ADCERAX
ADVANCED CERAMICS

ENGINEERING SELECTION CATALOG

ADC-CAT-R119-001 | Revision 01 | Review copy

Alumina Ceramic Filling Pump Components

Pump heads and matched wear sets for liquid, cream and paste dosing

Compare 41 volume references, define the ceramic working pair and prepare a drawing-based inquiry for your filling equipment.



Website configuration images. Visible form reference only; images do not identify an individual AT-CP item or establish dimensions, grade or performance.

From the dose requirement to the defined wet end

Select the application group, then confirm the plunger, barrel, valve arrangement, seals and equipment interface. The reference volume alone does not establish the final assembly or its operating accuracy.

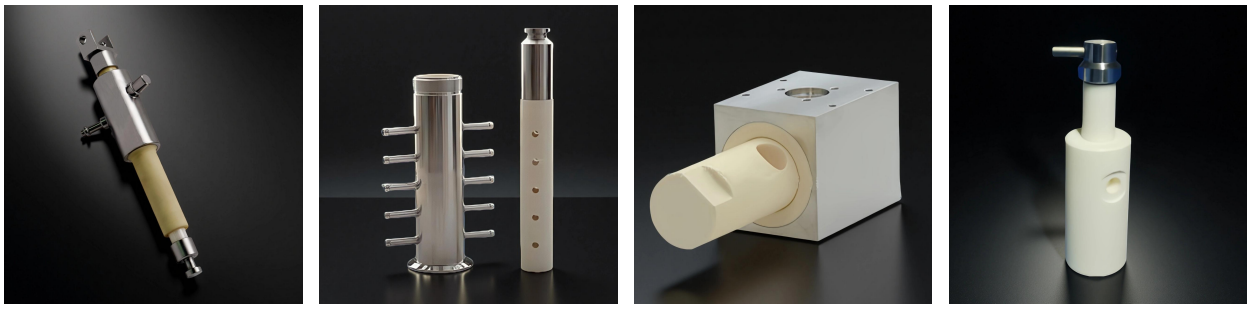
ADCERAX is a China-based advanced ceramics manufacturer for custom precision ceramic components.

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02 SELECTION ROUTE

Choose the application and supply unit

Use the application group to find an initial volume reference. Use the drawing, wetted bill of materials (BOM) and actual process conditions to define the order.



Website configuration images, left to right: cosmetics, laboratory, food and electrolyte page groups. Group-level references; no item-by-item photo mapping is implied.

Application group	Catalog references	Volume reference	Page
Cosmetics and personal care	AT-CP-001 to 011	0.2-20 mL	3
Laboratory and hygienic filling	AT-CP-1001 to 1012	0.5-40 mL	4
Food, flavor and syrup	AT-CP-2001 to 2012	1-40 mL; 40-220 mL	5
Battery electrolyte	AT-CP-3001 to 3006	0.5-5 mL	6

These are selection references, not a continuously adjustable range for every item. Material grade, dimensions, tolerances, availability and acceptance are defined for the quoted configuration.

State what you want to purchase

Supply unit	Definition needed
Ceramic wear part	Identify the plunger, barrel, valve seat or outlet part, drawing revision, working surface and mating component.
Matched wear set	Identify all matched parts, pair clearance, valve arrangement and the set BOM.
Drawing-based pump head	Define the ceramic parts, housing, seals and connections included in the supply list.

Drive, controls and complete equipment

This catalog covers ceramic wet-end components and defined pump heads. Motors, drives, controls and a complete filling machine require a separate supply agreement.

Continue with drawing inputs on page 7, material selection on page 8, acceptance on page 9 and RFQ on page 10.

03 VOLUME REFERENCE 1

Cosmetics and personal care

Start with the required dose for creams, lotions, gels, fragrance carriers or pigment-loaded formulations. Match the wear pair and outlet geometry to the actual formulation.



Website configuration image for this application group. The project drawing defines the actual profile and interfaces.

