

HUNAN ATCERA Introduction

Advanced Ceramic Solutions & Service

- 1. Company Introduction**
- 2. Main Products Service**
- 3. Application and Tyipcal Cases**
- 4. New Product Development**

1. Company Introduction

ATCERA Glance



HUNAN ATCERA CO.,LTD is founded in 2003, located in Changsha, Hunan, China. At present, ATCERA has established three automatic production lines, with around 150 employees, including more than 20 technical engineers. the main products include ceramic substrate, ceramic tube & rod, ceramic ball, ceramic crucible, ceramic shaft, ceramic needle, ceramic tube sleeve, ceramic plunger, ceramic arm, ceramic valve and other ceramic precision parts.



During the past 20+ years, ATCERA has produced more than 2000 types precision ceramic products. Besides our own factory, we have more than 20 collaboration factories, focus on the material of alumina ceramics, zirconia ceramics, silicon carbide ceramics, boron carbide ceramics, silicon nitride ceramics, boron nitride ceramics, quartz, etc., and aim to provide you with advanced ceramics one-stop service.

Production Equipment



Cold isostatic pressing machine



Hot isostatic pressing machine



Dry pressing machine



Electrical sintering furnace



Gas sintering furnace



Tape casting machine

In ATCERA factory, there are various forming and sintering equipment. According to the product feature and customer's requirements, appropriate process and production equipment will be selected, to get the best balance of product high quality, low cost and short production time.

All equipment are maintained according to the technical manual, to make sure they can work with good status.

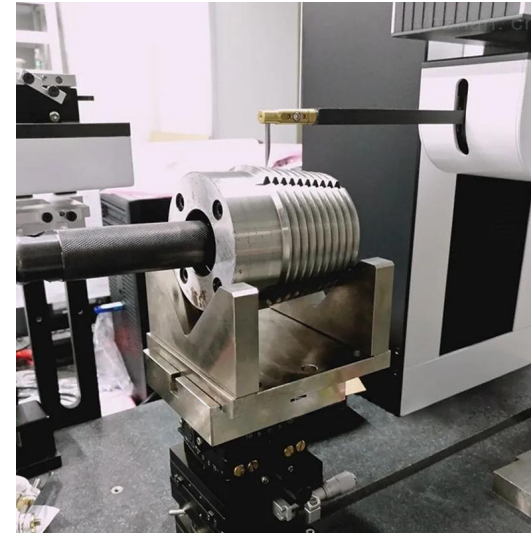
Inspection Instruments



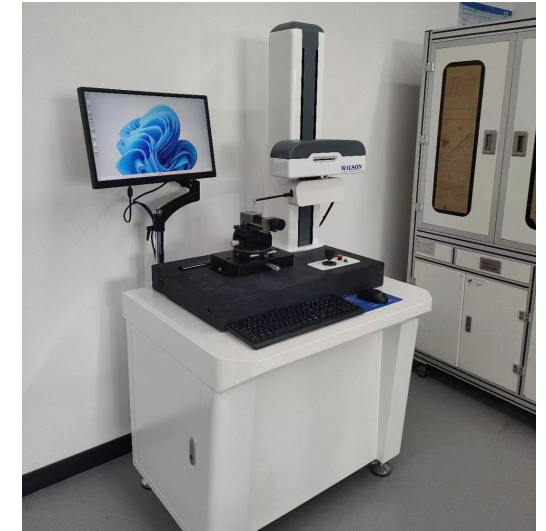
Three dimensional measuring machine



Bending strength tester

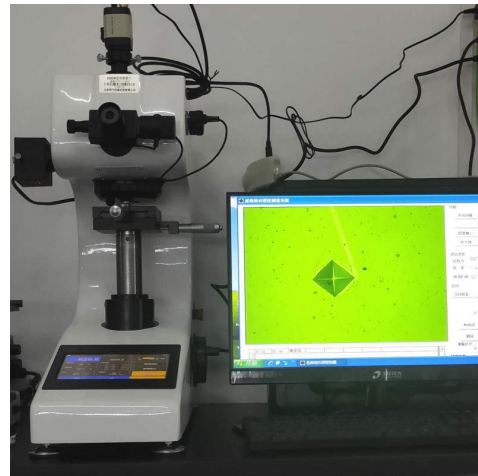


Surface roughness tester



Cylindricity measuring instrument

ATCERA has a variety of inspection instruments to test performance and parameters of ceramic products, to make sure they can meet customer's requirements, also to test products with new technology and process.



