

Acrylic Aquarium Viewing Panels

CAST PMMA / US & EUROPEAN SPECIFICATION

Specify optical material quality and long-term water-loaded structural performance separately. Thickness follows geometry, water depth, supports, joint design and the agreed service environment.

01 Specify the destination-market route

Market / purpose	Standard reference	How to apply it
United States	ASTM D4802-16(2024)	General-purpose monolithic acrylic sheet material specification. Specialty aquarium use requires additional design and qualification; it is not a tank pressure rating.
European / ISO route	ISO 7823-1:2003	General-purpose, non-modified flat cast sheets, 1.5-25 mm scope. Do not extend this conformity claim automatically to thicker blocks, curved panels or bonded assemblies.
Aquarium design	Project-specific engineering + local authority	DIN 32622 addresses glass aquariums; it is not a PMMA structural certification. Do not transfer glass thickness tables to acrylic.

02 Product and performance parameters

Parameter	Unit / status	Technical requirement
Material identity	Cell-cast PMMA	Approve the exact grade, batch, casting route, annealing and suitability for freshwater / seawater exposure.
Water head / panel geometry	m; mm	Record maximum water level, clear opening, overall dimensions, thickness map, curvature and supported edges.
Optical acceptance	Transmission %; haze %	RP website lists clear-grade transmission $\geq 92\%$; no thickness-specific report was supplied. Treat it as an unverified catalogue claim, not an acceptance result.
Design values	Engineer-approved	No allowable stress, safe thickness, design life or bonded-joint strength is established by this publication.

Evidence status: no product-specific third-party reports were supplied. Referenced standards are procurement / test routes, not a declaration that RP products are tested, listed, CE marked or certified. Numeric limits must be agreed for the identified product and application.

Property and test method matrix

03 Record values with their test conditions

For each row, the approved schedule must state the measured value, required limit, unit, standard edition and report ID. US and ISO / EN routes below address related properties; they are not presented as equivalent tests.

Property	Unit	US / ISO / EN reference	Required test record / acceptance basis
Optical transmission / haze	% / %	ASTM D1003; alternatively ISO 13468-1 / ISO 14782	State thickness, colour, surface, test procedure and instrument. Methods are not automatic equivalents.
Tensile / flexural behaviour	MPa; GPa; %	ASTM D638 / D790; alternatively ISO 527 / ISO 178	Report strength, modulus and elongation with specimen, orientation, speed and conditioning. Short-term values are not allowable design stress.
Creep / long-term stiffness	MPa; strain %; h	ASTM D2990; alternatively ISO 899-1 (tension)	Provide stress-time-temperature data for the actual grade and environment; agree extrapolation and safety factors with the engineer.
Water uptake / exposure	Mass change, %	ASTM D570 OR ISO 62	Record duration, temperature, specimen thickness and water type; assess dimensional and optical changes.
Dimensions / visual quality	mm; visual criteria	Drawing + agreed inspection procedure	Map thickness; define tolerances, viewing distance, lighting and acceptable bubbles, inclusions, scratches and distortion.
Bonded joints / finished tank	MPa; leakage / deflection	Project-qualified procedure and test plan	Agree qualification specimens, joint preparation, cure / anneal records and staged water-test acceptance.

Measured value is not the same as a catalogue typical value, guaranteed minimum or structural design allowable. Match the report to the grade, thickness, colour, coating, batch and fabrication route. Where no report is available, the result remains unverified.

Inspection schedule to agree before production

Identify sampling frequency, test specimens, numeric limits, drawing tolerances, inspection conditions and handling of nonconforming results. Use a qualified laboratory whose scope covers the selected method. Record buyer approval before release.

Design review and delivery acceptance

04 Engineering and release requirements

01 For static water, pressure varies with depth: $p = \rho \times g \times h$. Use the actual design water density and maximum head; include other applicable load cases.

02 Check short- and long-term stresses, creep deformation, edge support, seals, thermal movement and joint behaviour. Agree safety factors and service life with the responsible engineer.

03 Approve material and joint traceability, fabrication and annealing records, dimensional inspection and optical acceptance before shipment.

04 Conduct filling, leakage and deflection checks only under an approved commissioning plan, with hold levels, monitoring, stop criteria and sign-off responsibility.

Calculation illustration only: at $h = 2.0$ m, $\rho = 1000$ kg/m³ and $g = 9.81$ m/s², bottom gauge pressure is 19.62 kPa. This is water pressure, not a safe panel thickness, test pressure or design rating.

05 Source register and edition control

Public publisher / authority scope information checked 18 Oct 2026. These notes do not reproduce the standards or replace licensed full texts. Agree contract editions, amendments, required classifications and local authority acceptance before testing or purchase.

ASTM D4802-16(2024) - material specification scope

ISO 7823-1:2003 - scope and 1.5-25 mm thickness range

DIN - DIN 32622 concerns glass aquariums

ASTM D2990 - long-term creep data

ISO 899-1:2017 - tensile creep

RP product / application range (catalogue information)

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Send drawings and the required market standard