PLEXIGLAS®

PLEXIGLAS®
for Pools

POLYVANTIS

PLEXIGLAS® GS Pools

Material Description

PLEXIGLAS® is the world's original acrylic, invented and still made today by POLYVANTIS. Pool constructors have relied on PLEXIGLAS® for decades, giving POLYVANTIS extensive knowledge in pool applications. GS stands for cast solid sheets and blocks of PLEXIGLAS® polymerized in cells between two high-quality glass plates. Our large pool grade blocks are inspected at every step of manufacturing to meet an internal quality standard established for this application.

Durability and Guarantee

PLEXIGLAS® GS pool glazing provides excellent long-term performance. The permanent hydrostatic pressure on pool glazing means material creep must be accounted for in the design.

PLEXIGLAS® GS guarantees, physical properties, and thickness tolerances are provided in brochures available at www.plexiglas.de.

Compliance with Standards

In terms of their basic properties, PLEXIGLAS® blocks correspond to cast PLEXIGLAS® GS sheets, the profile of which is defined in the ISO 7823-1 "Plastics - Poly (methylmethacrylate) sheets - Types, dimensions and characteristics - Part 1: Cast sheets" standard.
The production of solid PLEXIGLAS® GS sheets complies with the globally accepted and applied standards ISO 9001 for quality management systems and ISO 14001 for environmental management systems. Our QPA inspection is performed on PLEXIGLAS® GS blocks of 30 mm to 250 mm. This test covers all major physical properties of importance to material

behavior. It is performed on each production batch to insure technical safety in pool applications. EN 10 204 Certificates of Compliance are available on request.

Choice of Material Thickness

The choice of material thickness is a function of water column height, opening width and glazing installation method. Higher water columns and wider widths require thicker acrylic. Three-sided supports also require thicker material than four-sided supports. On request, the thickness for a specific project can be determined and manufactured according to your instructions.

POLYVANTIS provides customers with an initial design estimate of material thickness. Our structural calculation tool is based on analytical solutions of linear elasticity theory confirmed by practical tests. This enables us to make thickness recommendations based on maximum material stress (σ) and maximum deflection (y). The basis for this calculation is an Elastic Modulus of 3300 MPa, a Poisson's Ratio of 0.37, and an Allowable Stress of 3.0 MPa. Glazing bonded with the polymerization adhesive ACRIFIX® 2R 0190 calls for special consideration. In this case, the Allowable Stress should be ≤ 3.0 MPa, for bonded components 2,8 MPa.

Detailed calculations by a structural engineer are required to precisely determine material stresses and deflections. We recommend using Finite Element Analysis (FEA) for detailed design.

Installation and Assembly

Installation of our products must comply with the applicable local building codes and best practices for pool construction. Consult our technical brochures for important information on fabricating with acrylic.

To provide optimal support of the glazing, follow the principles shown in the installation sketches. For four-sided mounting, we recommend mounting in an L-profile. For three-sided mounting, we recommend mounting in the U-profile in the base area and in the L-profile at the sides—see drawings A-A and B-B. Section C-C shows the recommended installation at the bottom corners.

Additional recommendations include:

- Provide a face support width equal to 1 to 2 times the glazing thickness, d. This face support is critical for supporting the glazing against water pressure.
- Chamfer the sawn edges at 45° to approximately 5 mm.
- Insert a 15 mm thick EPDM gasket between the glazing and the support faces. Cut the gasket width to the dimensions shown.
- Use materials chemically compatible with PMMA glazing. Do not use EPDM or foams that include plasticizers.
- Ensure that solvents in paints and sealants on the structure have flashed off before installing the glazing.
- After setting, seal the glazing with an extrudable, compatible silicone rubber compound. This silicone seal should not be exposed to mechanical stress. Provide ventilation during curing.

Fire Safety

Fire safety experts rate materials according to various safety tests. The performance of PLEXIGLAS® indicates a high safety potential.

