

**PLEXIGLAS®**  
for Aquarium Glazing







# PLEXIGLAS® GS Aquarium Glazing

## Material Description

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

## Durability and Guarantee

PLEXIGLAS® GS aquarium glazing provides excellent long-term performance. The permanent hydrostatic pressure on aquarium 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](http://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 aquarium 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.

Röhm 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 ( $\sigma$ ) 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 adhesives ACRIFIX® 2R 0190 or ACRIFIX® 5R 0194 call for special consideration. In this case, the Allowable Stress should be  $\leq 3.0$  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 aquarium 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)

## 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.

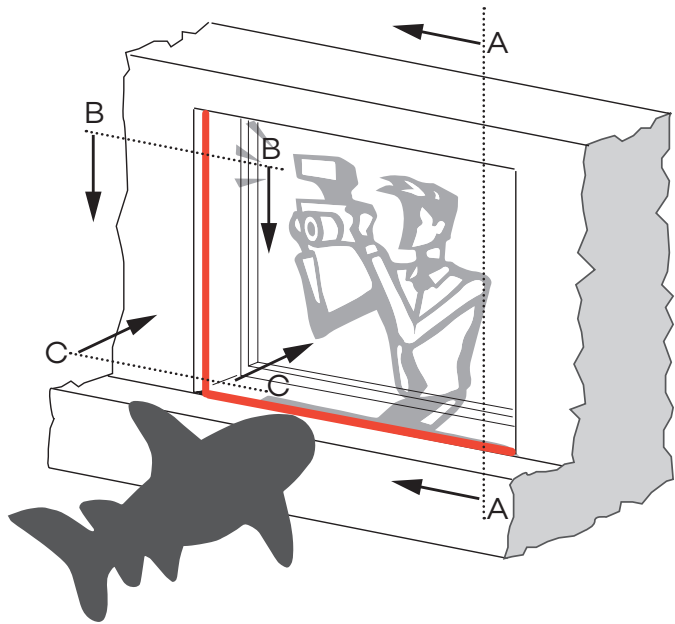


# Aquarium Wall Glazing

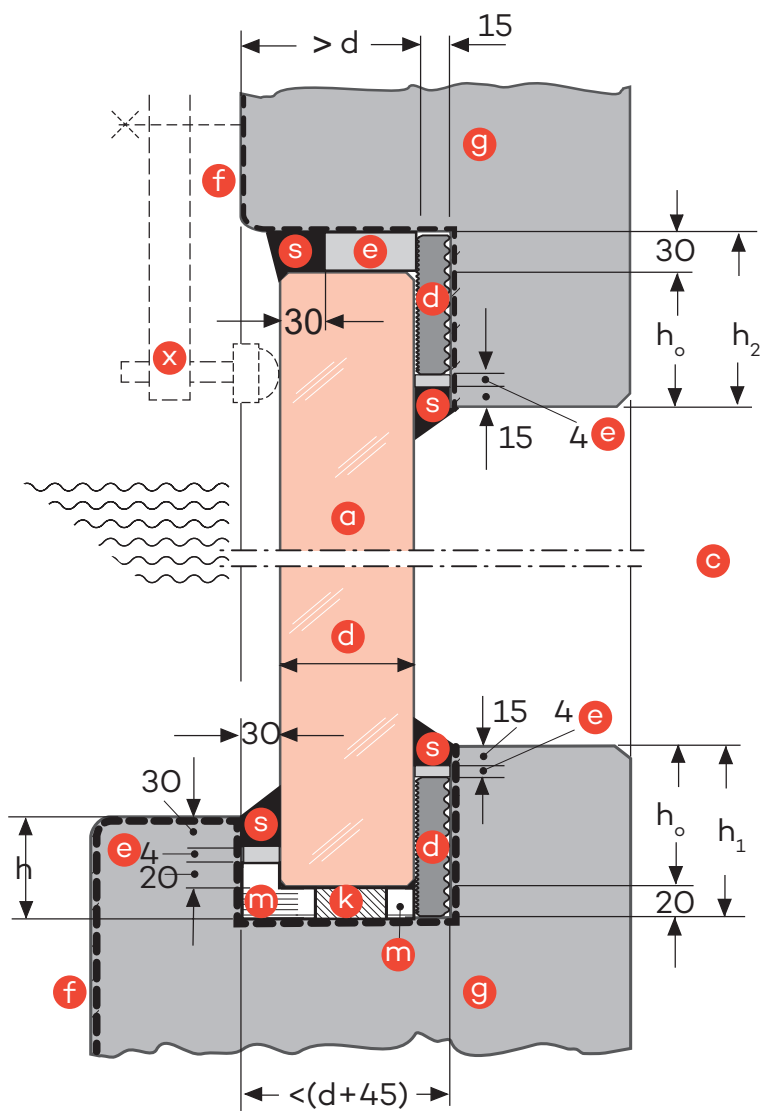
## Recommended Installation Details for PLEXIGLAS® GS Blocks

- 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.

