



DURAN®
Tubular Gage Glasses

Standard, High Pressure, Red Line, Heavy Wall and
Heavy Wall Red Line

Where others say no, we say yes. Because at SCHOTT we believe that shared responsibility can release the energy to achieve the impossible. As a global material technology group, we are constantly exploring unique and innovative ways to make a difference for businesses and people. Being a foundation company, SCHOTT has anchored responsibility, scientific research, society and the environment deeply in its DNA. Represented in over 30 countries by 17,200 employees, we are a highly skilled partner for many high-tech industries. Whatever challenges the future might hold, we can't wait to come up with innovative solutions and turn visions into reality.

With a production capacity of round about 230,000 tons and production sites in Europe, South America and Asia, SCHOTT Tubing is one of the world's leading manufacturers of glass tubes, rods and profiles. More than 60 different glass types are produced in a large variety of dimensional and cosmetic specifications based on a standardized production process and a global quality assurance system. SCHOTT Tubing provides customized products and services for international growth markets such as pharmaceuticals and electronics as well as industrial and environmental engineering.



DURAN® Tubular Gage Glasses

Product Information

Many years of experience allow SCHOTT to provide DURAN® tubular gage glasses that are preferred in a wide variety of industrial and commercial applications.

DURAN® tubular gage glass is offered as Standard, High Pressure, Red Line, Heavy Wall, Heavy Wall Red Line.

Diameters range from 1/2" OD to 1 1/2" OD. End finishes may be fire-polished or saw cut with ground edges depending on application. Pressure ratings range from 90 psi to 600 psi depending on end finish, diameter, and length required.

In all cases, before placing a SCHOTT DURAN® product into your process, read the "Use and Care" section of this product catalog and the "Use and Care" sheet provided with the product. Pay strict attention to installation and maintenance instructions, maximum use criteria, cautionary messages, and warnings.

To ensure the quality and performance of SCHOTT's tubular gage glasses, look for the DURAN® trademark.

Corrosives

The borosilicate glass used to manufacture these products is outstanding for chemical services. Certain limitations, however, must be recognized.

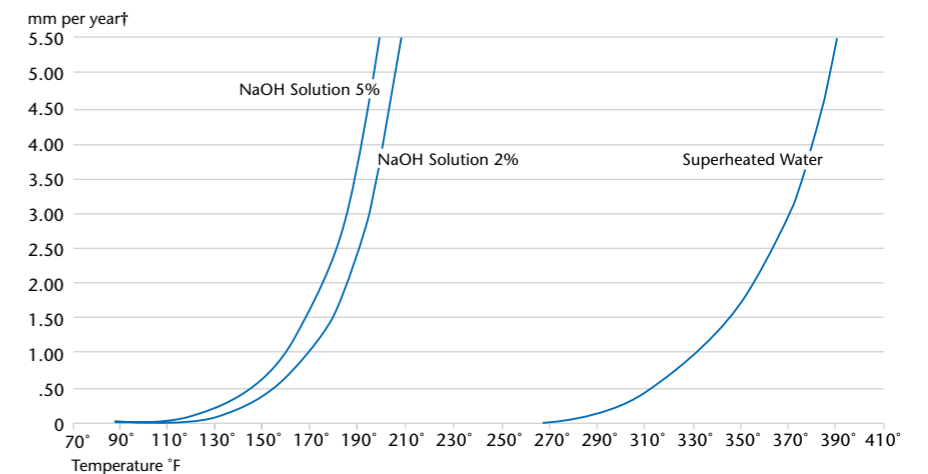
Some materials reduce the useful life of the gage glass by chemical action: e.g. hydrofluoric acid (HF); hot concentrated phosphoric acid; sodium and potassium hydroxides above 125 °F; steam or superheated water above 250 °F (see graph below).

Effects of Water and Alkaline Solutions, with Temperature Increase

Alkaline solutions attack glass very slowly at room temperatures, but as temperature is increased over 100 °F, the corrosion rate rises rapidly.

Depth of Attack vs. Solution Temperature

The accompanying graph illustrates how the rate of attack increases with temperature and concentration.



