LJ STAR®
Precision in Process

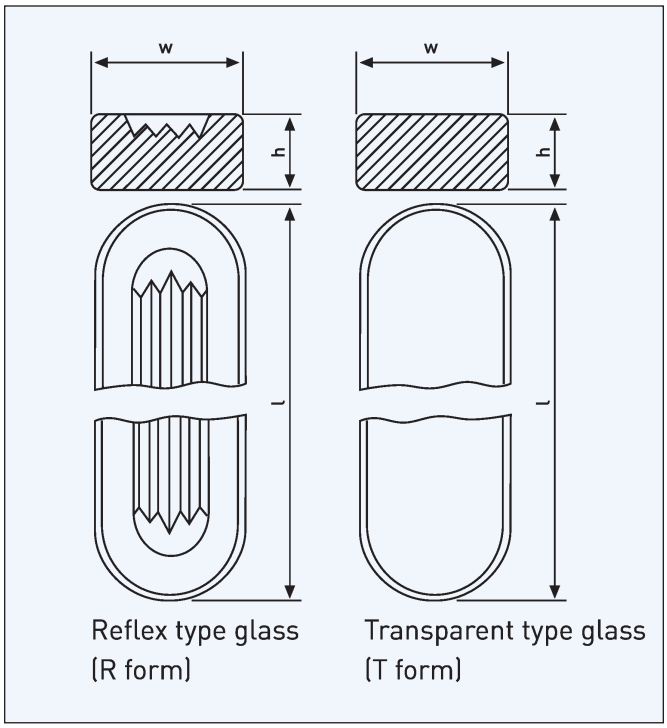
MAXOS®

Level Gauge Glass Program

MAXOS® safety sight and level gauge glasses have proved themselves universally where visual process control is essential. This includes pressure vessels subjected to thermal and chemical stresses and liquid level gauge application.

A high safety level is secured through the use of special borosilicate glass of high chemical durability, exceptional purity and homogeneity. The low thermal expansion of our SUPRAX® 8488 borosilicate glass, combined with thermal prestressing (tempering) creates a high resistance to sudden temperature changes.

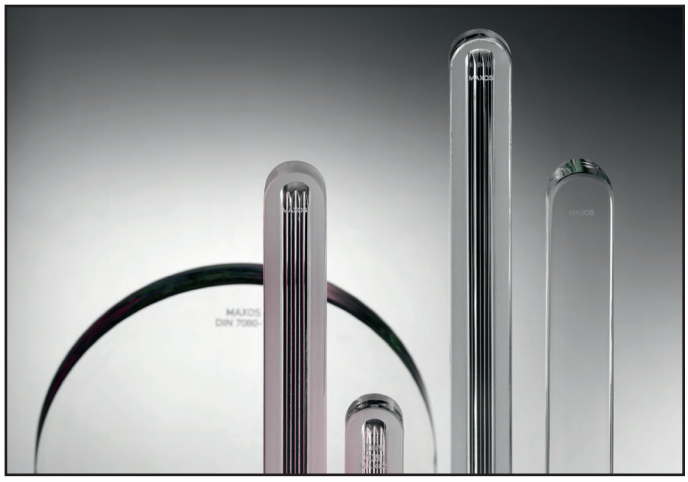
The material properties values and small dimensional tolerances are guaranteed by production and quality controls. With these exceptional safety characteristics, MAXOS safety sight and level gauge glasses can be used under extreme operational conditions. It is therefore mainly these safety aspects which influence responsible technicians again and again to choose MAXOS.



MAXOS® product range

Special tempered reflex and transparent level gauge glasses and disc sight glasses can be supplied in accordance to:

- DIN 7080/7081
- BS 3463
- JIS B 8211
- MIL – G – 16356 D
- Auer USA specification
- Customer specification
- Aluminosilicate glass on request



Size	Dimensions						max. flatness tolerance			
	Length (l)		Width (w)		Thickness (h)		Standard		High pressure	
	mm	inch*)	mm	inch*)	mm	inch*)	mm	inch*)	mm	inch*)
0	95	3.740	34	1.339	17.5	0.689	0.05	0.002	–	–
1	115	4.500	34	1.339	17.5	0.689	0.05	0.002	0.05	0.002
2	140	5.500	34	1.339	17.5	0.689	0.05	0.002	0.05	0.002
3	165	6.500	34	1.339	17.5	0.689	0.05	0.002	0.05	0.002
4	190	7.500	34	1.339	17.5	0.689	0.08	0.003	0.05	0.002
5	220	8.625	34	1.339	17.5	0.689	0.08	0.003	0.05	0.002
6	250	9.874	34	1.339	17.5	0.689	0.13	0.005	0.05	0.002
7	280	11.000	34	1.339	17.5	0.689	0.13	0.005	0.05	0.002
8	320	12.625	34	1.339	17.5	0.689	0.13	0.005	0.05	0.002
9	340	13.374	34	1.339	17.5	0.689	0.13	0.005	0.05	0.002
10	370	–	34	–	17.5	–	0.13	–	–	–
11	400	–	34	–	17.5	–	0.13	–	–	–
Toleran-ces*)	+ 0 – 1.5	+ 0 – 0.039	+ 0.2 – 0.8	+ 0.008 – 0.039	+ 0 – 1.0	+ 0 – 0.028			High pressure is effective only for transparent glasses.	

