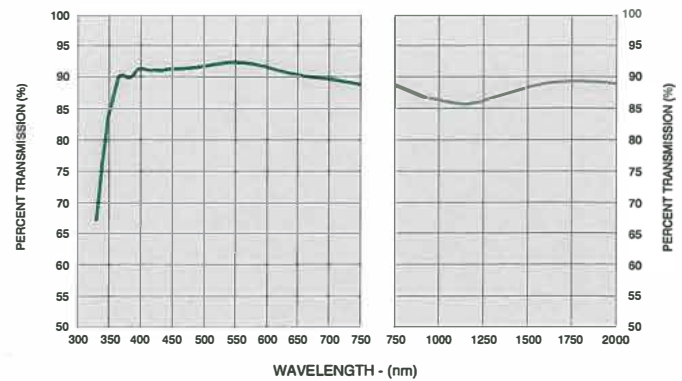
MIL-O-13830 windows from Qnnect can be produced in almost any size or shape - round, square, or rectangular- to meet specific requirements. Glass materials available include: borosilicate, soda lime, sapphire or 8337 borosilicate.

Shell/Glass Material Combinations

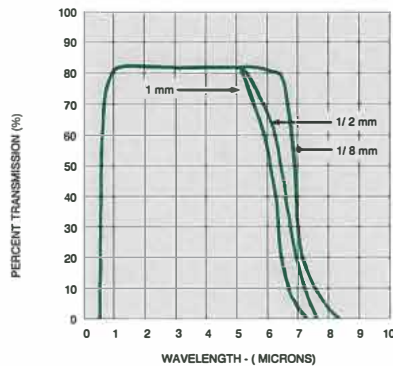
Shell Material	Glass Material
Kovar (F-15)	Borosilicate
Stainless Steel Alloy	Soda Lime
Kovar (F-15)	Sapphire
Kovar (F-15)	8337 Borosilicate



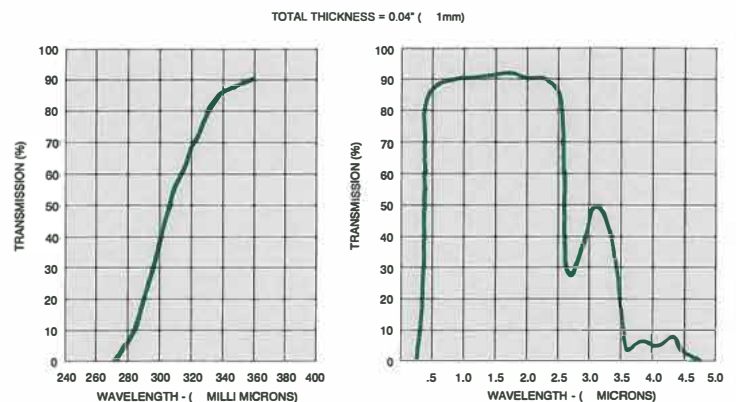
ULTRAVIOLET GLASS - UV 8337



SODA LIME GLASS



SAPPHIRE GLASS

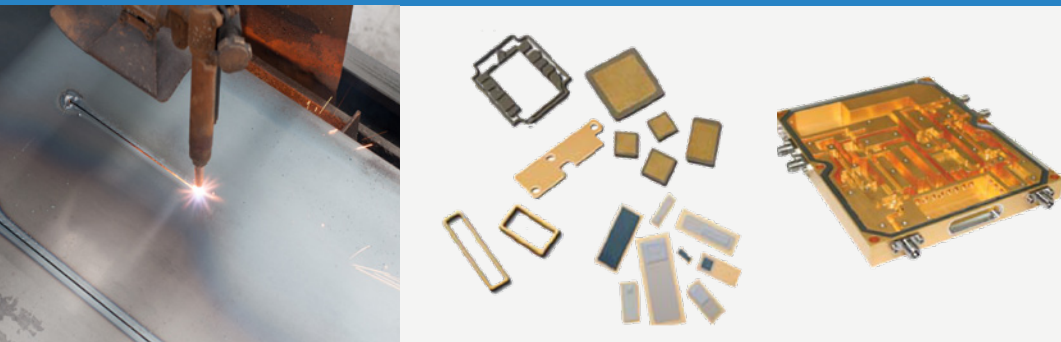


BOROSILICATE #7052 / 7056



For Product Info:
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For Company Info:
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Other Products & Services:

Hermetic Electronic Packaging

We bring customers' hermetic electronic package designs to life and use unique materials and manufacturing processes to help optimize for weight savings, footprint reduction, thermal transfer and more. Our precision machining capabilities allow us to meet very tight tolerances for Kovar, Aluminum, Titanium, and other material housings. We deliver the custom packaging solutions that ensure the electronics within those devices are unaffected by whatever extreme environmental condition they operate in.

Enabling Components

There's more to a reliable hermetic package solution than a box and connectors and we manufacture components to ensure a module's long term viability. We produce: getters to prevent build-up of contaminants; solder preforms that aid in attaching electronic circuitry; ring frames that become integral side walls of a hermetic package; and custom thermal spreaders that ensure heat from a chip or substrate is efficiently dissipated. To top things off, we also manufacture package lids.

Laser and Integration Services

We provide high-speed laser welding, sealing and marking with consistent accuracy. Our laser welding expertise also extends to the manufacture of custom designed/build laser welding and sealing systems for customers who wish to bring those capabilities in house.