Reference volumes for engineering selection

Catalog reference	Reference volume (mL)
AT-CP-001	0.2
AT-CP-002	0.5
AT-CP-003	1
AT-CP-004	2
AT-CP-005	3
AT-CP-006	5
AT-CP-007	7
AT-CP-008	10
AT-CP-009	15
AT-CP-010	16
AT-CP-011	20

Reference volume is a selection value, not a physical drawing dimension. Final dose range, material grade, interfaces and filling performance are defined for the agreed pump configuration. Availability is confirmed in the quotation.

Send with the selected reference

Dose minimum and maximum; viscosity at filling temperature; pigment or filler size and concentration; valve and nozzle geometry; changeover frequency; cleaning agent; seal material; equipment interface.

For replacement work, include the current drawing or old-part dimensions. The same volume in another application group does not establish interchangeability.

04 VOLUME REFERENCE 2

Laboratory and hygienic filling

Review small-dose dispensing against the manifold, nozzle and cleaning cycle. Define residual-volume and traceability requirements for the full wetted assembly.



Website configuration image for this application group. The project drawing defines the actual profile and interfaces.

Reference volumes for engineering selection

Catalog reference	Reference volume (mL)
AT-CP-1001	0.5
AT-CP-1002	1
AT-CP-1003	2
AT-CP-1004	3
AT-CP-1005	5
AT-CP-1006	7
AT-CP-1007	10
AT-CP-1008	15
AT-CP-1009	16
AT-CP-1010	20
AT-CP-1011	30
AT-CP-1012	40

Reference volume is a selection value, not a physical drawing dimension. Final dose range, material grade, interfaces and filling performance are defined for the agreed pump configuration. Availability is confirmed in the quotation.

Send with the selected reference

Reagent identity and concentration; dose target; manifold and nozzle drawing; allowable residual volume; seal and wetted-part BOM; cleaning or sterilization cycle; requested batch and inspection records.

The application name does not establish pharmaceutical approval or validated cleanability. Any regulated-use requirement must be agreed for the actual parts, media and system.

05 VOLUME REFERENCE 3

Food flavor and syrup

Select the dose reference together with recipe temperature, viscosity and cleaning conditions. Check the inlet, outlet and seal interfaces through recipe changes.



Website configuration image for this application group. The project drawing defines the actual profile and interfaces.

Reference volumes for engineering selection

Catalog reference	Reference volume (mL)
AT-CP-2001	1
AT-CP-2002	2
AT-CP-2003	3
AT-CP-2004	5
AT-CP-2005	7
AT-CP-2006	10
AT-CP-2007	15
AT-CP-2008	16
AT-CP-2009	20
AT-CP-2010	30
AT-CP-2011	40
AT-CP-2012	40-220

Reference volume is a selection value, not a physical drawing dimension. Final dose range, material grade, interfaces and filling performance are defined for the agreed pump configuration. Availability is confirmed in the quotation.

Send with the selected reference

Recipe and temperature; dose target; viscosity and particles; inlet and outlet dimensions; cleaning chemicals and cycle; complete wetted-part BOM; food-contact documentation required for the destination.

AT-CP-2011 is a 40 mL reference; AT-CP-2012 is separately listed at 40-220 mL. The overlap does not establish identical geometry, adjustment range or interchangeability.

06 VOLUME REFERENCE 4

Battery electrolyte dosing

Define whether the process is controlled by delivered volume or delivered mass. Select the pump reference only after the electrolyte, seals and leakage criteria are specified.



Website configuration image for this application group. The project drawing defines the actual profile and interfaces.

Reference volumes for engineering selection

Catalog reference	Reference volume (mL)
AT-CP-3001	0.5
AT-CP-3002	1
AT-CP-3003	2
AT-CP-3004	3
AT-CP-3005	4
AT-CP-3006	5

Reference volume is a selection value, not a physical drawing dimension. Final dose range, material grade, interfaces and filling performance are defined for the agreed pump configuration. Availability is confirmed in the quotation.

Send with the selected reference

Electrolyte composition; dose basis in mL or g; density at the process temperature if converting units; moisture-control requirements; seal materials; pressure and leakage limits; machine interface.

The table gives volume references only. A mass-dose target requires its own fluid density, temperature, calibration and test protocol; no mass rating is assigned by this table.

