



ZIGHT

MADE IN NORTH AMERICA



ZIGHT

VISION FOR THE
AMERICAN INDUSTRY

MADE IN NORTH-AMERICA

INDUSTRIAL GLASS

VISION FOR THE AMERICAN INDUSTRY





ZIGHT
MADE IN NORTH AMERICA

SODA LIME SIGHT GLASS

TEMPERED ACC DIN 8902

ZIGHT



SODA LIME SIGHT GLASS

TEMPERED

DIN 8902

ZIGHT GLASS

Manufactured in Soda Lime Glass, these sight glasses are used in several applications where the cost-reduction is important, and the glass will not be in contact with food, drugs, chemicals, or temperatures above 300 F.

Special dimensions of glasses are available upon request, where the minimum diameter is 10mm, and the maximum diameter is 350mm. The thickness can be manufactured to a minimum of 3mm and a maximum of 25mm. Do not hesitate to contact us for recommendations as to which sight glass fits your application the best.

MANUFACTURED IN ACCORDANCE TO DIN 8902

In order to achieve the standardization of this type of type of sigh glasses in all the different industries, the German regulatory institute, DIN for its acronym in German, designed standard parameters for the manufacture of this type of glass.

The main issues this norm regulates is the pressure resistance in terms of the total diameter of the glass, the observable diameter of the glass, and the glass thickness. It also dictates permissible imperfections in the glass, chemical attack, markings, and dimensional tolerances.


SODA LIME SIGHT GLASS
TEMPERED
DIN 8902
TECHNICAL INFORMATION

| PHYSICAL PROPERTY | TESTING METHOD | VALUE OBTAINED |
|---|------------------------|--|
| THERMAL EXPANSION COEFFICIENT | ISO 7991 | $8.72 \times 10^{-6} \text{eK}$ |
| DENSITY AT 25°C | SN 7005 13 | 2.49 g/cm ³ |
| REFRACTIVE INDEX ($\lambda = 587.6\text{nm}$) _{nd} | | 1.52 |
| TRANSFORMATION TEMPERATURE | ISO 7884-8 | 560°C |
| HIGHEST SHROT-TERM WORKING RANGE | ISO 7884-7 | 150°C |
| THERMAL SHOCK RESISTANCE | ISO 7884 | 70 K |
| YOUNGS MODULUS | | 63.150 MPa |
| POISSON CONSTANT | | 0.20 |
| THERMAL CONDUCTIVITY | 20°C - 100°C λ | $(1.2)(\text{W}\cdot\text{m}^{-1})(\text{K}^{-1})$ |
| PHOTOELASTIC CONSTANT | DIN 52314 | $(4.00 \times 10^{-6})(\text{mm}^2/\text{N})$ |
| SPECIFIC ELECTRIC RESISTANCE | DIN 52326 | 250°C |
| DIMENSIONAL TOLERANCES DIAMETER | DIN 8902 | PASS (SEE ANEX B1) |
| DIMENSIONAL TOLERANCES THICKNESS | DIN 8902 | PASS (SEE ANEX B1) |

| OPTICAL PROPERTY | TESTING METHOD | VALUE OBTAINED |
|------------------------------------|----------------|--------------------|
| BUBBLE ON GLASS | DIN | PASS (SEE ANEX A1) |
| MARKINGS ON GLASS | DIN 8902 | PASS (SEE ANEX A2) |
| EDGE TOLERANCES (CHAMFER ON GLASS) | DIN 8902 | PASS (SEE ANEX B2) |
| VISCOUS KNOTS | DIN 8902 | NON-VISIBLE NO EYE |
| CRYSTALLINE INCLUSIONS | DIN 8902 | LESS THAN 0.2MM |



SODA LIME SIGHT GLASS

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Special dimensional design upon request is available

