

**Improved Safety, Constructive Solutions and Simplified Fitting
with Metal Fused Sight Glasses**

ISO 9001
DATA SHEET 03-0010 11/18

Introduction

Conventional sight glasses are sensitive to stress, bending and impact and when subjected to mechanical overload they may catastrophically fail without warning. This can cause a relatively minor expense and inconvenience if it happens during installation but a major cost and safety implication if it occurs when a plant is fully operational.

METAGLAS® eliminates this potential of sight glass failure, helping to improve safety and avoid the expense and inconvenience of unscheduled plant shut downs. These advantages are due to the unique, “glass fused to metal” fabrication of METAGLAS® which gives it unmatched strength and integrity.

METAGLAS® is made by melting borosilicate glass inside a metal frame, which results in the fusion of glass and metal. Upon cooling, the glass solidifies and the difference in the linear coefficient of thermal expansion between glass and metal produces forces that create a uniform compressive stress throughout the glass. This high degree of mechanically induced compressive stress makes METAGLAS® the strongest and most secure sightglass for sight window or visual flow indicator applications.



Special Features

- Reliability against total failure - due to the mechanically prestressed glass
- Unsurpassed resistance to pressure, impact and temperature
- Simple, stress free installation - resistant to bending, overtightening and impact
- Reusable - METAGLAS® can be cleaned and reused in the same or other applications, conventional sight glasses cannot.
- Borosilicate glass to DIN 7080 and USP Type I Compliant.

Applications

METAGLAS® can replace conventional glass in many applications including circular assemblies welded onto vessels, weld neck & nozzle flanges and visual flow indicators. In addition, METAGLAS® cover flanges can be mounted onto flat face base flanges, which are available for all international flange connections including ANSI, BS & DIN. Existing installations can therefore be easily retrofitted to improve safety and extend equipment life.

The unique properties of METAGLAS® also make it ideal for use with hygienic systems. MetaClamps® are available as sight glass caps for sanitary clamp connections and In-line systems. Sight glasses and Luminaire adaptors for sterile flush mount designs, such as the NA-Connect and TCI ClampConnect™ fittings are also available.

METAGLAS® has been subjected to the most rigorous tests by specific third party testing facilities in the chemical and pharmaceutical industries and has subsequently been integrated into their standards.

Specifications

- USP Class VI (tested to confirm biocompatibility)
- TÜV Approved and BPE Compliant
- Sight glass fused to metal conforming to DIN7079
- Borosilicate Glass to DIN7080
- Standard surface finish of 10 Ra μ-in (0.25μm)
- Material to ASTM/ASME, TÜV and DIN/EN standards
- Certificate of Conformity to EN 10204-3.1B or 3.1A
- Pressure Equipment Directive 97/23/EG

Tech Data

- Ring Materials: Duplex stainless steel 1.4462, Carbon steel 1.0570, Hastelloy and others
- Glass Materials: borosilicate or soda lime
- Operating Temp.: -30°C to +300°C (depends on metal)
- Operating Pressure: 64 bar (TUV) max. 1000 bar, depending on design



Type 73: Sight Glass Discs for DIN 28120 and other weld type assemblies



Type 13: Sight Glass for ANSI Flange Connection type full face



Type 77: Sight Glass Discs for Visual Flow Indicator Fittings



Type 74: Sight Glass Discs with Tongue and Groove Joint



Type 76: Sight Glass Discs for ANSI Flange connection



Type 903: Sight Glass Discs for Sterile Applications, stepped for flush mount



Type 19.CF: Sight Glass Discs for ConFlat high vacuum applications



Type 19.BIO: Bolt On Sight Glass for Sterile Applications O-Ring Seal



Type 99.TUC: Sight Glass with Luminaire for Varivent-In-Line Fittings



Type 80: MetaClamp® Sanitary Clamp Fitting



Type 80.USL01: MetaClamp® Sanitary Clamp Fitting with USL-01 Luminaire



Type 80.SW: MetaClamp® - with Wiper



Type 80.ESL25: Sight Glasses for Use with Clamp Connections and Sight Glass Luminaire ESL-25 EX



Type 99.ZIM: Pressure Manway with Integrated Metaglas



Type 80.SC: High Pressure Hinged with O-Ring Seal



Type 83.USL33: Sight Glass Discs for Aseptic Screwed Pipe Connection DIN 11864-1 for Mounting Luminaires USL-33



Type 13.SW: Sight Glass Flange - with Wiper



Type 73.SW: Sight Glass Discs with Wiper



Type 61: Threaded Sight Glasses - Hexagon head, NPT or other threads



Type 64: Threaded Sight Glasses - Round head



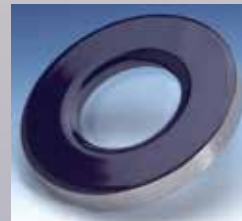
Type 19.BIO.USL33: Bolt On Sight Glass for Sterile Applications using Sight Glass Luminaires or USL-33



Type 99.NA.USL33: Sight Glasses for NA-Connect Fitting with USL-33



Type 80.USL33: MetaClamp® Sanitary Clamp Fitting with USL-33 Luminaire



Type 275: Glass Lined Metaglas Sight Glass for glass lined reactors



Type 83: Sight Glass Discs for Aseptic Screwed Pipe Connection DIN 11864



Type 99.NA: Sight Glasses for Flush Mount Hygienic Weld Pad



Type 80.TCI.CC: Sight Glasses for Clamp Style Flush Mount



Type 99.TUC.USL33: Sight Glass with USL-33 Luminaire for Varivent-In-Line Fittings



Type 99.LSG: Fused Metal Elongated Sight Glass for Rectangular & Obround Sight Windows and Armored Liquid Level Gages