PLEXIGLAS® burns almost without smoke, does not emit any acutely toxic smoke gases according to DIN 53436 and can be extinguished quickly and easily (e.g. by sprinklers). Cast PLEXIGLAS® shows the following fire behavior:

- B2, without burning droplets to DIN 4102 (D)
- Class E, without burning droplets to DIN EN 13501 (EU)
- Class 3 to BS 476, Part 6+7 (GB)
- TP(b) to BS 2782, method 508 A (GB)
- The UL flammability is UL 94 HB (USA)
- CSE/RF2/75A and 3/77 Class 4 (I)
- NEN 3883 Class 3 (NL)

„Pool"-Formats

Width (mm)	Length (mm)
1000	2000, 3000, 4000, 6000, 7800
1100	2000, 3000, 4000, 6000
1500	2800, 3000, 3900, 4500, 5000, 6000, 6300, 7800
2000	2000, 3000, 4000, 6000, 7800
3000	3000, 3900, 6000, 7800

Special formats can be produced on request.

Standard formats

- 3000 x 2000 mm
- 3800 x 1800 mm
- 5000 x 2000 mm
- 6000 x 2200 mm
- 6000 x 3000 mm
- 7800 x 3000 mm

Technical Documentation

- 222-18 PLEXIGLAS® Blocks

Further specific topics, such as

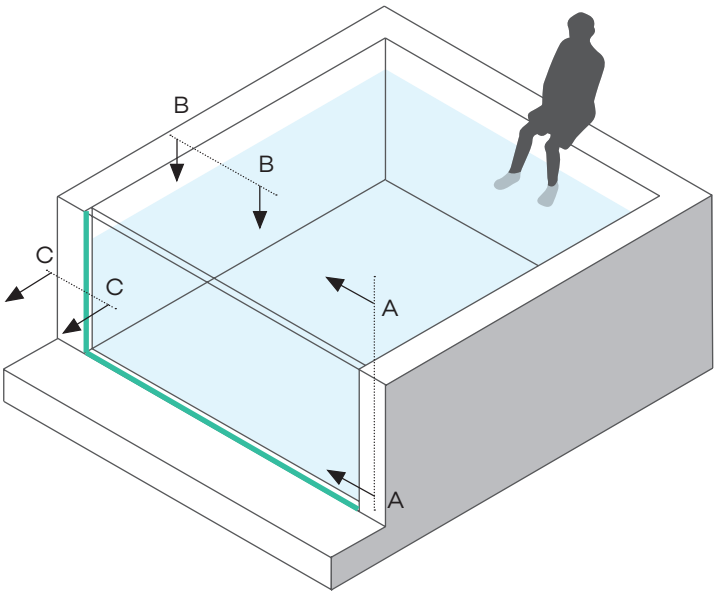
- Quality Criteria
- Fabricating and Installation Conditions
- Conditions for Use
- Advice on Cleaning and Care are compiled or defined as required for specific projects.