Hardness tester



Thickness gauge



Densimeter



Vernier caliper

2. Main Products Service

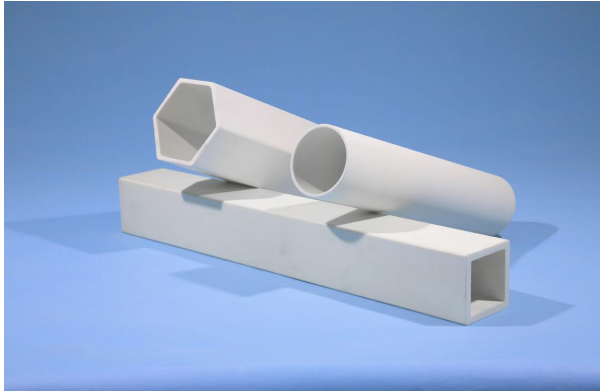
Main Ceramic Materials

Material	Max. working temp./°C	Bending strength/MPa	Thermal conductivity(W/m*K)	Thermal expansion(/°C)	Density (g/cm ³)	Typical Products
Alumina	1700	320	24-30	7	3.83	Substrate, crucible, heater, pump, valve, filter, thermocouple, sleeve, vacuum chuck, lining plate
Zirconia	1000	600-900	3	9-10	5.7-6	Bearing, piston and plunger, optical fiber ferrule, filter membrane tube, injector
ZTA (zirconia toughened alumina)	1200	500-700	18-21	6-7.6	4.1-4.38	Roller, hydraulic rod, sleeve, filter, shaft, grinding ball and bead, substrate, sealing ring
Silicon carbide	1600	390	150	4.1	3.1	Substrate, wafer, heater, ignitor, nozzle, sealing ring, wafer carrier, kiln roller, high temperature mold
Silicon nitride	1100	700	20-100	3	3.2	Substrate, machining cutting tool, crucible, insulation and sealing ring, bearing, grinding bead
Aluminum nitride	1100	350-450	180-230	4	3.25-3.3	Substrate, crucible, heating element, heat sink
Quartz	1600	67	1.4	5.1-5.5	2.21	Crucible, wafer boat and wafer boat bracket, sight glass, light source, flask and tube for laboratory

Note:

1. The parameters above might be slightly different during to raw material, forming or sintering process and production batch;
2. Other materials including beryllium oxide, boron nitride, boron carbide are also in the supply scope, need to inquire ATCERA.

Main Ceramic Product Categories



Category: Tube

Material: Alumina, zirconia, ZTA, silicon carbide, silicon nitride, quartz



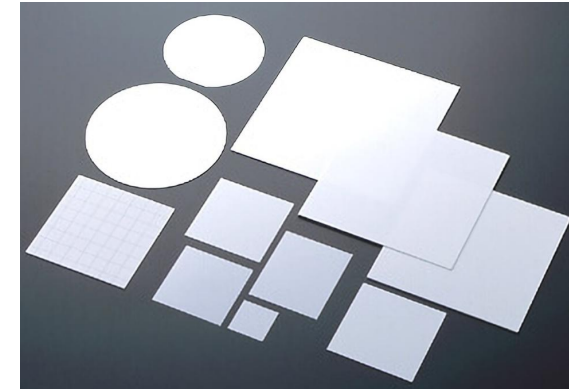
Category: Crucible

Material: Alumina, zirconia, silicon nitride, quartz, silicon carbide



Category: Rod

Material: Alumina, zirconia, ZTA, silicon carbide, silicon nitride, quartz



Category: Substrate

Material: Alumina, silicon carbide, aluminum nitride, beryllia, silicon carbide



Category: Ball and bead

Material: Alumina, zirconia, ZTA, silicon carbide, silicon nitride, aluminum nitride



Category: Ring

Material: Silicon carbide, silicon nitride, alumina, zirconia, ZTA, aluminum nitride



Category: Lining plate

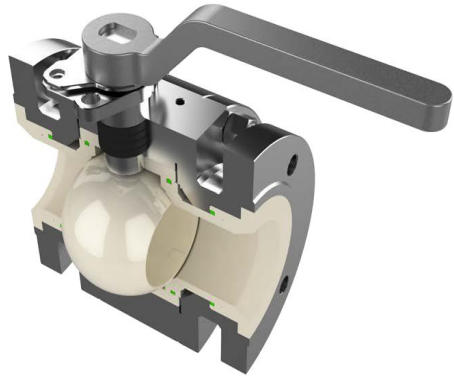
Material: Alumina, zirconia, ZTA, silicon carbide