* Calculated from weight loss over a 24 hour period

DURAN® is a registered trademark of DWK Life Sciences GmbH

DURAN® Tubular Gage Glass Standard



Benefits: Economical, low pressure applications, long service life
 End Finish: Fire-polished

Maximum Recommended Working Pressure, psi

DURAN® Standard

Outside Diameter OD	Wall Thickness WT	Length* In.	Code	Temperatures Up to 150 °F No Corrosion**	Steam Boiler Service Up to 425 °F	Pieces Per Carton	
5/8" OD +0, -3/64"	5/64" WT ±1/64"	8	1084497	210	100	12	
		10	1084498	210			
		12	1084500	205			
		14	1084502	200			
		16	1084503	195			
		18	1084316	190			
		20	1086339	185			
		24	1084321	180			
		30	1084322	175			
		36	1084507	165			
		48	1084508	140			NOT RECOMMENDED
		60	1084511	120			
		72 (Max.)	1084512	100			
		3/4" OD +0, -3/64"	3/32" WT ±1/64"	8			1098082
10	1098099			210			
12	1084513			205			
14	1084328			200			
16	1084514			195			
17	1084515			190			
18	1090037			190			
20	1098120			185			
24	1084330			180			
30	1098122			175			
36	1084516			165	NOT RECOMMENDED		
48	1084331			140			
60	1084517			120			
72 (Max.)	1084518			100			

* Additional lengths are available for purchase. Please contact Customer Service for price and lead time.
 ** See Corrosives, Pg 3

DURAN® Tubular Gage Glass High Pressure



Benefits: Visual indication of liquid flow, contamination or discolorization of liquid, metering a constant rate of flow through a fixed port
 End Finish: Fire-polished, for OD < 7/8 and larger: saw cut with ground edges

Maximum Recommended Working Pressure, psi

DURAN® High Pressure

Outside Diameter OD	Wall Thickness WT	Length* In.	Code	Temperatures Up to 150 °F No Corrosion**	Steam Boiler Service Up to 425 °F	Pieces Per Carton
1/2" OD +0, -1/32"	5/64" WT ±1/64"	8	1084333	460	340	12
		10	1084335	445	335	
		12	1084337	435	325	
		14	1084338	415	315	
		16	1086313	400	300	
		18	1084339	385	295	
		20	1086314	375	285	
		24	1084340	340	270	
		30	1086315	295		
		36	1084341	260		
		48	1084342	205	NOT RECOMMENDED	
		60	1084343	155		
		72	1084344	110		
		5/8" OD +0, -1/32"	3/32" WT ±1/64"	8	1084347	
10	1084351			420	315	
12	1084356			410	305	
14	1084358			390	295	
16	1084362			375	285	
18	1084363			360	280	
20	1084364			350	270	
24	1084366			320	255	
30	1084367			280		
36	1084369			245		
48	1084371			195	NOT RECOMMENDED	
60	1084372			150		
72	1084373			100		

* Additional lengths are available for purchase. Please contact Customer Service for price and lead time.
 ** See Corrosives, Pg 3

DURAN® Tubular Gage Glass

High Pressure



Benefits: Visual indication of liquid flow, contamination or discolorization of liquid, metering a constant rate of flow through a fixed port

End Finish: Fire-polished

DURAN® High Pressure Maximum Recommended Working Pressure, psi

Outside Diameter OD	Wall Thickness WT	Length* In.	Code	Temperatures Up to 150 °F No Corrosion**	Steam Boiler Service Up to 425 °F	Pieces Per Carton
3/4" OD +0, -1/32"	7/64" WT ±1/64"	8	1084376	425	315	12
		10	1086316	410	310	
		12	1084377	400	300	
		14	1084379	385	290	
		16	1084381	370	280	
		18	1084382	355	275	
		20	1084383	345	265	
		24	1084385	315	250	
		30	1084386	275	NOT RECOMMENDED	
		36	1084387	240		
		48	1084388	190		
		60	1084389	145		
		72	1084390	100		

* Additional lengths are available for purchase. Please contact Customer Service for price and lead time.
 ** See Corrosives, Pg 3

DURAN® Tubular Gage Glass

High Pressure



Benefits: Visual indication of liquid flow, contamination or discolorization of liquid, metering a constant rate of flow through a fixed port

End Finish: Saw cut with ground edges

DURAN® High Pressure Maximum Recommended Working Pressure, psi

Outside Diameter OD	Wall Thickness WT	Length* In.	Code	Temperatures Up to 150 °F No Corrosion**	Steam Boiler Service Up to 425 °F	Pieces Per Carton
7/8" OD +0, -1/32"	1/8" WT ±1/32"	30	1098161	285	NOT RECOMMENDED	12
		48	1086317	210		36
		60	1086312	160		12
		72	1086319	110		16
		8	1098162	345		NOT RECOMMENDED
10	1098164	335				
12	1098167	325				
36	1098168	240				
48	1084391	190				
60	1086320	145				
72	1084392	100				