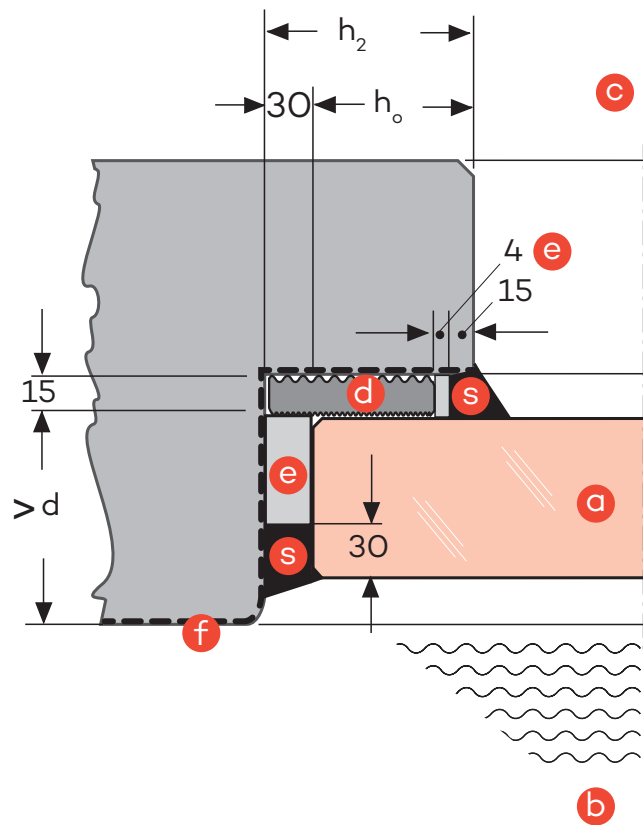
Our Technical Service will be glad to answer any specific questions you may have in this context.



Section A - A

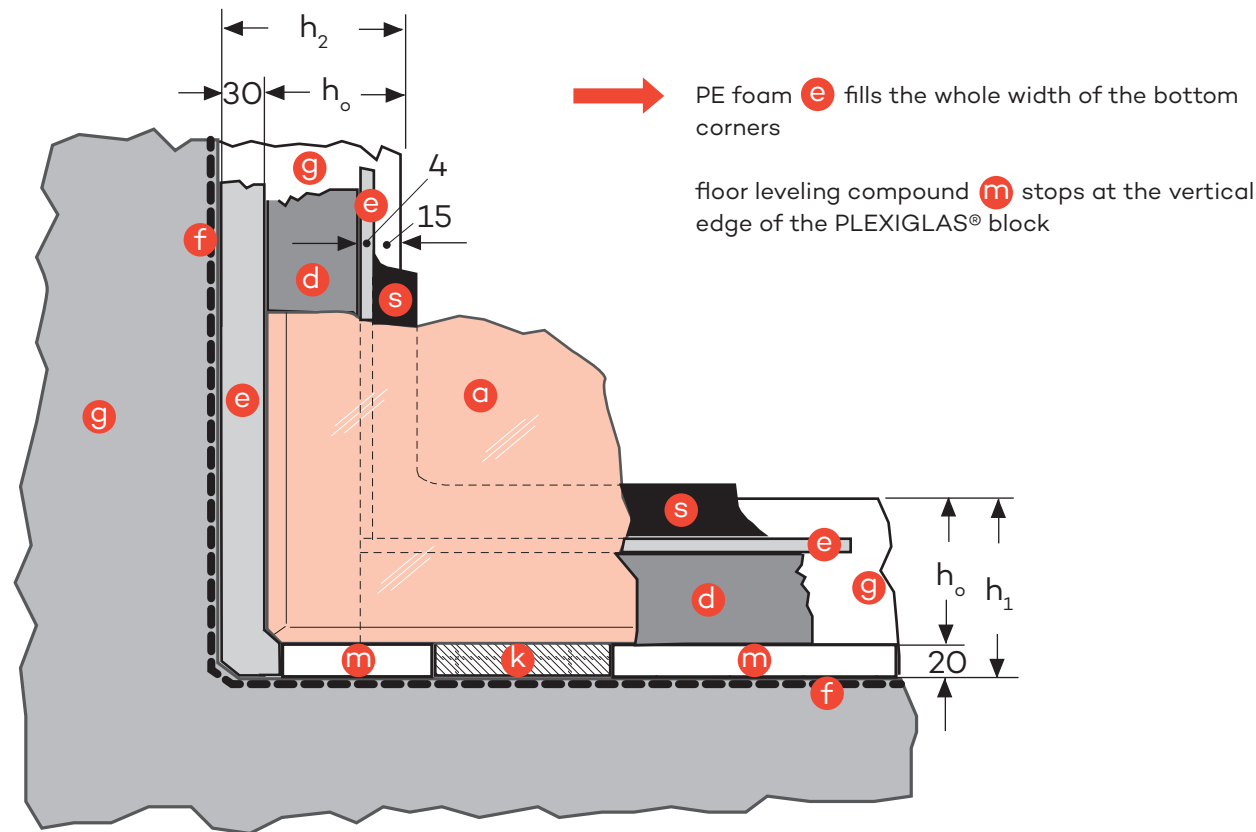


Section B - B



- 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



## United Nations Sustainable Development Goals: How PLEXIGLAS® supports sustainable action

The United Nations' 2030 Agenda for Sustainable Development aims to shape global economic progress in a socially just manner and within the Earth's environmental limits. At the heart of this agenda are 17 Sustainable Development Goals (SDG). These goals are to be achieved by 2030 through the joint efforts of states, companies and civil society. We at Röhm GmbH are also contributing toward this necessary change – through both our PLEXIGLAS® products and our company's sustainability strategy.



Find out which SDGs are particularly relevant for us and how PLEXIGLAS® supports sustainable action at [www.plexiglas.de/eco](http://www.plexiglas.de/eco).



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® = registered trademark

PLEXIGLAS is a registered trademark of Röhm GmbH, Darmstadt, Germany.

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

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