Category: Bearing

Material: Silicon carbide, silicon nitride, zirconia, ZTA, aluminum nitride

Main Ceramic Product Categories



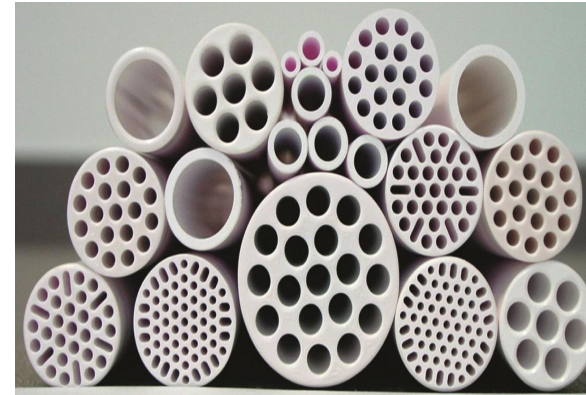
Category: Valve

Material: Alumina, zirconia, ZTA, silicon carbide, silicon nitride



Category: Pump

Material: Alumina, zirconia, silicon carbide, silicon nitride



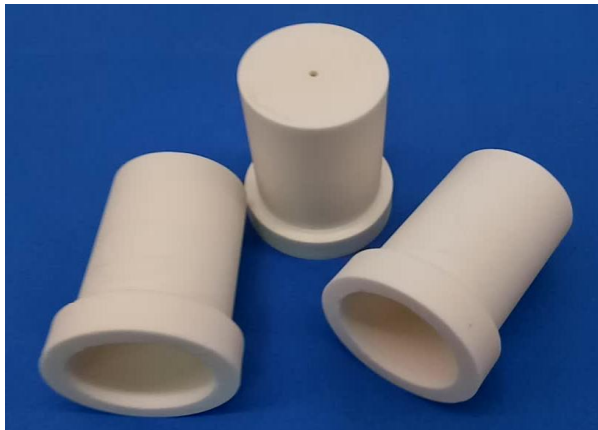
Category: Membrane tube

Material: Alumina, zirconia, silicon carbide



Category: Shaft sleeve

Material: Alumina, zirconia, silicon carbide, aluminum nitride



Category: Cylinder sleeve

Material: Alumina, zirconia, silicon carbide, aluminum nitride



Category: Nozzle

Material: Silicon carbide, silicon nitride, alumina, zirconia, aluminum nitride



Category: Machining cutting tool

Material: Silicon nitride, zirconia



Category: Fastener parts

Material: Silicon carbide, silicon nitride, zirconia, ZTA, alumina

3. Application and Typical Cases

Application Fields



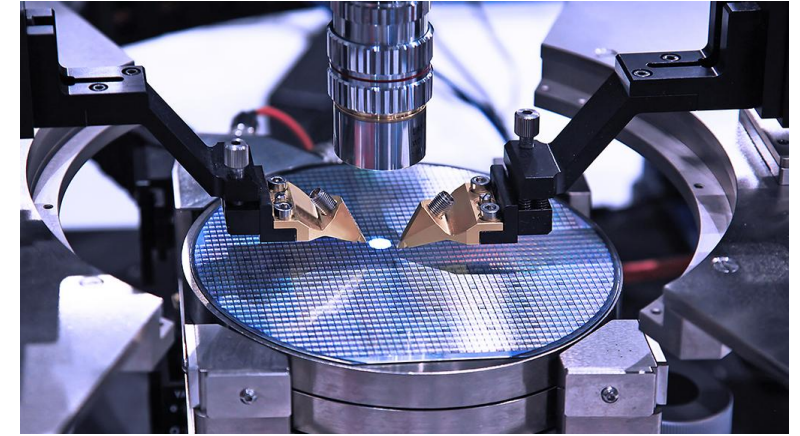
Field: Electronic and electrical device

Product features: Electrical insulation, good thermal conductivity, corrosion resistance



Field: Petrochemical industry

Product features: Corrosion resistance, wear and high temperature resistance, good thermal conductivity



Field: Semiconductor industry

Product features: Corrosion resistance, wear and high temperature resistance, low density



Field: Mechanical equipment

Product features: High strength, wear and corrosion resistance, small thermal expansion, low density



Field: Metallurgy industry

Product features: High temperature resistance, wear and corrosion resistance, good thermal conductivity



Field: Photovoltaic cell industry

Product features: Wear and corrosion resistance, good thermal conductivity, low density

