Chanter BioMed 01274 414666

TUBULAR GAUGE GLASSES

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.

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.

TUBULAR GAUGE GLASS - CORROSION

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

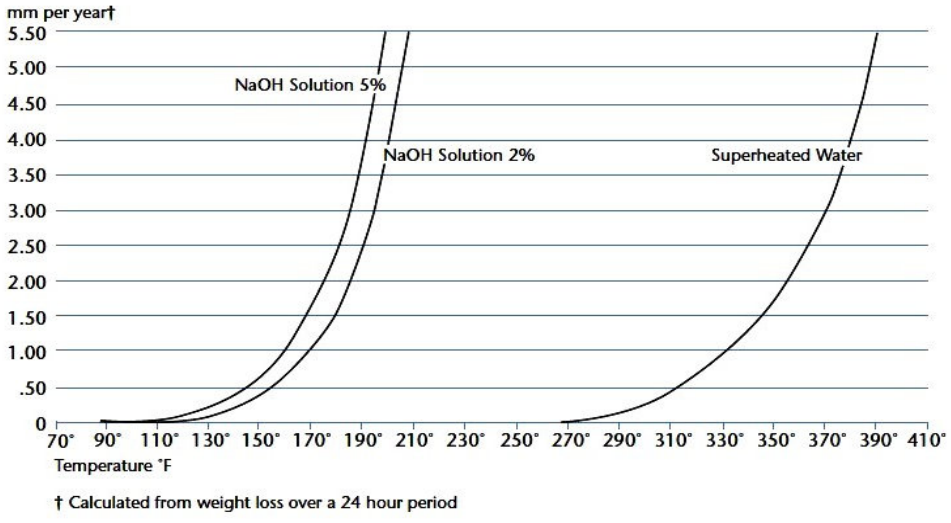
Apart from the boiler pressure, which determines the saturation steam temperature, the other factors determining corrosive rate of attack are:

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



PRESSURE RATINGS PLAIN AND RED LINE TUBING

O.D.12.6±0.4mm Wall 2.2±0.3mm

Length		Max. Pressure No Corrosion @ 65C (150°F)		Steam Boiler Service up to 210C (425°F)	
Inches	mm	Standard	Red Line	Standard	Red Line
8	203	460	390	340	300
10	254	445	370	335	295
12	305	435	360	325	295
14	356	415	345	315	290
15	381	405	*	310	*
16	406	400	335	300	285
18	457	385	325	295	280
20	508	375	310	285	280
22	559	355	*	280	*
24	610	340	280	270	270
30	762	295	250	*	*
36	914	260	215	*	*
48	1219	205	175	*	*
60	1524	155	135	*	*
72	1829	110	100	*	*
*	2000	85	75	*	*

O.D.15.4±0.4mm Wall 2.4±0.3mm

Length		Max. Pressure No Corrosion @ 65C (150°F)		Steam Boiler Service up to 210C (425°F)	
Inches	mm	Standard	Red Line	Standard	Red Line
8	203	435	370	320	280
10	254	420	345	315	275
12	305	410	335	305	275
14	356	390	325	295	270
15	381	380	*	290	*
16	406	375	315	285	265
18	457	360	305	280	260
20	508	350	290	270	260
22	559	335	*	265	*
24	610	320	265	255	250
30	762	280	235	*	*
36	914	245	205	*	*
48	1219	195	165	*	*
60	1524	150	125	*	*
72	1829	100	90	*	*
*	2000	75	65	*	*

O.D.18.6±0.4mm Wall 3.0±0.3mm

Length		Max. Pressure No Corrosion @ 65C (150°F)		Steam Boiler Service up to 210C (425°F)	
Inches	mm	Standard	Red Line	Standard	Red Line
8	203	425	360	315	280
10	254	410	340	310	275
12	305	400	330	300	275
14	356	385	320	290	270
15	381	375	*	285	*
16	406	370	310	280	265
18	457	355	300	275	260
20	508	345	285	265	260
22	559	330	*	260	*
24	610	315	260	250	250
30	762	275	230	*	*
36	914	240	200	*	*
48	1219	190	160	*	*
60	1524	145	125	*	*
72	1829	100	100	*	*
*	2000	75	65	*	*