ADCERAX
ADVANCED CERAMICS

ENGINEERING PRODUCT CATALOG

Alumina Ceramic Cylinder Liner

For mud, slurry and reciprocating pump liner projects

Define the bore, mating parts and operating conditions before selecting a liner. This catalog organizes the specification and acceptance inputs for an engineering quotation.



Website display image. Appearance reference only; material, dimensions and the delivered construction are defined by the approved drawing.

AT-GT-01 | Custom by drawing

Review edition

Not released for customer distribution.

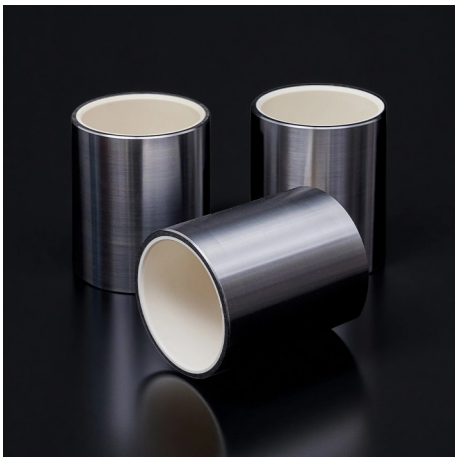
ADCERAX is a China-based advanced ceramics manufacturer for custom precision ceramic components.

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01 PRODUCT AND PURCHASE SCOPE

Identify the liner and the supply unit

A cylinder liner forms the stationary bore working surface in a reciprocating pump. The piston or plunger, seals, support housing and pump are separate parts of the design.



Website display image of cylindrical forms with pale bores and silver-grey outer surfaces. It does not establish a pump installation or a bill of materials.

Inquiry route	Define before quotation
Ceramic body only	Provide the ceramic drawing and the housing support, end restraint and installation requirements.
Liner with a support shell	Identify the ceramic, shell and joining interfaces separately. Specify who supplies and assembles each part. Supply scope requires review.
Replacement or repair request	Provide the pump maker, model and revision, old part number, photographs and a drawing or measurable sample. Identify any seals or mating parts requested.

Where the review starts

Mud and mineral slurry service: define particles, solids content and pressure cycling. Chemical metering service: define fluid chemistry, temperature, cleaning agents and allowable leakage. OEM designs and replacement projects also require the full stroke and mating seal arrangement.

The same bore diameter does not establish interchangeability. AT-GT-01 identifies this product inquiry; it is not an OEM cross-reference, a fixed-size list or a stock statement.

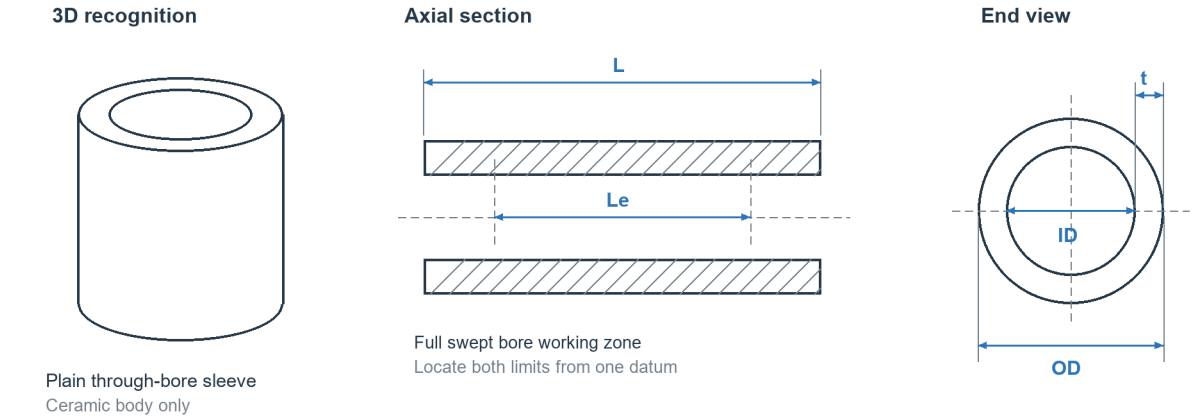
Catalog route

Dimensions 3 | Bore and fit 4 | Materials 5–6 | Acceptance and supply 7 | RFQ 8

02 DRAWING INPUTS

Define the ceramic body

AT-GT-01 is a custom inquiry reference. Define the ceramic body separately from any support shell. All values below are buyer drawing inputs; no standard dimensions are assigned.



Plain ceramic-body dimension key. End steps, shoulders and shell interfaces require the actual part drawing; the figure does not represent an approved AT-GT-01 construction.