*) Inch dimensions are only valid for Auer USA Specification.

Application conditions	Maximum permissible pressure		Maximum permissible temperature	
	bar	psi	°C	°F
Saturated steam or hot water in direct contact with reflex or transparent sight glasses	35	500	243	470
Saturated steam or hot water in contact with transparent sight glasses protected with mica	103	1,500	320	608
Non-corrosive, non-steam service and no technically significant glass attack, with reflex or transparent glasses	280	4,000	38	100
Transparent sight glasses in contact with medias with no technically significant glass attack	345	5,000	38	100
High pressure transparent sight glasses in special armatures (gauges)	414	6,000	38	100

PO Box 1116 • Twinsburg, OH 44087 • 330 405 3040 • Fax: 330 405 3070 • view@ljstar.com • www.ljstar.com

Glass type SUPRAXR 8488

Coefficient of expansion @ 20°C/300°C	4.1 x 10^{-6}/K	
Transformation temperature	540°C	
Glass temperature for the viscosities dPas (Poise)	$10^{13.0}$	560°C
	$10^{7.6}$	800°C
	$10^{4.0}$	1200°C
Density at 25°C	2.3 g/cm³	
Modulus of elasticity	67 x 10^3 N/mm²	
Poisson's ratio μ	0.20	
Thermal conductivity λ at 90°C	1.2 $\frac{W}{m \cdot K}$	
Refractive index nd (λ=587.6 nm)	1.484	
Photoelastic parameter K	3.2 x 10^{-6} mm²/N	

Chemical characteristics	Hydrolytic resistance	Acid resistance	Alkali resistance
Test acc. to	DIN ISO 719	DIN ISO 1776	DIN ISO 695
max. abrasion acc. to DIN ISO	0.1	<100 µg Na_2O each 100 cm²	>75–175 mg each 100 cm²
MAXOS® max. abrasion	0.050	<60 µg Na_2O each 100 cm²	<100 mg each 100 cm²
MAXOS®	HGB 1	–	class A2

Long form reflex and transparent

Bending strength is determined by the surface compressive stress and the inherent resistance of the glass. The inherent resistance is heavily dependent upon the surface quality.

For safety reasons, the stress to the glasses caused by internal forces, thermal stress and vessel pressure have to be totally absorbed by the surface compressive stress so that a tensile stress of the glass surface is prevented.

Surface compressive stress

Standard level gauge glasses
≥ 90 N/mm² 13,000 psi

Average
100 N/mm² 14,500 psi

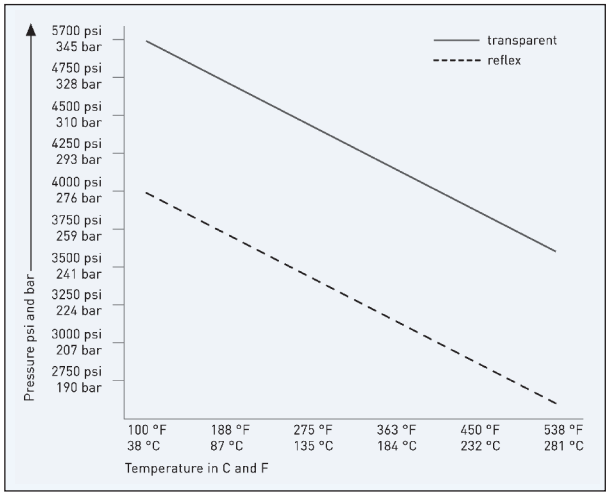
High pressure level gauge glasses
≥ 100 N/mm² 14,500 psi

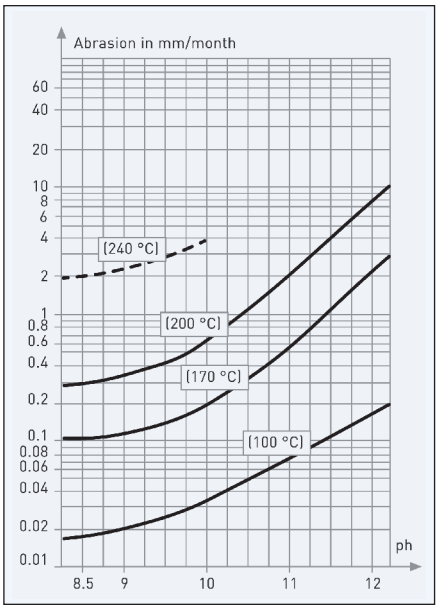
Average
110 N/mm² 16,000 psi

Parallelism

Standard level gauge glasses
≤ 0.08 mm 0.003 inches

High pressure level gauge glasses
≤ 0.05 mm 0.002 inches





The abrasion of MAXOS® glass in watery phase for several temperatures as a function of the ph-value.

Bending strength (typical values)

Standard level gauge glasses
≥ 150 N/mm² 21,000 psi

Average
170 N/mm² 25,000 psi

High pressure level gauge glasses
≥ 180 N/mm² 26,000 psi

Average
200 N/mm² 29,000 psi

Temperature

Thermal shock resistance Δ T 265 K

Max. permissible temperature 300°C (572°F)
Protected with mica 320°C (608°F)

Special tempered MAXOS® glass under polarized light.

MAXOS® – a registered trademark of Auer Lighting GmbH
SUPRAX® – a registered trademark of SCHOTT AG