ADCERAX
ADVANCED CERAMICS

ENGINEERING PRODUCT CATALOG

ADC-CAT-ZRO-MSZ-MB-001 | Revision 01 | Issue date 2026-10-08

Magnesia Stabilized Zirconia Multi Bore Tubes

Reference sizes and drawing inputs for compact ceramic assemblies

Compare the 2, 4 and 6 bore references, define the section and both ends, and send the material and service requirements for engineering review.



Representative two-bore short components. Photograph supports visible form only; it does not identify a listed model, grade, dimensions or availability.

Find the information you need

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ADCERAX is a China-based advanced ceramics manufacturer for custom precision ceramic components.

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Reference dimensions and product scope

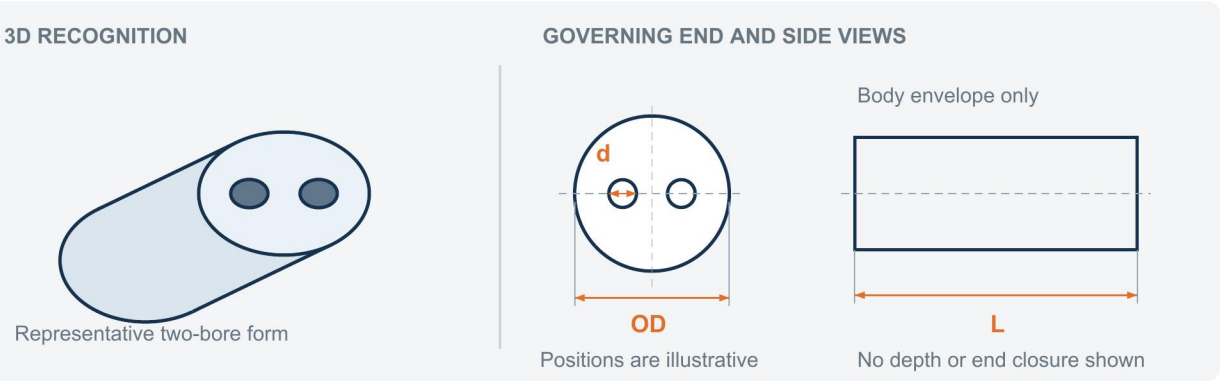
Mg-PSZ means magnesia partially stabilized zirconia; MSZ is the common shorthand. MgO is the stabilizer, rather than the material identity of an MgO tube. Multi-bore describes separate passages, not a porous filtration network.



Representative two-bore components; this photograph does not cover every listed configuration or establish bore continuity.

Use the full reference row

The six model-and-geometry combinations are enquiry references. They are not confirmed stock, finished-part acceptance limits or an unrestricted manufacturing range. Keep each row intact when requesting a quotation.



Dimension key, not to scale. OD = outside diameter; d = nominal diameter of each bore; L = overall length. Representative two-bore topology only; bore count, positions, depth and both ends are defined for the requested part.

Model reference	OD (mm)	d (mm) Each bore	L (mm)	Number of bores
AT-MGO-G2001	5	1.2	4	2
AT-MGO-G2002	5	1.2	10	2
AT-MGO-G2003	5.3	1.2	8	4
AT-MGO-G2004	5.3	1.2	15	4
AT-MGO-G2005	6.5	1.2	15	6
AT-MGO-G2006	6.5	1.2	20	6

Before selecting a row: confirm bore coordinates, usable bore size, depth, minimum webs and outer wall, both ends, critical fits and the actual Mg-PSZ grade. Nominal d does not certify unobstructed or constant diameter over the full length.

Supply boundary: state whether the request is for the bare ceramic piece or a separately defined fitted or sealed assembly. Final specifications and availability are confirmed in the quotation and approved drawing.

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AD ZRO MG material selection reference

The values below apply to the corresponding dense sintered AD-ZRO-MG material grade. They are material-level references, not measured results or design allowables for the six multi-bore components. Confirm the actual supplied grade and test basis for the project.

Property	Material reference	Condition or limitation
Stabilizer	MgO	Grade-specific composition; no fixed MgO percentage is inferred.
ZrO2 + HfO2	95-99 wt%	Grade range; this is not the stabilizer content.
Bulk density	5.70-5.80 g/cm³	Typical dense-material reference.
Flexural strength	500-755 MPa	Typical at 20°C on material specimens.
Compressive strength	2100 MPa	Typical at 20°C on material specimens.
Fracture toughness KIC	6-12 MPa·$m^{1/2}$	Typical at 20°C; method-dependent.
Vickers hardness	11.5 GPa	Typical; test force and dwell time must be specified.
Young's modulus	200 GPa	Typical at 20°C.
Poisson's ratio	0.28	Typical; dimensionless.
Water absorption	0%	Typical for the defined dense sintered body.
Thermal conductivity	2.5 W/(m·K)	Typical at 20°C.
Linear thermal expansion	10.5 × 10^{-6}/K	Reference valid only over 40-80°C.
Specific heat capacity	0.45 J/(g·K)	Typical; temperature is not listed in the source.