Pool Wall Glazing

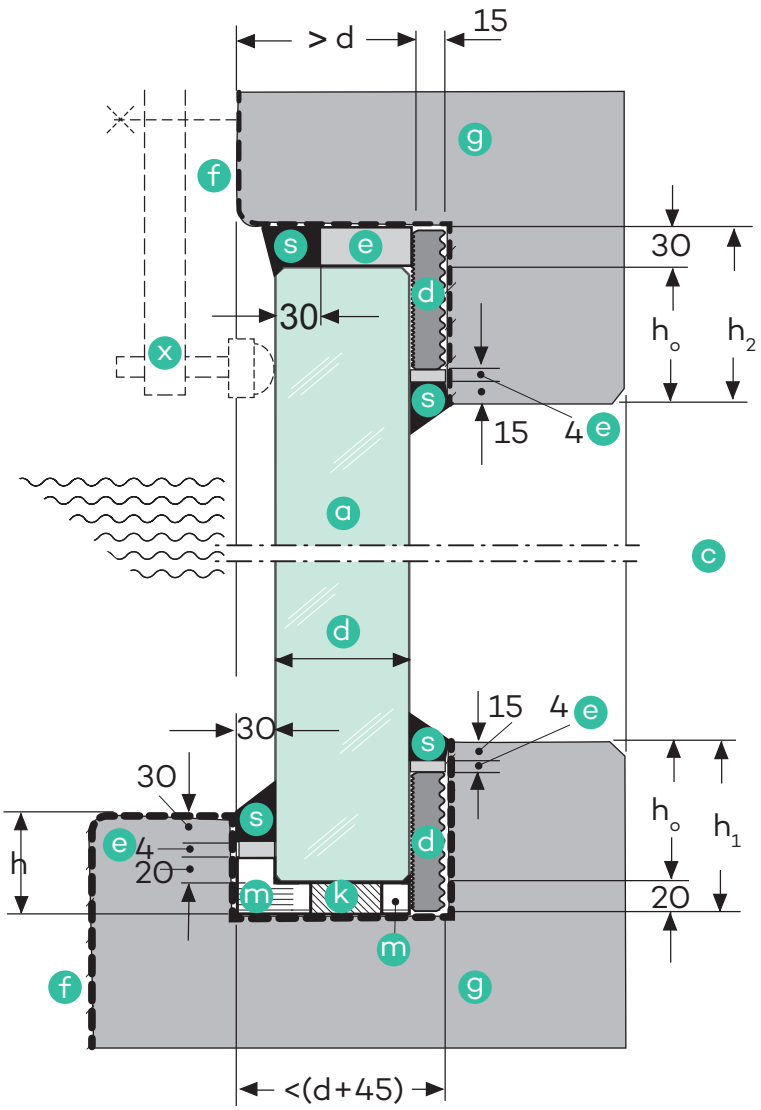
Recommended Installation Details for PLEXIGLAS® GS Blocks

- The supporting structure of reinforced concrete or steel girder construction has to be dimensioned according to the structural engineer's specifications and cannot be transferred.
- The given section drawings are valid for rectangular panels symmetrically supported on 4 sides; they may vary slightly depending on the dimensions and alignment of the PLEXIGLAS® GS blocks.
- All items are to be resistant to water and compatible with PMMA.
- The dimensions in mm are given as recommendations.

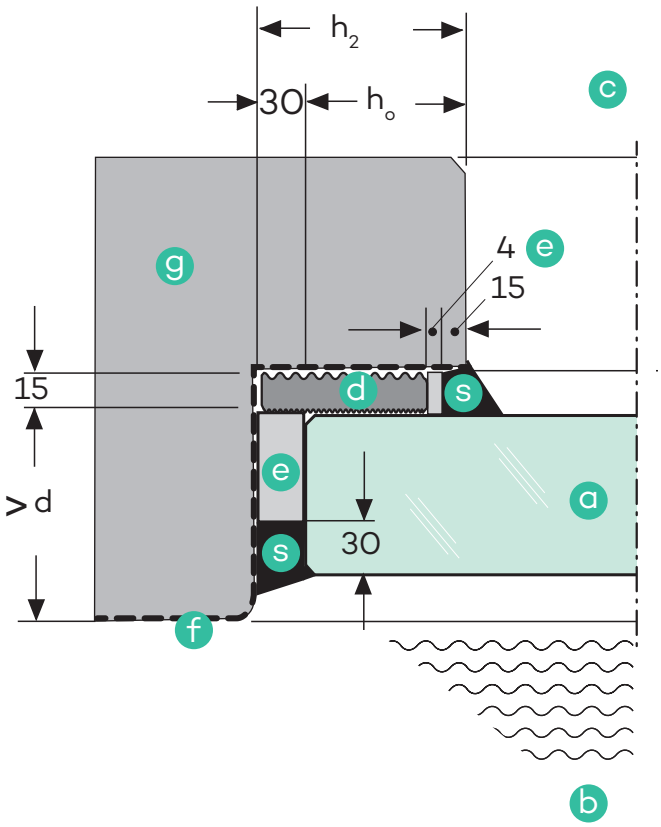
Our Technical Service will be glad to answer any specific questions you may have in this context.



