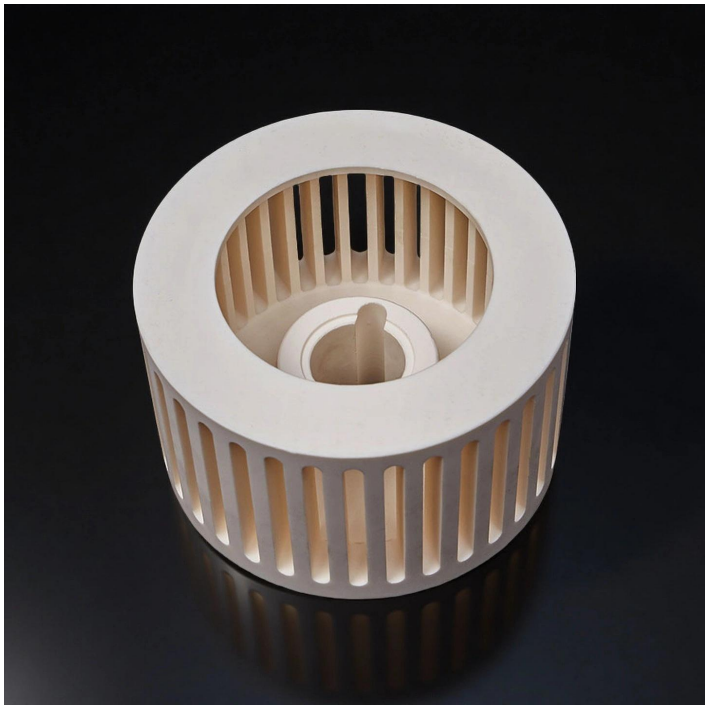
ADCERAX
ADVANCED CERAMICS

ENGINEERING PRODUCT CATALOG

ADC-CAT-ALCW-001 | Revision 02

# Alumina Ceramic Classifier Wheels

Dry-powder air classification
Dimensions, material properties and drawing-based selection



Product photograph: slotted wheel form with an open centre and central bore. The photograph supports form recognition; the ordered drawing and grade define the actual component.

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

## Quick route

Sizes and interfaces 2 | Custom drawing inputs 3
Material properties 4-6 | Duty and acceptance 7 | RFQ 8

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01 CATALOG REFERENCE SIZES

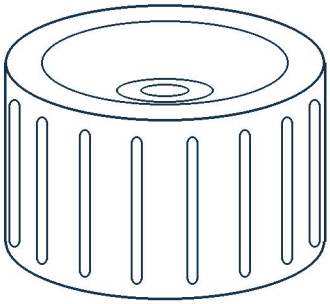
# Wheel Dimensions and Equipment Fit

Compare OD, ID and H together. Wheel replacement also depends on slot layout, hub fit, rotation and the operating envelope.



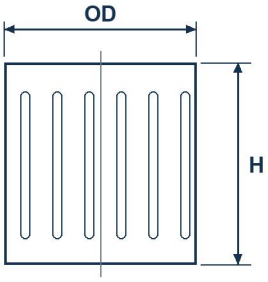
Product form photograph: open end and slots. Image evidence does not assign a material grade, size or machine compatibility.

### 3D FORM RECOGNITION



Representative slotted form. Not to scale.

### ENVELOPE VIEWS AND DRAWING INPUT




Side envelope: OD and H

**ID**

Source-listed internal diameter

Locate its measuring surface and section on the part drawing.

Drawing-defined measurement

ID identifies the listed internal diameter; the part drawing defines its surface and section.

Envelope key - not to scale. OD = outer diameter; H = overall listed height. ID is the source-listed internal diameter; its measuring surface and section are drawing-defined.

| Item No. | OD (mm) | ID listed (mm) | H (mm) | Listed $Al_2O_3$ (%) |
|---|---|---|---|---|
| AT-SM-A001 | 50 | 30 | 70 | 95-99 |
| AT-SM-A002 | 80 | 65 | 90 | 95-99 |
| AT-SM-A003 | 100 | 75 | 80 | 95-99 |
| AT-SM-A004 | 155 | 135 | 95 | 95-99 |
| AT-SM-A005 | 250 | 220 | 100 | 95-99 |
| AT-SM-A006 | 260 | 240 | 120 | 95-99 |

Catalog reference dimensions are paired by item number. The listed composition range is distinct from the nominal grade references on pages 4-6. Confirm the exact ceramic grade and drawing revision for the order; current availability and final acceptance are quotation-controlled.

