



# MAXOS®

SAFETY SIGHT AND LEVEL GAUGE GLASSES SPECIAL-TEMPERED



# THE COMPLETE SAFETY SIGHT AND 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

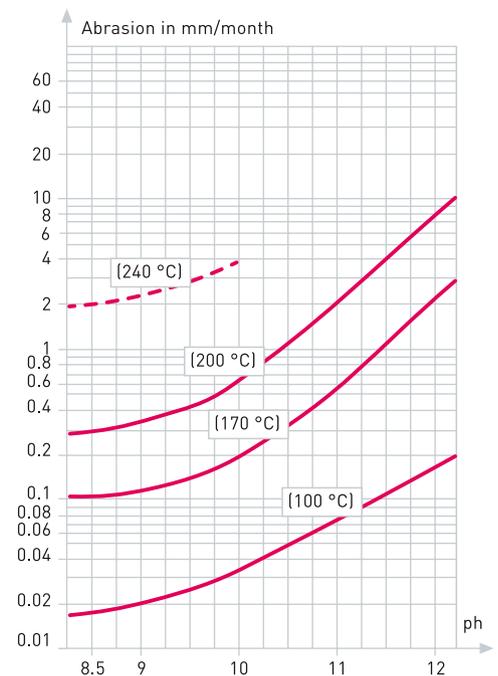
Special tempered reflex and transparent level gauge glasses and disc sight glasses can be supplied in accordance to:

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

## Glass type SUPRAX® 8488

Coefficient of expansion $\alpha$ 20 °C/300 °C	$4.3 \times 10^{-6} \text{ K}^{-1}$
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/cm <sup>3</sup>
Modulus of elasticity	$67 \times 10^3 \text{ N/mm}^2$
Poisson's ratio $\mu$	0.20
Thermal conductivity $\lambda$ at 90 °C	$1.2 \frac{\text{W}}{\text{m}\cdot\text{K}}$
Refractive index $n_d$ ( $\lambda = 587.6 \text{ nm}$ )	1.484
Photoelastic parameter K	$3.2 \times 10^{-6} \text{ mm}^2/\text{N}$

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 $\mu\text{g Na}_2\text{O}$ each 100 cm <sup>2</sup>	>75–175 mg each 100 cm <sup>2</sup>
MAXOS® max. abrasion	0.050	<60 $\mu\text{g Na}_2\text{O}$ each 100 cm <sup>2</sup>	<100 mg each 100 cm <sup>2</sup>
MAXOS®	HGB 1	–	class A2



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

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

# MAXOS® DISC SIGHT GLASSES

## Technical characteristics

Bending strength	$\geq 160 \text{ N/mm}^2$	23,000 psi
Surface compressive stress	$\geq 100\text{--}140 \text{ N/mm}^2$	14,500–20,000 psi
Parallelism	$\leq 0.20 \text{ mm}$	0.008 inches
Flatness*)	Diameter:	up to 100 mm $\leq 0.05$ above 100 up to 150 mm $\leq 0.08$ above 150 up to 200 $\leq 0.12$ above 200 mm $\leq 0.15$
Thermal shock resistance $\Delta T$	265 K	
Max. permissible temperature	300 °C	572 °F
Protected with mica	320 °C	608 °F

\*) Measurements of flatness are taken only in the sealing area.

## Dimensional tolerances (DIN 7080)

### Diameter

up to 135 mm	$\pm 0.5 \text{ mm}$
150 to 200 mm	$\pm 0.8 \text{ mm}$
above 200 mm	$\pm 1.0 \text{ mm}$

### Thickness

up to 20 mm	+ 0.50 mm / - 0.25 mm
above 20 mm	+ 0.80 mm / - 0.40 mm

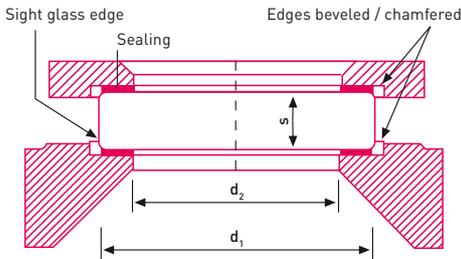


## Available sizes

Special dimensional design on request, e.g. Ø min. 30 – max. 265 mm and thickness min. 10 – max. 30 mm.