Define the acceptance result

Input	Record for the actual electrolyte
Dose accuracy	Target quantity, mean deviation, sample count and measurement method.
Repeatability	Agreed statistical measure, operating speed and stabilized test conditions.
Leakage and cleanliness	Internal/external leakage basis, test duration and contamination limits.

07 DRAWING INPUTS

Define the working geometry

The keys below define cylindrical working sections only. Provide the complete part and assembly drawing for ports, steps, end fittings, valves and housing interfaces; these features are not inferred from the reference volume.

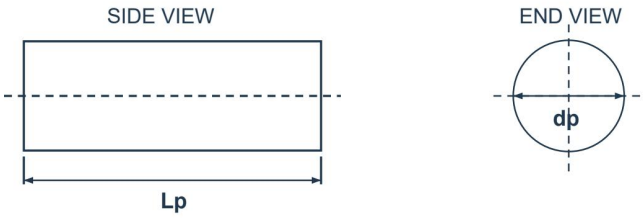
Plunger working section

3D RECOGNITION



Working section only

GOVERNING DIMENSION VIEWS



Dimension key - not to scale. Symbols describe RFQ inputs, not standard item dimensions. The approved project drawing governs.

Symbol / unit	Drawing input
dp / mm	Working plunger diameter with tolerance and measurement temperature.
Lp / mm	Axial length of the cylindrical working section; identify its start and end on the complete part drawing.
Surface and geometry	Working-surface finish and measurement direction; roundness, cylindricity, straightness and datum references.

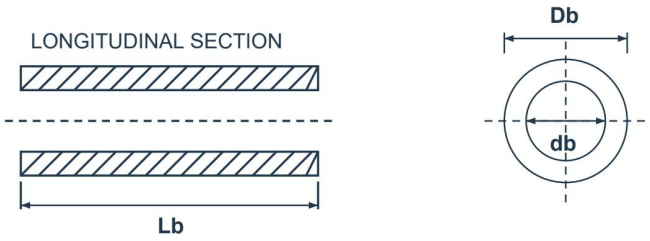
Barrel straight bore section

3D RECOGNITION



Working section only

GOVERNING DIMENSION VIEWS



Dimension key - not to scale. Section and end view govern the symbols. Ports and end geometry require a separate drawing.

Symbol / unit	Drawing input
db and Db / mm	Working bore diameter db and outside diameter Db at the section shown, with tolerances.
Lb / mm	Length of the defined straight bore section; identify port positions and transitions on the complete part drawing.
Matched pair	Specify the mating plunger, clearance definition and measurement temperature. State radial or diametral clearance explicitly.

Assembly inputs: stroke and valve timing; port orientation; seal seats; ceramic-to-metal connection; mounting datums; nozzle fit; edge protection; assembly and cleaning access.

08 MATERIAL AND MEDIA

Select the grade for the working pair

Specify the actual grade for each ceramic component in the wetted BOM. Nominal alumina content identifies a material grade; it does not assign that grade to an AT-CP reference.

Material grade	Nominal Al_2O_3 (wt%)	Density (g/cm^3)	Flexural strength (MPa at 20 °C)
AD-ALU-950	95	3.75	280
AD-ALU-960	96	3.70	300
AD-ALU-990	99.00	3.80-3.91	300-320
AD-ALU-995	99.50	3.90-3.92	320-350
AD-ALU-997	99.70	3.94	330
AD-ALU-999	99.90	3.94	315-340

Source: ADCERAX Alumina Ceramic Grade Comparison, Rev 16. Density and flexural-strength values are typical material references, not finished-pump design allowables or purchase acceptance limits. Test basis, sampling and limits must be agreed separately.

A complete compatibility review includes every wetted material

Process factor	Information to review
Fluid chemistry	Media name, composition, concentration, pH where relevant, and contamination limits.
Viscosity and solids	Viscosity at filling temperature; particle size, hardness and concentration; tendency to settle, crystallize or dry.
Temperature and pressure	Normal and peak media conditions, suction and discharge pressure, backpressure and thermal cycling.
Mating parts and seals	Ceramic grade for each part, counterface, seals, metals, connections and the complete wetted BOM.
Cleaning and sterilization	Cleaner identity, concentration, exposure time, temperature, pressure, flushing, drying and residual limits.