Apply the reference at the correct level

Bored component strength: room-temperature specimen strength does not define allowable load at thin webs, bore edges or an assembled part. Define loads, supports, clamping and the acceptance basis for the component.

Thermal design: do not extrapolate the 40-80°C expansion coefficient to a furnace temperature or use the 20°C conductivity as a high-temperature result. Specify the complete design interval, atmosphere and cycle.

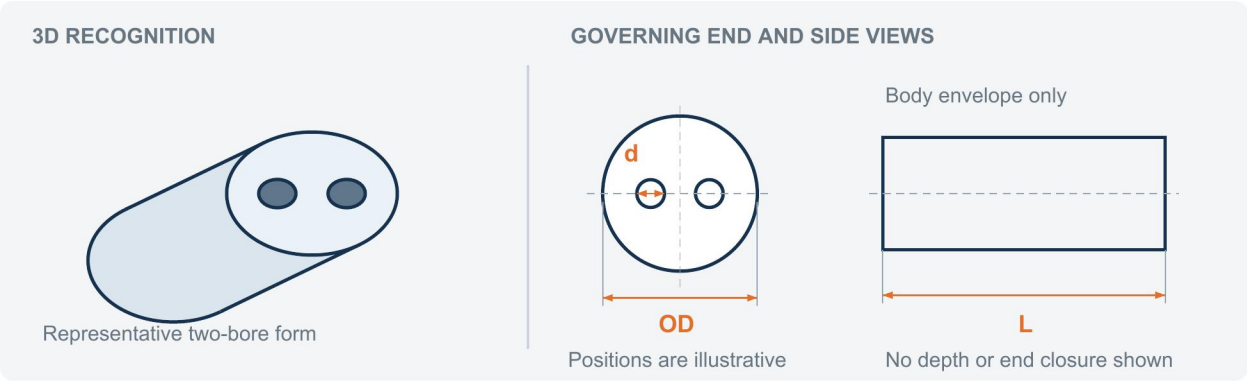
Functional qualification: water absorption does not establish gas tightness or absence of cross-leakage. Working temperature, voltage, pressure, chemical compatibility, thermal shock and service life are qualified for the actual part and assembly.

Reference basis: ADCERAX Zirconia Ceramic Grade Comparison, Rev 06, AD-ZRO-MG column, pages 1-3. Methods and purchase acceptance are selected separately for the ordered part.

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Define the multi bore drawing

A reference row identifies a starting geometry. A released drawing defines how the ceramic mates with the assembly. Number the bores and show both ends; use a section or end view to define the pattern and a side view to define length and end features.



Dimension key, not to scale. OD, d and L have the same meanings as the schema below. The two-bore outline communicates terminology only; it supplies no production coordinates, depth or end-closure requirement.

Drawing group	Required definition
Body envelope	OD, overall L and any effective length; units, measurement temperature, datums and dimensional/shape tolerances.
Individual bores	Total bore count; each bore number, d or profile, diameter tolerance, centre coordinates or pitch/angle, orientation datum and position tolerance.
Bore depth and connections	Through or blind requirement for each bore, usable depth, inlet/outlet, any interconnections and the method for checking passage continuity.
Remaining ceramic	Minimum web between bores and minimum wall to the outside surface, with acceptance limits. OD and d alone do not determine these thicknesses.
Both ends and mating surfaces	End-face requirements, chamfers/steps if required, locating/retaining or sealing surfaces, insertion length and mating materials. Define special features on the actual drawing.
Material and finish	Mg-PSZ grade or composition; surface texture, cleanliness, cracks/chips and allowable defects. Identify critical surfaces separately.

Review geometry before manufacturing commitment

Bore diameter, bore positions, remaining ceramic and length are linked. A different bore count or length is assessed as a complete geometry, rather than assembled by mixing values from the reference rows. Feasibility, tolerances and inspection access are reviewed before quotation.

No drawing yet: send photographs of both ends, a numbered section sketch, measurable OD and length, the intended function and quantity. Mark unknown details so the first review can focus on the features that control fit.

Replacing an existing part: provide the original part number and equipment version if known, installation position, material requirement, mating features and failure description. Similar dimensions and bore count do not establish interchangeability.

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Match review requirements to the function

Choose the route that describes what the component must do. These are engineering assessment routes, not verified installations or approvals for the reference sizes. Add the actual assembly and environment to the geometry defined on page 4.

