

SPECIALTY & CUSTOM SIGHT GLASS WINDOWS

Science, engineering and applied research; terms that refer to a scope of work so vast and complex that the meanings and implications are virtually limitless. Professionals working in these fields are often engaged in searches for products and services that will keep them on the cutting edge. The list of suppliers at their disposal can be overwhelming...except when it comes to Sight Glass Windows.

Because of the unique and challenging nature of glass, few companies have accumulated the skills and knowledge base to produce a wide range of high tech custom Sight Glass solutions. Applying a glass making technique to a particular challenge may solve one problem; but knowing how to engineer integrated solutions generates lasting value to customers.

Why McDanel?

- Much like our clients, McDanel continually seeks new solutions through innovation, experimentation, applied research & ongoing R&D
- All design, engineering & manufacturing is performed in-house in McDanel's U.S. facility
- Full-time, on-staff Sight Window Engineers are available for customer consultations & co-engineering
- McDanel has amassed an extensive database of custom manufactured & tested Sight Glass Products

Applications

McDanel develops custom products for working environments, including:

- Aerospace (from high speed atmosphere to space)
- Critical sour process operations in oil & gas (O&G) systems (API Spec)
- Lethal service pressure vessel applications (ASME Spec)
- Subsea O&G processing, inspection & intervention
- Cryogenic & refrigeration systems
- HPHT systems for scientific research & observation
- Combustion analysis (high temperature) in laboratory environments
- Downhole camera & video systems for drilling tools, downhole equipment & well intervention
- High pressure flow cells for laminar flow analysis

Capabilities

- Pressure Ranges - ultra-high vacuum to 100Kpsi (6890bar)
- Temperature Ranges - cryogenic temperatures of ~ -150°C (-238°F) to 1850°C (3362°F)

Specifications met or exceeded include but are not limited to:

- ASME B31.3, B16.5, DIN/EN (7080 & others), ANSI, AS9100, Sanitary 3-A, USP Type1/Class 6, BPE, PED Directive 97/23/EG



ASME 400# High Pressure Sight Glass Window



Downhole Camera Annular Lens High Pressure



Nuclear Reactor Sight Glass Portal

For applications that fall outside McDanel's established database, McDanel uses a Front End Engineering and Design (FEED) process to ensure quality and mitigate risk. The FEED Process can shorten development time, reduce costs and increase success rates by ensuring that all McDanel departments and the customer collaborate in the design, manufacturing and testing processes.

The following steps allow McDanel to determine if an inquiry will be fulfilled by a stock or custom solution.

- Customer provides project details by completing the McDanel Customer Spec Form. Some details to consider:
 - Pressure requirements (max/min/test)
 - Housing type (flanged, threaded, etc.)
 - Temperature (max/min)
 - Clarity requirements
 - Clear aperture
 - Chemical exposure
 - Quantity
 - Project budget
- McDanel reviews requirements:
 - A McDanel Sight Window Engineer reviews the McDanel Customer Spec Form and reaches out for further clarification.

- A determination is made on whether a McDanel Stock or Custom Sight Window will be the best solution. McDanel will always recommend a stock option if possible
3. McDanel provides a formal quotation as quickly as possible.

Housing & Window Options For Custom Sight Glass Windows

HOUSING MATERIALS STOCK	HOUSING MATERIALS BUILD-TO-ORDER & CUSTOM	WINDOW MATERIALS STOCK	WINDOW MATERIALS BUILD-TO-ORDER & CUSTOM
NPT - 316 Stainless Steel	Alumina / other ceramics	Borosilicate (Pyrex™) Glass	Calcium Fluoride
SAE - 316 Stainless Steel	Aluminum	Borosilicate Fused Glass	Diamond
ASME - 316 Stainless Steel	Hastelloy	Fused Quartz Glass	Germanium
Triclamp - 2205 Duplex Stainless Steel	Inconel	Fused Silica Glass	Magnesium Fluoride
	Invar	Sapphire, C-Axis Crystal	Microware Transparent Materials
	Kovar	Soda Lime Fused Glass	Quartz Crystal
	Monel	Soda Lime Glass	Silicon
	Niobium		Yag
	Stainless Steel 17-4		Zinc Selenide
	Stainless Steel 303		
	Stainless Steel 304		
	Stainless Steel 316		
	Stainless Steel Duplex		
	Steel A105		
	Steel 1018		

	Titanium		
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