Material properties do not establish pump performance

Filling accuracy, repeatability, leakage and service life depend on the working pair, geometry, assembly, fluid and operating cycle. Agree a test on the actual configuration. Ceramic material temperature data must not be used as an assembled pump temperature rating.

CIP and SIP

Clean-in-place (CIP) or sterilize-in-place (SIP) requirements apply to the complete wetted system. Include seals, metal parts, drainability, dead spaces and the proposed cycle in the review.

09 VALIDATION AND HANDLING

Agree acceptance and repeat supply

Separate material acceptance, individual-part inspection, matched-set checks and filling-system performance. A result at one level does not establish acceptance at the next.

Acceptance level	Define before ordering
Material	Grade and batch identity; composition or other material documents required for the ordered part.
Ceramic part	Drawing revision; critical dimensions and datums; roundness and cylindricity; surface texture; edge and visible-defect limits; measurement temperature.
Matched wear set	Pair identity; clearance definition; alignment; valve orientation; connection and seal checks; assembly acceptance.
Pump or filling process	Actual media, temperature, speed/stroke, backpressure, priming and calibration; sample count; accuracy, repeatability, leakage and wear criteria.

Keep the test reproducible

State the dose target and the method used to measure it. For a mass-based check, record the fluid and temperature; for a volume conversion, record the density basis. Define startup exclusions, test duration and the agreed pass criteria. Required records and sampling belong in the quotation or quality agreement.

Protect the matched surfaces

Define separate protective sleeves or soft liners for the ceramic parts, clean bags or caps for open ports, and edge protection against impact. Keep matched components identified together through packing, installation and reordering. Confirm the packing format and label content with the order.

Installation cleaning and maintenance

Follow the equipment procedure for alignment, assembly torque, priming and cleaning. Do not force a plunger through a misaligned barrel. Protect polished surfaces from metal tools and abrasive cleaning. Confirm lubricant or wetting requirements before movement and avoid abrupt thermal changes.

Observed change	Useful information for replacement review
Gradual underfill	Priming condition, trapped air, seal leakage, wear-pair dimensions and dose records.
Rising torque or stiff motion	Alignment, particles, surface scoring, valve condition and recent process changes.
Drip after stop	Nozzle condition, valve-seat condition, pressure decay and anti-drip timing.

Repeat order: cite the accepted drawing revision, material grade, set BOM and pair identification. Availability, quantity, delivery and any changed acceptance requirements are reconfirmed in the quotation.

10 REQUEST A QUOTATION

Send a specification for engineering review

Use an AT-CP reference to start the selection conversation, or send a drawing or sample definition for a new or replacement wet end. In both cases, identify the supply unit and the actual fluid.

Existing catalog reference	New or replacement geometry
Cite ADC-CAT-R119-001, Rev 01, the application group and AT-CP reference. State target dose, quantity and deviations.	Send the drawing/3D model with revision, or old-part photos and sample details. Identify equipment and part numbers where available.
Confirm the final drawing, material, wet-end BOM and acceptance conditions before order.	Define the complete working geometry, end connections, port layout, mating parts and installation orientation.

Include these six information groups

RFQ field	What to send
1 Supply and identity	Individual part, matched wear set or defined pump head; AT-CP reference or drawing revision; machine/part identification.
2 Geometry and materials	Plunger dp/Lp; barrel db/Db/Lb as applicable; complete interfaces and valve drawing; tolerances, finish, ceramic grade and wetted BOM.
3 Fluid and operating cycle	Media/composition; viscosity and particles; temperature; suction/discharge/backpressure; stroke, speed and cleaning cycle.
4 Dose and acceptance	Minimum/maximum target in mL or g; density basis when converting; accuracy and repeatability definitions; leakage criteria and test protocol.
5 Quality and supply	Trial and repeat quantities; inspection and material documents; pair/lot identification; packing and any destination-specific requirements.
6 Delivery	Destination and target schedule; sample or drawing availability; current failure mode or reason for replacement.

Send the drawing and technical brief

info@adcerax.com | +86-0731-84428843

Product page | Online engineering inquiry

ADCERAX reviews the information to establish the technical and commercial quotation basis. Final supply scope, material, dimensions, acceptance, availability and delivery are stated in the agreed quotation.

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