Symbol	Unit	Definition	Information to supply
ID	mm	Bore diameter	Nominal diameter, tolerance and measurement positions across the working length.
OD	mm	Ceramic outside diameter	Ceramic-body diameter and tolerance; do not substitute the assembly shell diameter.
L	mm	Total ceramic length	End-to-end length and tolerance, with the drawing datums identified.
t	mm	Ceramic wall thickness	Minimum wall and any local changes. For the concentric uniform body shown, t = (OD − ID) / 2.
Le	mm	Swept working length	Full bore zone swept by the seal or piston contact over the complete stroke, including contact width. Locate both limits from one end datum.

Complete the end and interface definition

Specify lead-in or runout allowances separately from Le. Attach views of chamfers, radii, shoulders, grooves, ports and any nonuniform wall, with sizes, positions, tolerances and datums. Add shell OD, seat bore, support length and fit requirements separately for an assembly.

Approval basis

The quoted drawing revision governs the final part. A worn sample helps identify the geometry, but worn dimensions must be distinguished from the intended new-part dimensions.

03 BORE FIT AND SERVICE

Match the bore to the pump

Bore accuracy, surface texture, seal contact and support must be specified together. A roughness target alone does not define sealing performance or service life.

Review area	Inputs and acceptance definition
Bore working zone	ID tolerance, roundness, cylindricity, straightness and any specified taper or profile. Define axial measuring positions and the inspection temperature.
Surface texture	Specify Ra or Rz, the working zone, measurement direction, filter and evaluation length. Agree the method and acceptance limit with the seal design.
Mating parts	Piston or plunger material, diameter, geometry and surface; seal material and arrangement; full stroke. State whether the clearance is radial or diametral.
Support and assembly	Housing or shell material, seat bore, end support, fit and joining requirements. Define alignment, preload and the checks required after assembly.

Service conditions to review

Condition	What to report
Pressure and motion	Working, peak and test pressures; pressure differential and pulsation; stroke, speed or frequency; start-stop cycles and possible side loads.
Medium and solids	Fluid composition, concentration and pH; viscosity; solids content; particle size distribution, hardness and shape; foreign-particle exposure.
Temperature and cleaning	Continuous and peak temperatures, heating/cooling changes, cleaning chemicals, concentrations and cleaning cycles.
Failure and acceptance	Existing bore wear, scoring, chips or leakage; measurement locations and service hours/cycles; desired leakage, wear and replacement criteria.

Selection boundary

Pressure capacity and fit depend on the complete geometry, support, assembly stresses and service conditions. Material strength cannot be used as a liner pressure rating. Chemical compatibility must include the ceramic grade, secondary phases, seals and any joining material.

04 MATERIAL REFERENCE

Composition and mechanical properties

The following six dense sintered alumina grades are material references from ADCERAX Rev 16. Select the exact grade in the quotation; the table does not establish every grade as a stocked or approved AT-GT-01 liner option.

Property	Unit and status	AD-ALU-999	AD-ALU-997	AD-ALU-995	AD-ALU-990	AD-ALU-960	AD-ALU-950
Al_2O_3 content	wt%, nominal	99.90	99.70	99.50	99.00	96	95
IEC 60672-3 group	-	C799	C799	C799	C795	C795	C795
Bulk density	g/cm^3, typical	3.94	3.94	3.90-3.92	3.80-3.91	3.70	3.75
Flexural strength	MPa, 20 °C, typical	315-340	330	320-350	300-320	300	280
Compressive strength	MPa, 20 °C, typical	2558-2900	2500	2400	2400	2000	2000
Young's modulus	GPa, typical unless stated	359-375	370	365	355	275 at 20 °C	340
Fracture toughness KIC	MPa·m½, method-dependent	3.8-4.2	3.6	3.5	3.3	3.5 at 20 °C	3.0

Read the status with the value

Alumina content is nominal composition. Typical values and ranges describe material data, not dimensional tolerances or guaranteed finished-part results. Fracture toughness is method-dependent. IEC C795 and C799 are composition groups, not liner certifications.

Match the test basis

Flexural and compressive strength values are at 20 °C. For elastic modulus and fracture toughness, retain each grade's stated conditions and agree the test method. Select specimen geometry, surface condition, sample count and acceptance rules when a test report is required.

Apply the data to the correct object

A material specimen, finished ceramic body, supported liner assembly and complete pump have different acceptance requirements. These material values do not establish assembly pressure, leakage, wear rate or service life.

Source: ADCERAX Alumina Ceramic Grade Comparison, Rev 16, pages 1–2 and 4. Request this exact revision from info@adcerax.com with your RFQ.

05 MATERIAL REFERENCE CONTINUED

Thermal and physical properties

Use the grade codes and conditions together. A higher alumina content is not a universal selection rule for a particular slurry, chemical or pressure cycle.