* Additional lengths are available for purchase. Please contact Customer Service for price and lead time.
 ** See Corrosives, Pg 3

DURAN® Tubular Gage Glass

High Pressure



Benefits: Visual indication of liquid flow, contamination or discolorization of liquid, metering a constant rate of flow through a fixed port

End Finish: Saw cut with ground edges

DURAN® High Pressure **Maximum Recommended Working Pressure, psi**

Outside Diameter OD	Wall Thickness WT	Length* In.	Code	Temperatures Up to 150 °F No Corrosion**	Steam Boiler Service Up to 425 °F	Pieces Per Carton
1 1/8" OD +0, -3/64"	1/8" WT ±1/32"	24	1098170	235	NOT RECOMMENDED	12
		36	1098176	200		
		48	1098177	180		
		60	1086318	150		
		72	1086311	130		
1 1/4" OD +0, -3/64"	1/8" WT ±1/32"	8	1086321	240	NOT RECOMMENDED	12
		10	1086308	235		
		24	1098178	210		
		30	1084397	200		
		36	1084305	180		
		48	1086322	160		
		60	1086324	135		
		72	1086323	115		
1 1/2" OD +0, -3/64"	1/8" WT ±1/32"	8	1084398	210	NOT RECOMMENDED	12
		12	1098198	200		
		24	1098199	185		
		36	1098220	160		
		48	1086325	140		
		60	1086309	120		
		72	1086310	100		

* Additional lengths are available for purchase. Please contact Customer Service for price and lead time.
 ** See Corrosives, Pg 3

DURAN® Tubular Gage Glass

Red Line



Benefits: The red line shaded with white makes it easier to read the liquid level metering a constant rate of flow through a fixed port

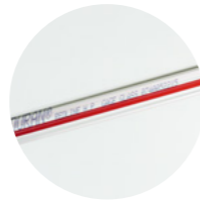
End Finish: Fire-polished

DURAN® Red Line **Maximum Recommended Working Pressure, psi**

Outside Diameter OD	Wall Thickness WT	Length* In.	Code	Temperatures Up to 150 °F No Corrosion**	Steam Boiler Service Up to 425 °F	Pieces Per Carton
1/2" OD +0, -1/32"	5/64" WT ±1/64"	8	1084399	390	300	12
		10	1098222	370	295	
		12	1084432	360	295	
		14	1084400	345	290	
		16	1098247	335	285	
		18	1084401	325	280	
		20	1084402	310	280	
		24	1084434	280	270	
		30	1084403	250	NOT RECOMMENDED	
		36	1084435	215		
		48	1084436	175		
		60	1084437	135		
		72 (Max.)	1084438	100		
5/8" OD +0, -1/32"	3/32" WT ±1/64"	8	1084441	370	285	12
		10	1084443	345	280	
		12	1084448	335	280	
		14	1084449	325	275	
		16	1084450	315	270	
		18	1084453	305	265	
		20	1084455	290	265	
		24	1084457	265	255	
		30	1084458	235	NOT RECOMMENDED	
		36	1084459	205		
		48	1084462	165		
		60	1084439	125		
		72 (Max.)	1084440	90		

* Additional lengths are available for purchase. Please contact Customer Service for price and lead time.
 ** See Corrosives, Pg 3

DURAN® Tubular Gage Glass Red Line



Benefits: The red line shaded with white makes it easier to read the liquid level metering a constant rate of flow through a fixed port

End Finish: Fire-polished

DURAN® Red Line **Maximum Recommended Working Pressure, psi**

Outside Diameter OD	Wall Thickness WT	Length* In.	Code	Temperatures Up to 150 °F No Corrosion**	Steam Boiler Service Up to 425 °F	Pieces Per Carton
3/4" OD +0, -1/32"	7/64" WT ±1/64"	8	1084468	360	280	12
		10	1084469	340	275	
		12	1084471	330	275	
		14	1084473	320	270	
		16	1084475	310	265	
		18	1084476	300	260	
		20	1084479	285	260	
		22	1084480	270	250	
		24	1084481	260	250	
		30	1084482	230	NOT RECOMMENDED	
		36	1084483	200		
		48	1084484	160		
		60	1084466	125		
		72 (Max.)	1084467	90		