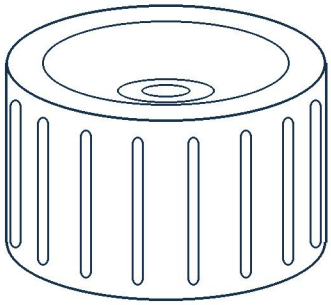
Matching OD alone does not establish interchangeability. Identify the part drawing, bore/shaft interface, slot layout, rotation direction and running clearances.

02 CUSTOM GEOMETRY AND SUPPLY SCOPE

# Define the Wheel Against Your Drawing

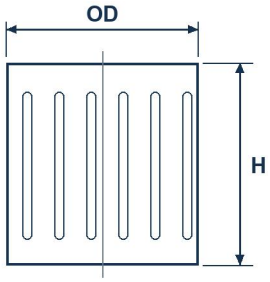
Use a drawing, sketch or old-part photographs to define the replacement or new wheel. State whether the supply scope is the ceramic body or a rotor in a specified assembly state.

**3D FORM RECOGNITION**



Representative slotted form. Not to scale.

**ENVELOPE VIEWS AND DRAWING INPUT**




Side envelope: OD and H

**ID**

Source-listed internal diameter

Locate its measuring surface and section on the part drawing.

Drawing-defined measurement

ID identifies the listed internal diameter; the part drawing defines its surface and section.

Not to scale. The representative form explains envelope inputs; the part drawing governs actual slot geometry, internal surfaces and mounting features.

| Review area | Information to define |
|---|---|
| Envelope dimensions | OD, ID and H in mm; overall versus effective height; ID measuring surface; steps and equipment clearances. |
| Blade and slot geometry | Count, width, depth, pitch, profile and angle; rotation direction; edge and root acceptance. |
| Hub and shaft interface | Bore/shaft fit, datums, locating features and any specified sleeves, inserts, keyways or bolt patterns. |
| Tolerance and surfaces | General and critical tolerances; coaxiality/runout; Ra or Rz where required; ground, lapped or as-fired surface definition. |
| Ceramic and assembly materials | Exact grade for each ceramic component; scope and materials of sleeves, joints and fasteners. |
| Operating and order basis | Equipment, powder, known continuous/peak speed and temperature, quantity, destination and required timing. |

For replacement: cite the original reference and show the mounting faces. For a new design: provide drawing/model revision and the function-critical dimensions before accepting a final specification.

## Order definition

Material coupons, ceramic wheel bodies, specified rotor assemblies and complete classifier performance have separate acceptance scopes. Define connections and the assembled condition before agreeing runout, balance or speed qualification.

03 ALUMINA MATERIAL SELECTION REFERENCE

# Physical and Mechanical Properties

Dense sintered alumina grade references. The columns are material-selection data, not a wheel-model supply matrix. Map the ordered ceramic component to its exact grade before applying values. Grades above the listed wheel range require explicit component-grade confirmation.

| Property | Unit and basis | AD-ALU-999 | AD-ALU-997 | AD-ALU-995 | AD-ALU-990 | AD-ALU-960 | AD-ALU-950 |
|---|---|---|---|---|---|---|---|
| Alumina content | $Al_2O_3$; wt%; nominal | 99.90 | 99.70 | 99.50 | 99.00 | 96 | 95 |
| IEC 60672-3 composition class | composition grouping | C799 | C799 | C799 | C795 | C795 | C795 |
| Bulk density | g/cm³; 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 |
| 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 | Mohs scale; typical | 9 | 9 | 9 | 9 | Not reported | 9 |
| Vickers hardness | HV1; 1 kgf; typical | Not reported | Not reported | Not reported | Not reported | 1600 | Not reported |

Reference basis: ADCERAX Alumina Ceramic Grade Comparison, Rev16, pages 1-2. Nominal composition, typical values/ranges and selection limits retain their stated meanings.