Property	Unit and status	AD-ALU-999	AD-ALU-997	AD-ALU-995	AD-ALU-990	AD-ALU-960	AD-ALU-950
Thermal conductivity	W/(m·K), typical	35-42 at 25 °C	35-40 at 25 °C	30-38 at 25 °C	24 at 25 °C	25 at 20 °C	18-25 at 25 °C
Mean CTE	10^{-6}/K, stated range	7.6 (25-800 °C)	7.6 (25-800 °C)	7.6 (25-800 °C)	7.2 (25-800 °C)	8.2 (25-1000 °C)	7.6 (25-800 °C)
Color	visual	Ivory	Ivory	Ivory	Ivory	White	Ivory / white
Water absorption	%, selection limit unless stated	≤0.01	≤0.05	≤0.10	≤0.10	≈0; typical, rounded	≤0.20
Mohs hardness	typical	9	9	9	9	/	9
Vickers hardness	HV1, 1 kgf, typical	/	/	/	/	1600	/
Use temperature guideline	°C, application-dependent	1750	1700	1650	1600	1600 max in air	1400

Temperature and expansion

Use-temperature values are application-dependent material selection guidelines, not continuous pump operating temperatures. AD-ALU-960 conductivity is at 20 °C and its mean expansion covers 25–1000 °C; the other stated conductivity and expansion conditions differ. Evaluate the liner, shell, seal and fluid temperatures as a system.

Water absorption and hardness

AD-ALU-960 near-zero absorption is a rounded typical value, not a hermeticity guarantee. Other listed absorption values are selection limits. The slash indicates a value not provided in the source. Mohs and Vickers hardness use different scales; 1600 HV1 is not a conversion from Mohs hardness.

Grade and chemical acceptance

State the grade, certificate requirement and any relevant secondary-constituent or contamination limits. Confirm the exact medium and cleaning chemistry before selecting the ceramic and its mating materials.

Source: ADCERAX Alumina Ceramic Grade Comparison, Rev 16, pages 1–2 and 4. Request this exact revision from info@adcerax.com with your RFQ.

06 ACCEPTANCE AND SUPPLY

Agree how the liner will be accepted

Set the acceptance plan with the drawing and quotation. The following are requirements to agree for the ordered part; they do not imply that every test is included in every order.

Acceptance stage	Agree and record
Material identity	Exact grade, lot identification, certificate and required composition or material test results.
Ceramic body	Drawing revision and datums; dimensions, bore geometry, surface texture, end features and defect limits. State measuring positions, method and sampling.
Supported assembly	Shell and joining-material identity, fit and assembly procedure, bond or interface checks and bore remeasurement after assembly.
Pump validation	Test medium, pressure, temperature, stroke/speed, duration and cycles. Define leakage, wear and failure criteria for the actual mating parts.

Inspection and repeat ordering

Include the requested dimensional and roughness reports in the RFQ. Retain the accepted drawing revision, grade, mating-part reference and first-article result for repeat orders. Changes to the shell, seal, medium or duty cycle require an applicability check.

Packing requirements

Specify protection for the bore and ceramic edges, individual separation, supported positioning and the identification to show on each package. Agree the outer pack and transport requirements with the order quantity and destination.

Handling and service review

Inspect for chips and bore damage before installation. Follow the approved housing and pump procedures for alignment, fit, lubrication and start-up. Use cleaning agents compatible with all assembly materials. Investigate leakage, scoring or pressure changes against the pump maker’s service limits; symptoms alone do not identify a single cause.

Commercial definition

Quantity, sample and repeat demand, inspection scope, packing, price and lead time are quotation-controlled. No stock, minimum-order quantity or delivery period is implied by this catalog.

07 REQUEST FOR QUOTATION

Send the drawing and duty data

Use AT-GT-01 and catalog ADC-CAT-ACCL-001 Rev 01 to identify your inquiry. Request the ceramic body or the supported assembly explicitly.

Existing part or replacement inquiry

Send the pump maker, model and revision; old part number; photographs and drawing or sample details; requested supply unit; quantity; medium and reason for replacement. A model name or photograph starts identification and does not establish compatibility.

New drawing or specification inquiry

Send the current drawing and revision, target grade, ceramic and assembly definitions, bore and interface requirements, mating parts and the operating conditions below.

RFQ input	Include in your message or drawing
Geometry	ID, OD, L, t and Le as defined on page 3; tolerances, datums, end details and any shell interface drawing.
Bore and mating parts	Roundness/cylindricity, surface-texture target and method, piston/plunger and seal details, radial or diametral clearance and stroke.
Operating duty	Medium, solids and particle distribution; working/peak pressure and pulsation; temperature, speed/cycles, lubrication and cleaning.
Acceptance and supply	Material documents; dimensional, roughness and assembly tests; first-article and batch criteria; quantity and repeat demand; packing, destination and target schedule.

If you do not have a complete drawing

Start with the old-part photographs, pump identification, medium and quantity. Mark measured worn features and the intended new-part requirements separately so the missing specification can be identified during review.

Send your technical brief for engineering review and quotation

info@adcerax.com

Product page | Contact ADCERAX

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Engineering review defines the feasible specification, supply scope and required validation before a quotation or order is confirmed.