* Additional lengths are available for purchase. Please contact Customer Service for price and lead time.
** See Corrosives, Pg 3

DURAN® Tubular Gage Glass Heavy Wall



Benefits: Permit stable & reliable operation while viewing oil, water or gas flow rates

End Finish: Saw cut with ground edges

DURAN® Heavy Wall **Maximum Recommended Working Pressure, psi**

Outside Diameter OD	Wall Thickness WT	Length* In.	Code	Temperatures Up to 150 °F No Corrosion**	Steam Boiler Service Up to 425 °F	Pieces Per Carton
5/8" OD +1/64", -3/64"	3/16" WT +3/64", -0	10	1084405	600	345	12
		12	1084410	600	340	
		14	1098263	600	335	
		16	1098267	600	325	
		18	1086330	600	320	
		20	1084325	600	315	
		24	1084407	580	300	
		30	1084408	550	NOT RECOMMENDED	
		36	1084411	500		
		48 (Max.)	1084412	340		
3/4" OD +1/64", -3/64"	7/32" WT +1/16", -0	10	1084406	600	345	12
		12	1084416	600	340	
		14	1086326	600	335	
		16	1086331	600	325	
		18	1086332	600	320	
		20	1086329	600	315	
		24	1098270	580	300	
		30	1084413	550	NOT RECOMMENDED	
		36	1084414	500		
		48 (Max.)	1084415	340		
7/8" OD +1/64", -3/64"	1/4" WT +1/16", -0	36	1086328	500	NOT RECOMMENDED	12
		48 (Max.)	1086327	340		
1" OD +1/64", -3/64"	5/16" WT +1/16", -0	36	1098271	500	NOT RECOMMENDED	12
		48 (Max.)	1084409	340		25

* Additional lengths are available for purchase. Please contact Customer Service for price and lead time.
** See Corrosives, Pg 3

DURAN® Tubular Gage Glass

Heavy Wall Red Line



Benefits: Permit stable & reliable operation with better viewing oil, water or gas flow rates. The red line shaded with white makes it easier to read the liquid level

End Finish: Saw cut with ground edges

DURAN® Heavy Wall Red Line		Maximum Recommended Working Pressure, psi				
Outside Diameter OD	Wall Thickness WT	Length* In.	Code	Temperatures Up to 150 °F No Corrosion**	Steam Boiler Service Up to 425 °F	Pieces Per Carton
5/8" OD +1/64", -3/64"	3/16" WT +3/64", -0	12	1084529	600	340	12
		16	1084521	600	325	
		20	1084318	600	315	
		24	1084428	580	300	
		30	1084544	550	NOT RECOMMENDED	
		36	1084536	500		
		48	1084542	340		
3/4" OD +1/64", -3/64"	7/32" WT +1/16", -0	12	1084319	600	340	12
		16	1084545	600	325	
		20	1084523	600	315	
		24	1084525	580	300	
		30	1084320	550	NOT RECOMMENDED	
		36	1084530	500		
		48	1084537	340		

* Additional lengths are available for purchase. Please contact Customer Service for price and lead time.
 ** See Corrosives, Pg 3

Use and Care

Maintenance

Examine the gage glass regularly for any signs of clouding, scratching, erosion, or corrosion. In new processes, the glass should be inspected daily until the need for replacement becomes apparent. This will help establish the routine inspection and routine replacement cycles.

Cleaning

Keep gage glass clean using non-abrasive commercial glass cleaners. Always observe the safety rules when handling hazardous cleaning solutions. Never use wire brushes, metal scrapers, or harsh abrasives, which could scratch the glass.

Inspection

Scratches, corrosion, chips, surface flaws, or nicks on the surface or edges weaken the gage glass. To examine for these, shine a very bright concentrated light ("Burton Lite" or powerful flashlight) at about 45° angle. Anything which glistens and catches the fingernail or any star-shaped or crescent-shaped mark which glistens, is cause for replacement. Any gage glass which appears cloudy or roughened and will not respond to cleaning procedures should be replaced.

Storing

Keep gage glasses in original packaging until ready to install.

Handling

Avoid bumping, chipping, or scratching gage glass. Any glass-to-glass contact can cause scratches and must be avoided.

Installation

Always follow **FIXTURE** manufacturer's recommended procedures for glass replacement.

Before installing a gage glass, remove all deposits from the seal contact surfaces of the gland nut and the gland (where used). Check sealing surfaces for cleanliness and smoothness. Once a gage glass has been removed from its mounting, regardless of the reason for its removal, discard the glass and replace with a new piece.

