Industrial Glass - Tubular Gauge Glasses

We manufacture a wide range of tubular gauge glass types and sizes for liquid level applications ranging from coffee machines to industrial steam boilers. These products are manufactured from low expansion Borosilicate glass which is specifically noted for its high chemical and corrosion resistance, and its clarity and mechanical strength.

Standard tube diameters are normally available from stock i.e. 3/8", 7/16" 1/2", 9/16", 5/8", 11/16", 3/4", 7/8" and 1". We can also produce glass to meet specific customer requirements. Standard lengths are available up to 2 metres, and longer lengths for some diameters can be supplied on special request.

Glasses can be supplied with ends cut or flame polished. It is assumed that lengths of 48" tube and under are to be used as finished gauge glasses and are therefore supplied with flame polished ends.

Standard

Glasses made from borosilicate tubing are used for low pressure applications such as level indication in tanks etc, where hydrostatic pressure is the only consideration.

5/8" diameter tubing is generally available from stock and other sizes are available on special request.
High Pressure

These glasses are manufactured from our high quality borosilicate tubing and are especially suited for heavy duty sight level work in a range of pressure applications such as boilers, tanks and pressure vessels. This type of liquid level gauge glass is also available with red and white meniscus enhancing lines.

Heavy Wall

This extra heavy walled tubing allows even higher pressure ratings (up to 600psi) than the high pressure type. It is available in 5/8” and 3/4” diameters and in lengths up to 48”.

As with the high pressure glass, this type of tube is also available with red and white meniscus enhancing lines.

Red-line

This type of gauge glass has red and white meniscus enhancing lines. This is achieved by the application of specially developed paints that are bonded to the glass without etching.

The use of low curing temperatures means no pressure rating reduction is necessary.
In steam boiler service, corrosion of gauge glass presents a variety of problems: this is because the temperature of saturated steam increases with the steam pressure resulting in an increased rate of attack (a flat transparent gauge glass can be protected using a mica shield but this is not possible where tubing is concerned).

Chemical treatment of boiler feed waters to reduce steel corrosion will produce an alkalinity of the water at pH values between 10 and 11, sometimes higher, leading to further increases in the rate of wear of the glass. Fortunately, the water in contact with the gauge glass, being furnished largely by condensate through the upper connection to the boiler, will be less alkaline than that in the boiler.

This condensate, by flowing over the glass, dissolves minute quantities of silica. These small quantities of silica in solution inhibit the attack of the boiler water in the glass to a considerable extent. The fresh condensate entering the gauge will often attack the glass in upper areas, more than in the lower part of the gauge, where the temperature is lower and where the degree of saturation of silica is greater. This effect is particularly noticeable in the case of tubular gauge glasses.

Apart from the boiler pressure, which determines the saturation steam temperature, the other factors determining corrosive rate of attack are:

1. Speed of condensate flow into the gauge
2. The amount of circulation of water between the gauge column and boiler through the lower connection
3. The temperature drop between the boiler and the gauge column
4. Details of boiler operating routine

Because of these variables, between one boiler installation and another, it is not possible to state specific steam pressures at which the rate of glass corrosion becomes unacceptably high. In general, it is found that tubular type gauges are not suitable at pressures beyond 300 to 350 psi.

**TYPICAL PROPERTIES**

This graph illustrates how the rate of attack increases with the temperature and concentration of NaOH.

![Graph showing rate of attack vs temperature and NaOH concentration](image_url)

*† Calculated from weight loss over a 24 hour period*
TUBULAR GAUGE GLASSES

Spectraglass manufacture a wide range of tubular gauge glass types and sizes, for sight level work in applications ranging from coffee machines to industrial steam boilers.

They are manufactured from low expansion Borosilicate glass, specially noted for its high chemical and corrosion resistance, also its clarity and mechanical strength.

All standard diameters are stocked including, 3/8", 7/16" 1/2", 9/16" 5/8", 11/16", 3/4", 7/8" and 1", We can also produce glass to specific customer requirements. Standard lengths are up to 2 meters, longer lengths of some diameters can be supplied on special request.

Glasses can be supplied with ends cut or flame polished. It is assumed that lengths 48" and under are to be used as finished gauge glasses and, are therefore, supplied with flame polished ends.

STANDARD TYPE

Glasses made from soda lime tubing, used for low pressure applications, such as level indication in tanks etc. where hydrostatic pressure is the only consideration. Available from stock in 5/8” diameter, other dimensions are available on special request.

HIGH PRESSURE TYPE

These glasses are manufactured from our high quality, borosilicate tubing, and are especially suited for heavy duty sight level work in a range of pressure applications such as boilers, tanks and pressure vessels. This type is also available with red and white meniscus enhancing lines, the application of specially developed paints that are bonded to the glass without etching, and use low curing temperatures, means that no pressure rating reduction is necessary.

HEAVY WALL TYPE

This extra heavy walled tubing allows even higher pressure ratings (up to 600psi) than the high pressure type. It is available in 5/8” and 3/4” diameters in lengths up to 48”

As with the high pressure glass, this type is also available with red and white meniscus enhancing lines.