## Read the properties correctly

IEC C795/C799 describes composition grouping, not product certification. Water absorption near zero is a rounded typical value for AD-ALU-960, not proof of zero porosity or hermeticity.

Hardness scales remain separate: AD-ALU-960 provides 1600 HV1 at 1 kgf; a Mohs value is not reported. Fracture toughness is method-dependent. The 20°C basis is retained where specified.

## Finished-wheel qualification

Material strength, density and stiffness support grade review. Wheel allowable speed, balance, wear and service life are established for the actual geometry, defects, connections and assembled operating conditions.

04 MATERIAL VALUES WITH MEASUREMENT BASIS

# Thermal Properties and Service Conditions

Dense sintered alumina grade references. The columns are material-selection data, not a wheel-model supply matrix. Map the ordered ceramic component to its exact grade before applying values. Grades above the listed wheel range require explicit component-grade confirmation.

| Property | Unit and basis | 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 linear thermal expansion | $10^{-6}$/K; stated interval | 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 |
| Service temperature guide | °C; application-dependent | 1750 | 1700 | 1650 | 1600 | 1600 maximum in air | 1400 |

Reference basis: ADCERAX Alumina Ceramic Grade Comparison, Rev16, pages 1-2. Thermal conductivity is a typical reference; expansion retains its temperature interval; service temperature is an application-dependent material guide.

## Measurement conditions

| Characteristic | Reading rule |
|---|---|
| Thermal conductivity | AD-ALU-960: 20°C. All other listed grades: 25°C. Keep the measurement temperature with each value. |
| Mean linear expansion | AD-ALU-960: 25-1000°C. All other listed grades: 25-800°C. Compare coefficients over the stated interval. |
| Service temperature | AD-ALU-960: 1600°C maximum in air. The entries guide material selection and are not continuous-duty wheel or rotor-assembly ratings. |

## Thermal inputs for a classifier wheel

Define powder/gas temperature, temperature at the ceramic body and hub, atmosphere, dwell, thermal cycling and mounting conditions. Evaluate the sleeve, joint and fastener materials as part of the assembly.

Grade selection is completed with the actual geometry and service conditions. Temperature, support, thermal gradients and connections are assessed together with retained performance after service cycles.

05 MATERIAL REFERENCES AND POWDER CONTAMINATION INPUTS

# Electrical Properties and Chemistry

Dense sintered alumina grade references. The columns are material-selection data, not a wheel-model supply matrix. Map the ordered ceramic component to its exact grade before applying values. Grades above the listed wheel range require explicit component-grade confirmation.

| Property | Unit and basis | AD-ALU-999 | AD-ALU-997 | AD-ALU-995 | AD-ALU-990 | AD-ALU-960 | AD-ALU-950 |
|---|---|---|---|---|---|---|---|
| Dielectric strength | kV/mm; typical | 10; 5 mm | 10; 5 mm | 10; 5 mm | 10; 5 mm | 8.3; AC, 6.35 mm | 10; 5 mm |
| Relative permittivity, εr | 1 MHz; typical | 9.8 at 25 °C | 9.8 at 25 °C | 9.7 at 25 °C | 9.6 at 25 °C | 9.0 at room temperature | 9.4 at 25 °C |
| Dissipation factor, tan δ | 1 MHz | <0.0001 at 25 °C | <0.0001 at 25 °C | <0.0001 at 25 °C | 0.0006 at 25 °C | 0.0002 at 20 °C | 0.0004 at 25 °C |
| Volume resistivity | Ω·cm; 20 °C | >$10^{14}$ | >$10^{14}$ | >$10^{14}$ | >$10^{14}$ | $10^{14}$; typical | >$10^{12}$ |

Reference basis: ADCERAX Alumina Ceramic Grade Comparison, Rev16, page 3. Dielectric strength and permittivity are typical references; loss and resistivity retain the displayed bounds or typical designation.

## Electrical measurement boundaries

AD-ALU-960 breakdown: AC, 6.35 mm coupon; other listed values: 5 mm coupon. AD-ALU-960 permittivity: room temperature, 1 MHz; loss: 20°C, 1 MHz. Other grades: 25°C, 1 MHz. Resistivity: 20°C for every column.

