

Windows

Optional Fittings

Windows can be installed in Parr stirred reactors and pressure vessels for visual observations, light transmission and other purposes. They usually are installed in pairs so that light can be introduced through one window while the other is used for viewing. Our standard material for these windows is quartz. Sapphire is also available for small diameter windows. Alternative window materials are available for specific transmission requirements. They can be mounted in several different ways.

Screw-in Windows

The simplest window is a screw-in type with a 5/8 inch diameter viewing area. The element in these windows is sealed in a fitting which screws into the vessel using a standard 1/2 inch NPT male pipe thread. Obviously, the vessel wall must be thick enough to provide full engagement for this thread. PTFE gaskets and O-ring seals restrict the maximum operating temperature to 225 or 275 °C, depending upon the O- ring material. Pressure ratings range from 2000 to 5000 psi, depending upon the window material and its thickness. Although these windows are rather small for straight optical viewing, they work well for small video systems and for laser and other analytical beams. A limitation of this design is that there is a dead space approximately 1.25 inches long between the inner face of the window and the inside wall of the vessel.

Integral Windows

Parr has developed designs for installing windows in the wall of the vessel so that the inside face of the window is very close to the inside wall of the vessel. This eliminates the large dead space associated with screw-in windows. These windows are offered in the two styles described below. The maximum size of the window will depend on the size of the cylinder in which it will be installed.

Circular Windows with a .62 inch diameter viewing area are the standard. Circular windows are available in a variety of materials including sapphire for very high pressures. This type of window is generally used for visual, photographic or optical sensor observations.

Oblong Windows with a viewing area 3.50" long and .62" wide are the standard size and can be installed on vessels of 100 mL and larger. These windows are commonly used for visual observations in both the vapor and liquid phases and for observing the liquid level in the vessel. Multiple windows can be stacked on larger vessels.

Windows in both the round and oblong styles can be furnished in larger sizes upon request. The windows we have rated above as standard are maintained in our inventory for readily available replacements.

All reactors and pressure vessels equipped with windows require custom designed heaters and supports. Flexible heating mantles and attached circulating jackets are the most commonly used heaters for window vessels. Windows are sealed into these vessels with o-rings. For this reason, vessels equipped with windows are restricted to operating temperatures of 225 or 275 °C depending upon the O-ring material selected.



2000 mL
Pressure
Vessel with
Three Screw-
In Quartz
Windows



Pressure/Tensile
Test Vessel with
Three Circular
Quartz Windows



2000 mL
Stirred
Reactor with
Two Elliptical
Quartz
Windows



One Liter
Zirconium
Reactor with
Four Windows



Cylinder for One
Gallon Pressure
Vessel with Steam
Jacket, Temperature
Probe, Two quartz
Windows and Two
Flanged Ports for
Special Electrical
Devices



Flexible
Mantle Heater
on an Elliptical
Window
Vessel



Cylinder for
600 mL Vessel
with Three
Windows



High Pressure Combustion
Chamber with Eight Windows