Intended function	Information needed	Validation to define
Separate or locate wires, pins or sensors	Element count and diameters; bore alignment and clearances; retention/support; temperature, atmosphere and contamination. Add voltage and AC/DC or frequency when electrical separation is required.	Assembly fit; creepage/clearance where relevant; insulation or withstand method, conditions and limits for the actual component or assembly.
Provide multiple gas or liquid passages	Each inlet/outlet and flow direction; continuity and independence; medium and particles; actual temperature/pressure, flow, pressure drop, seals and cleaning.	Per-bore flow/pressure drop, leakage and cross-leakage, test medium, temperature, pressure differential and acceptable limits.
Locate a short component in a heated assembly	Part and end temperatures; gradients, ramps and dwell; atmosphere/contact medium; supports, clamping, fit, neighbouring materials and load.	Fit and retained function after the agreed cycle; thermal expansion allowance, damage criterion and any leak/electrical acceptance required by the assembly.

Keep the service description specific

Thermal cycle: state continuous and peak temperatures, dwell, heating/cooling rates, temperature gradients and intended cycles. Identify where temperatures are measured, including ends and seals.

Chemical exposure: give composition, concentration, impurities, temperature and exposure time for gases, liquids, steam, melts and cleaning agents. A material family name alone does not establish compatibility.

Mechanical installation: show support points, insertion depth, clamping or preload, vibration, impact and thermal expansion space. Loads from wires, fittings and seals are part of the assembly review.

Avoid selecting by bore count alone

Two, four or six passages do not establish an insulation class, uniform flow, a pressure rating or a service-life benefit. A short multi-bore piece also has a different definition from a long furnace tube, a single-bore protection tube or a porous filter. Specify the required function before choosing the material or reference row.

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Agree acceptance and repeat supply

ADCERAX reviews the drawing, material and operating requirements before quotation. For these short multi-bore parts, agree how each critical feature will be checked and which records are needed. The table defines order inputs; it does not state that every test is routinely included.

Acceptance group	Agree for the order
Geometry and bore pattern	Drawing revision, datums, OD/d/L, bore count and positions, depth, minimum webs/outer wall, end faces and critical fits; method, measurement temperature and sampling.
Surface and visual condition	Crack/chip and edge criteria, bore openings, texture and cleanliness; inspection access and sampling. Do not repair a bore edge without an approved procedure.
Material documentation	Actual grade and composition requirement, requested certificate/report, specimen or finished-part basis, method, conditions, sample count and acceptance statistic.
Function where required	Electrical, leak/cross-leak, flow/pressure drop, thermal-cycle or medium compatibility test; fixture, conditions and limits matched to the intended function.

From review to a repeat order

1 Engineering and quotation: submit the section, ends, material, quantity and service conditions. Agree the feasible geometry, manufacturing route, finish, inspection scope, sample validation and commercial terms for the request.

2 Sample and assembly review: check the agreed bore pattern, mating fit and any critical function before authorizing the next stage. Record the drawing revision, test conditions and acceptance decision.

3 Identification and packing: request part/model and drawing revision, lot identification, quantity and documents as needed. Agree separation and cushioning to protect short pieces, end faces and exposed bore edges for the shipping route.

4 Repeat production: retain the approved drawing, material and acceptance criteria together. Review changes to bores, ends, finish or operating conditions before treating a repeat request as equivalent.

Handling and receiving

Keep pieces separated in protected trays and avoid impact at the openings. On receipt, check package condition, quantity, identification and visible damage, then inspect critical dimensions by the agreed method. During assembly, align the numbered pattern and do not force wires, pins or fittings through a restricted passage.

Final quantity, availability, price, MOQ, lead time, documentation and packing are confirmed in the quotation or order. Specific test methods are selected for the function; a materials reference sheet does not replace finished-part acceptance.

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Request an engineering quotation

Send a drawing or a complete reference row with your intended function. ADCERAX will review the geometry, material and service requirements, identify missing inputs and prepare the applicable quotation basis.

Path A Start from a listed reference

Cite ADC-CAT-ZRO-MSZ-MB-001, Rev 01, and the model on page 2. Include its complete OD × individual bore d × L × bore-count combination, required grade, quantity, destination and target schedule. Add deviations, both ends, bore layout, function and inspection needs. A reference row remains an enquiry starting point.

Path B Define a new or replacement part

Attach the drawing/model and revision, or photographs of both ends with a numbered section sketch. Include dimensions and units, material, tolerances, surfaces and mating features. For replacement work, add the original part/equipment version and installation position where available.

Include these project inputs with either path

Purchase scope: Bare ceramic piece or separately defined assembly; quantity, sample/production stage and repeat-order expectation.

Geometry: Numbered bore pattern, positions, through/blind depth, both ends, minimum webs/outer wall and critical fits. See page 4.

Operating conditions: Function, temperatures/cycle, atmosphere or medium, supports, loads, seals and mating materials. Add voltage, flow, pressure or leakage requirements when relevant.

Acceptance and delivery: Required methods/limits, sampling and documentation, identification, packing, delivery destination and target schedule.

Send the technical brief or drawing for review

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China-based advanced ceramics manufacturer for custom precision ceramic components.

Order specifications are controlled by the agreed drawing, quotation and acceptance requirements.