### Calculation of the glass thickness

(DIN 7080)



$$s \geq 0.55 \cdot d_m \sqrt{\frac{p \cdot S}{10 \cdot \sigma_{DV} \text{ zul.}}}$$

$s$  Theoretical minimum glass thickness in mm

$d_m$   $\frac{d_1 + d_2}{2}$  Mean sealing diameter in mm

$d_1$  Glass and sealing outside diameter in mm

$d_2$  Sealing inside diameter in mm

$p$  Permissible pressure in bar

$\sigma_{DV} \text{ zul.}$  Min. value of surface compressive stress in N/mm<sup>2</sup>

$S$  Safety factor = 5

Dimensions $d_1 \times s$ (mm)	Inspection aperture $d_2$ (mm)	Permissible pressure in bar	Dimensions $d_1 \times s$ (inch)	Inspection aperture $d_2$ (inch)	Permissible pressure in psi
30 x 15	20	200	1.181 x 0.591	0.787	2900
31.6 x 12.75	20	150	1.244 x 0.502	0.787	2175
34 x 17	24	200	1.339 x 0.669	0.945	2900
35 x 7	25	25	1.378 x 0.276	0.984	363
40 x 10	30	40	1.575 x 0.394	1.181	580
40 x 12	30	50	1.575 x 0.472	1.181	725
45 x 10	32	40	1.772 x 0.394	1.260	580
45 x 12	32	50	1.772 x 0.472	1.260	725
50 x 10	35	25	1.969 x 0.394	1.378	363
50 x 12	35	40	1.969 x 0.472	1.378	580
55 x 10	40	25	2.165 x 0.394	1.575	363
60 x 10	45	16	2.362 x 0.394	1.772	232
60 x 12	45	25	2.362 x 0.472	1.772	363
60 x 15	45	40	2.362 x 0.591	1.772	580
60 x 20	45	95	2.362 x 0.787	1.772	1377
63 x 8	48	8	2.480 x 0.315	1.890	116
63 x 10	48	16	2.480 x 0.394	1.890	232
63 x 12	48	25	2.480 x 0.472	1.890	363
63 x 15	48	40	2.480 x 0.591	1.890	580
65 x 10	50	12	2.559 x 0.394	1.969	174
65 x 15	50	40	2.559 x 0.591	1.969	580
70 x 12	55	16	2.756 x 0.472	2.165	232
70 x 15	55	25	2.756 x 0.591	2.165	363
75 x 12	60	16	2.953 x 0.472	2.362	232
80 x 10	65	10	3.150 x 0.394	2.559	145
80 x 12	65	16	3.150 x 0.472	2.559	232
80 x 15	65	25	3.150 x 0.591	2.559	363
80 x 20	65	40	3.150 x 0.787	2.559	580
90 x 10	70	8	3.543 x 0.394	2.756	116
92 x 10	72	8	3.622 x 0.394	2.835	116
95 x 10	75	6	3.740 x 0.394	2.953	87
95 x 15	75	16	3.740 x 0.591	2.953	232
100 x 10	80	7	3.937 x 0.394	3.150	101
100 x 12	80	10	3.937 x 0.472	3.150	145
100 x 15	80	16	3.937 x 0.591	3.150	232
100 x 20	80	25	3.937 x 0.787	3.150	363
100 x 25	80	40	3.937 x 0.984	3.150	580
110 x 12.5	85	10	4.331 x 0.492	3.346	145
113 x 15	88	10	4.449 x 0.591	3.465	145
115 x 15	90	10	4.528 x 0.591	3.543	145
120 x 15	95	10	4.724 x 0.591	3.740	145
125 x 15	100	10	4.921 x 0.591	3.937	145
125 x 20	100	16	4.921 x 0.787	3.937	232
125 x 25	100	25	4.921 x 0.984	3.937	363
125 x 30	100	40	4.921 x 1.181	3.937	580
130 x 15	105	10	5.118 x 0.591	4.134	145
135 x 25	110	25	5.315 x 0.984	4.331	363
150 x 10	125	2	5.906 x 0.394	4.921	29
150 x 15	125	8	5.906 x 0.591	4.921	116
150 x 20	125	10	5.906 x 0.787	4.921	145
150 x 25	125	16	5.906 x 0.984	4.921	232
150 x 30	125	25	5.906 x 1.181	4.921	363
175 x 20	150	10	6.890 x 0.787	5.906	145
175 x 25	150	16	6.890 x 0.984	5.906	232
175 x 30	150	25	6.890 x 1.181	5.906	363
200 x 20	175	8	7.874 x 0.787	6.890	116
200 x 25	175	10	7.874 x 0.984	6.890	145
200 x 30	175	16	7.874 x 1.181	6.890	232
250 x 20	225	4	9.843 x 0.787	8.858	58
250 x 25	225	8	9.843 x 0.984	8.858	116
250 x 30	225	10	9.843 x 1.181	8.858	145
265 x 30	240	8	10.433 x 1.181	9.449	116

All MAXOS® glasses are marked with a production code number.



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