(DIAM MIN 10mm MAX 350mm) / (THICKNESS MIN 3mm Max 35MM)

| | Glass Diameter | Glass Thickness | Visible Diameter | Pressure Resistance (BAR) | Pressure Resistance (PSI) |
|--|----------------|-----------------|------------------|---------------------------|---------------------------|
| AMERICAN UNITS, MOST STANDARD SIZES | 4" | 3/4" | 3-1/4" | 25 BAR | 362 PSI |
| | 5" | 3/4" | 4" | 16 BAR | 232 PSI |
| | 6" | 3/4" | 5" | 10 BAR | 145 PSI |
| | 6-3/4" | 3/4" | 5-3/4" | 10 BAR | 145 PSI |
| | 8-3/8" | 3/4" | 7-3/8" | 8 BAR | 116 PSI |
| INTERNATIONAL UNITS, MOST STANDARD SIZES | 63 mm | 10 mm | 48 mm | 16 BAR | 232 PSI |
| | 80 mm | 12 mm | 65 mm | 16 BAR | 232 PSI |
| | 100 mm | 15 mm | 80 mm | 16 BAR | 232 PSI |
| | 125 mm | 15 mm | 100 mm | 10 BAR | 145 PSI |
| | 125 mm | 20 mm | 100 mm | 16 BAR | 232 PSI |
| | 150 mm | 20 mm | 125 mm | 10 BAR | 145 PSI |
| | 150 mm | 25 mm | 125 mm | 16 BAR | 232 PSI |
| | 175 mm | 20 mm | 150 mm | 10 BAR | 145 PSI |
| | 175 mm | 25 mm | 150 mm | 16 BAR | 232 PSI |
| | 200 mm | 20 mm | 175 mm | 8 BAR | 116 PSI |
| | 200 mm | 25 mm | 175 mm | 10 BAR | 145 PSI |
| | 200 mm | 30 mm | 175 mm | 16 BAR | 232 PSI |
| | 250 mm | 25 mm | 225 mm | 8 BAR | 116 PSI |
| 250 mm | 30 mm | 225 mm | 10 BAR | 145 PSI | |

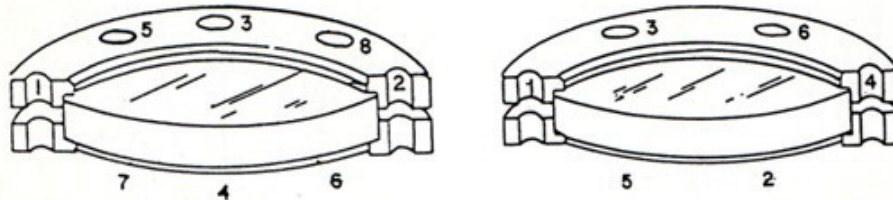
| | |
|----|--------------------------------------|
| d1 | TOTAL GLASS DIAMETER |
| d2 | VISIBLE GLASS DIAMETER |
| p | PRESSURE IN BAR |
| δ | SAFETY FACTOR (5 RECOMMENDED) |
| σ | SURFACE COMPRESSIVE STRESS (70N/mm2) |

$$Thickness\ in\ mm \geq 0.55 \cdot \frac{d_1 + d_2}{2} \sqrt{\frac{p \cdot \delta}{10 \cdot \sigma}}$$



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PREVIOUS INSPECTION

Upon receipt of the equipment, it is important to check all components for damage that may occur during shipment. In case you find damage, please do not try to install; immediately contact the freight forwarder and seller to request a damage analysis. The user will be responsible for reviewing the following:

- > That the equipment received is exactly what you requested in your purchase order.
- > That the conditions of use are the same or higher than those specified on the equipment.
- > That the working conditions of the equipment meet the conditions requested in its purchase.
- > That the fluids to work comply with the specifications of the materials used in the manufacture of the equipment.

SAFETY EQUIPMENT

It is important that operators have complete safety equipment; this includes safety glasses, hard hat, boots with cap, gloves and industrial clothing.

IMPORTANT INFORMATION

Use only qualified personnel familiar with the handling of this type of equipment. Personnel must be able to fully understand this manual for equipment installation and maintenance. Using personnel without prior experience or training can result in damage to the equipment, which can cause important damage.