Coupon breakdown values do not define the finished-wheel working voltage. Temperature, waveform, surface paths, edges and assembly geometry require separate evaluation.

## Powder-contact chemistry

| Assessment | Define for the actual powder process |
|---|---|
| Sensitive elements | Al and process-sensitive elements; Si, Na, Fe, Mg and Ca where relevant to the grade and powder specification. |
| Sampling and analysis | Original powder, process blank and classified powder; agreed preparation, analytical method, quantification limits and allowed increment. |
| Complete contact path | Ceramic wheel, sleeves, hub/shaft, joints, fasteners and the other powder-contact surfaces in the classifier. |

Alumina composition alone does not establish an overall contamination result. Record the actual grade, complete contact path, process conditions and analytical basis.

06 EQUIPMENT SPECIFIC ENGINEERING REVIEW

# Powder Duty and Wheel Acceptance

| Typical powder duty | Priority for wheel selection |
|---|---|
| Mineral and abrasive powders | Blade-edge, slot and rim wear; agreed profile or mass changes at defined locations and powder throughput. |
| Battery-material powders | Sensitive-element control, full powder-contact path and the specified particle-size distribution. |
| Chemical and functional powders | Chemical exposure, deposits, powder-compatible cleaning and accessible contact surfaces. |

Dry-powder air classification separates particles in gas. A wet sand/bead-mill separator retains grinding media in liquid; identify that task separately when reviewing a part.

## Acceptance points to agree

| Review block | Order-specific acceptance basis |
|---|---|
| Dimensions and fit | Drawing revision, datums, OD/ID/H, slot geometry, hub fit, clearances, surfaces and allowed edge defects. |
| Rotating assembly | Specified assembly state, measured runout and residual unbalance; agreed balance method, limits and qualification scope. |
| Process result | Powder, airflow, feed, speed and sampling; agreed PSD metric, wear and contamination methods. PSD = particle-size distribution. |
| Inspection evidence | Applicable tests, sample counts, instrument/method details and report fields; material and batch identification. |
| Packing and repeat supply | Protected bore, rim and slot edges; geometry-specific supports, separation, cleanliness, part/revision identification and accepted repeat-order specification. |

## Preparation for installation

Qualified personnel use the machine isolation and maintenance procedure. Confirm mating-surface cleanliness, approved fastening/preload, rotation and clearances. Commission within the machine-approved programme and agreed assembly limits.

Clean, dry and inspect before reuse. Unexpected vibration, impact damage or cracks require the specified stop-and-inspect procedure before restart. Cleaning and dust collection follow the equipment and powder safety procedure.

07 TWO ROUTES TO A TECHNICALLY USEFUL RFQ

# Request a Wheel Specification Review

Send the available information first. Identify the equipment and task, then use the relevant reference or drawing route below.

## Route A Existing catalog reference

| Identification | Information for the enquiry |
|---|---|
| Catalog and wheel | ADC-CAT-ALCW-001 Rev02; AT-SM item number, OD/ID/H and any dimensional deviations. |
| Material and requirement | Required ceramic grade, powder duty, equipment maker/model, known speed/temperature and mounting-interface information. |
| Order and documents | Quantity, sample/repeat need, destination, target schedule and required inspection or material records. |

## Route B Drawing or sample defined

| Definition area | Information for engineering review |
|---|---|
| Part and revision | Drawing/model and revision, sketch or part photographs; ceramic body versus specified assembly. |
| Geometry and interface | OD/ID/H, blade/slot layout, rotation, hub/shaft fit and clearances; critical tolerances, datums, surfaces and edge criteria. |
| Service and verification | Powder/gas, known continuous/peak speed and temperature, failure issue, PSD target where relevant, wear/contamination and assembly acceptance inputs. |
| Supply requirement | Quantity/repeat expectation, inspection reports, packing/identity requirements, destination and requested timing. |

## Next step

Review the drawing, material and critical acceptance points, then agree representative sample evidence and the final quotation. Record the accepted specification for repeat orders and review changes in geometry, grade or operating duty.

## Send your wheel reference or drawing for review

info@adcerax.com

Product details and enquiry

HUNAN ATCERA CO.,LTD | ADCERAX Advanced Ceramics

Availability, commercial terms, delivery and the final order specification are quotation-controlled.