Always use new packing, seals, and/or O-rings (if required) when replacing a tubular gage glass. Used packing, seals, and O-rings will not properly support the gage glass or provide the proper pressure seal without stressing the glass.

Warnings

NOTICE: Read these warnings & instructions before installing or replacing gage glass.

Warnings

- Improper installation or maintenance of tubular glass can cause immediate or delayed glass breakage resulting in bodily injury. To avoid breakage observe the following Do's and Do Not's and Use and Care Instructions, as well as tubular gage manufacturer's instructions.
- If a gage glass breaks, contained substances can be released and glass can be blown out of the unit with great force. Always wear safety glasses when looking towards a gage or working on a gage glass assembly. Guard against the possibility of fire and explosion.
- Protect glass from impact, scratches, other surface damage and sudden temperature changes. These can weaken or stress the glass and lead to breakage.

Do's and Do Not's

Failure to observe the following do's and do not's can result in glass breakage and its explosive release of pressurized system contents and flying glass particles.

Do's

- DO inspect the gage glass daily, keeping maintenance records, and conduct routine replacements.
- DO install protective guards where necessary to protect personnel.
- DO protect the outside of the gage glass from sudden temperature changes, such as drafts, water spray, etc.
- DO remove all deposits from the seal areas, the glands nuts, glands (where used) and use new packing before installing a tubular gage glass.
- DO examine gage glass for damage and seals for hard deposits and tears.
- DO verify that the tubular gage glass, gland, nuts, packing, etc. are the correct size and type before installing.
- DO ensure that system is protected by safety shut-off system (e.g. safety ball, check).

Do Not's

- DO NOT work on any gage until you have carefully read these warnings & instructions.
- DO NOT reuse any tubular glass, packing, or seals.
- DO NOT use glass that is scratched, chipped, or otherwise damaged. Used glasses may contain damage and are poor safety risks.
- DO NOT exceed the glass or gage manufacturer's recommended working pressures or maximum recommended gage glass length.
- DO NOT bump, impact, or scratch the glass.
- DO NOT tighten gland nut and packing beyond gage manufacturer's recommendations.
- DO NOT operate gages unless gage valve sets are equipped with drain vent and safety ball check.
- DO NOT attempt to clean glass while the unit is in operation. Cleaning should be done without removing the gage glass.
- DO NOT attempt to inspect the glass, to adjust tie rods, packing nuts or glands, to inspect or tighten other fittings without isolating the gage from the pressure vessel and opening the drain vent.
- DO NOT weld, impact, or sandblast in the gage glass area without protecting the glass.
- DO NOT have glass-to-metal contact.
- DO NOT subject gage glass to bending or twisting stress.
- DO NOT allow the gage glass to contact the bottom of the packing gland.

Warranty

SCHOTT warrants that its Tubular Gage Glasses conform to SCHOTT's specifications at the time of delivery. A warranty claim may be made only within thirty (30) days after delivery. This warranty does not apply to glass that has been annealed, tempered, cut, ground or altered by others.

This warranty is in lieu of all other warranties, and SCHOTT specifically excludes all implied warranties including warranties of merchantability, fitness for a particular purpose, and non-infringement. SCHOTT's sole obligation under this warranty shall be in its discretion to provide replacement glasses or a refund of the purchase price, and in no event shall SCHOTT be responsible for indirect, incidental or consequential damages.

Services

At SCHOTT, skilled engineers and designers work with you to develop component parts or complete products from glass. As with all SCHOTT products, we offer the experience that comes with over a century of making glass more useful. To ensure the quality and performance of SCHOTT's tubular gage glasses, look for the DURAN® trademark.

Special Finishing and Fabrication

Many of SCHOTT's Industrial Supplies Distributors are equipped to fabricate special shapes, drill holes, cut tubing, grind and polish, or finish glass to tolerances other than those shown in this catalog. For additional information and quotations on special requirements, contact your local SCHOTT Industrial Supplies Distributor or:

SCHOTT North America, Inc.
2 International Drive, Suite 105
Rye Brook, NY 10573
USA
Phone: (914) 831-2200
Fax: (914) 831-2201
E-Mail: cstubing@us.schott.com
schott.com/gage_glass

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SCHOTT North America, Inc., 2 International Drive, Suite 105
Rye Brook, NY 10573, USA, cstubing@us.schott.com