Section A–A

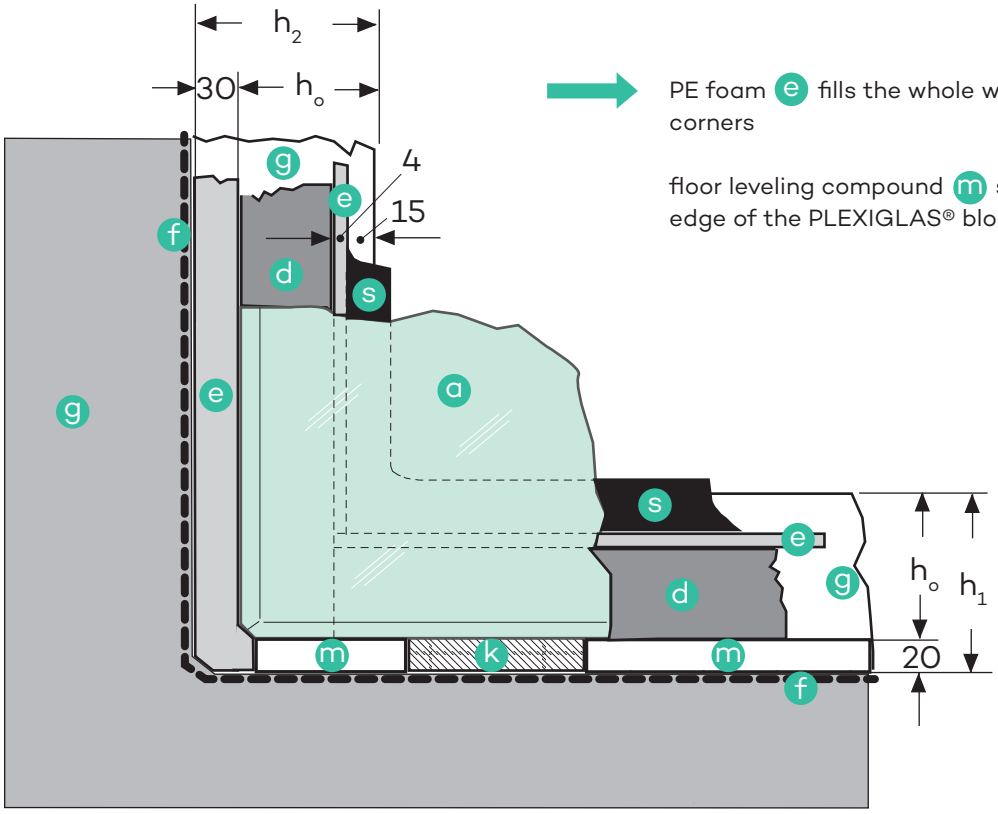


Section B–B



- a PLEXIGLAS® GS
- b Water side
- c Visitor (air) side
- d EPDM gasket
- e Gapfilling PE foam
- f Epoxy coating
- g Reinforced concrete supporting structure
- k Shim for alignment (rigid plastic)
- m Floor leveling compound
- s Silicone rubber sealing section
- x Fixing device for installation and security

Section C–C



PE foam e fills the whole width of the bottom corners

floor leveling compound m stops at the vertical edge of the PLEXIGLAS® block

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® = registered trademark

Semi-finished polymethyl methacrylate (PMMA) products from POLYVANTIS are sold on the European, Asian, African and Australian continents under the registered trademark PLEXIGLAS®, in the Americas under the registered trademark ACRYLITE®, both owned by Röhm GmbH, Darmstadt, or its affiliates.

Certified to DIN EN ISO 9001 (Quality) and DIN EN ISO 14001 (Environment)

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