REVIEW OF MATERIALS

Do not continue with the installation until it has been checked

that the glass to be used is free of imperfections. Crystals with imperfections or chips have been weakened and the pressure / temperature tables are not valid in these cases.

It is important to check that the connections and interior of the equipment are free of foreign materials. Failure to do so can result in serious damage to equipment, personnel, and / or facilities.

PRE-OPERATIONAL INSPECTION

Check that all installation steps have been completed successfully. Check that all bolts have been tightened according to the torque specified in the bolt torque table of this manual. Check that the glass does not show any damage, scratches or chips. Check that all connections are tightened correctly.

PRESSURE REGULARIZATION

Before subjecting the equipment to any type of pressure, take the necessary precautions to handle the possibility of leaks. Perform hydrostatic test at 50 PSI and correct leaks before proceeding. Increase the working pressure gradually. It is important not to subject the equipment to sudden changes in pressure, as this can lead to excessive stress on the glass. Strong pressure shocks can cause glass damage, instantaneous pressure releases, damage to personnel, equipment and facilities.

Bolt Tightening, Star system

For tightening and un.tightening the bolts, it is important to use a start-tightening-system, where the next-bolt-to-tighten is the one directly across or the one next to it. This Will cause the glass and the gaskets to compress uniformly



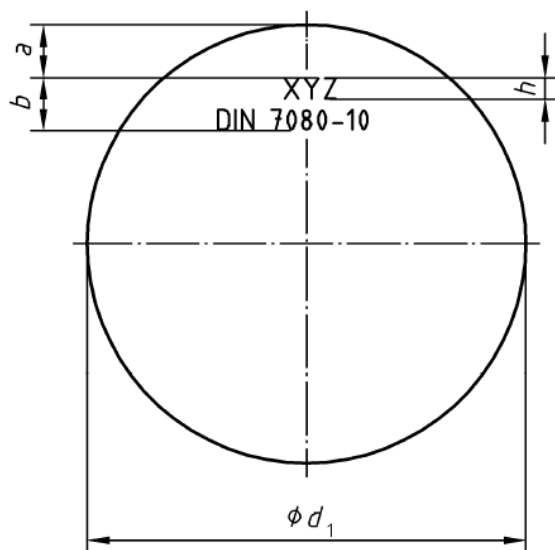
TEMPERED SODA-LIME SIGHT GLASS

ANEX A

A1 -

| Bubble diameter, d_3 | Permissible number of bubbles |
|---------------------------|--------------------------------------|
| $d_3 < 0,3$ | 3 per cm ² of sight glass |
| $0,3 \leq d_3 \leq 0,5$ | 10 per sight glass |
| $0,5 < d_3 \leq 1$ | 4 per sight glass |
| $1 < d_3 \leq 2$ | 2 per sight glass |

A2 - MARKINGS ON GLASS



Dimensions in millimetres

| Diameter d_1 | a | b | h |
|-------------------|-----|-----|-----|
| 45 | 9 | 6,5 | 2,5 |
| (50) | | | |
| (60) | | | |
| 63 | | | |
| 80 | 12 | 12 | 5 |
| 100 | | | |
| 125 | | | |
| 135 | | | |
| 150 | | | |
| 175 | | | |
| 200 | | | |
| 250 | | | |
| 265 | | | |



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ANEX B

B1 - DIMENSIONAL TOLERANCES

Dimensions in mm

| Diameter d_1 | | | Thickness s | |
|----------------|-------------------------|-------------|---------------------|--------------|
| $d_1 \leq 135$ | $150 \leq d_1 \leq 200$ | $d_1 > 200$ | $10 \leq s \leq 20$ | $s > 20$ |
| $\pm 0,5$ | $\pm 0,8$ | ± 1 | +0,5 -0,25 | +0,8 -0,4 |

B2 - EDGE TOLERANCES

| Diameter d_1 | Edge dimensions |
|----------------|-----------------|
| ≤ 100 | -1,0 -0,3 |
| > 100 | -1,5 -0,3 |