Application Fields



Field: Food processing

Product features: Corrosion resistance, biological compatibility, low density



Field: Biological and medical industries

Product features: Corrosion resistance, biological compatibility, low density



Field: Lithium battery production

Product features: Corrosion resistance, wear resistance, high temperature resistance



Field: IOT and communication

Product features: Electrical insulation and no magnetic interference, good thermal conductivity



Field: Military protection

Product features: High hardness and strength, good wear resistance, low density, corrosion resistance



Field: Laboratory equipment and instruments

Product features: Good wear and corrosion resistance, high temperature resistance, good light transmittance

Typical Cases



Underwriters Laboratories (UL)

Purchased product: Zironia Crucible



Hewlett-Packard (HP)

Purchased product: Alumina Crucible



Oxford University

Purchased product: Alumina Crucible



Massachusetts Institute of Technology (MIT)

Purchased product: Alumina Tube



Huawei Technologies

Purchased product: Silicon nitride substrate

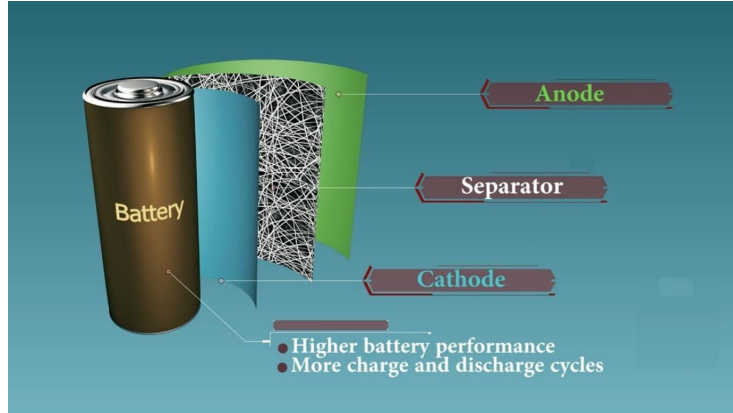


Mercedes Benz

Purchased product: Aluminum Nitride Rod

4. New Technologies

New Product Development

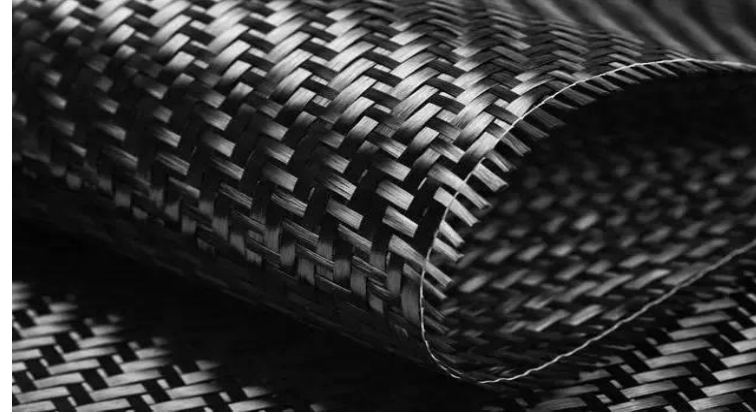


Ceramic Separator for Lithium Battery

Separator in lithium battery is to isolate the anode and cathode and avoid risk of short circuit, while let ion pass through and set up circuit loop.

Traditional polypropylene (PP) and polyethylene (PE) have good mechanical and stable chemistry performance, but still with some risk of fire and explosion when over heated or violent impact.

To increase battery thermal stability and puncture resistance, a kind of ceramic separator is under development, safety could be significantly improved.



High Performance Ceramic Fibers

Traditional ceramic fiber is made of aluminum silicate, which has light weight, high temperature resistance and good thermal insulation performance, it is widely used to replace rock wool for thermal insulation purpose in metallurgy, energy and other industries.

With increasing demand of material performance at high temperature, more and more kinds of ceramic fibers are attracting attention, including alumina, silicon carbide, silicon nitride and quartz, mechanical strength is significantly increased, or the thermal insulation performance can be further improved.



Long Lifetime Quartz Crucible

Arc fused quartz crucible is mainly used in photovoltaic industry of monocrystalline silicon growth process, it is available for continuous crystal pulling under high temperature condition. It's consumable and service life is short during continuous working under high temperature, the inner surface may rupture, making it impossible to continue using.

To decrease photovoltaic cell production cost, long lifetime quartz crucible is under development, which applies super high purity quartz powder, with new material and process of the inner surface coating, aims to extend the service life twice as existing products.

Thank You!



Whatsapp



Wechat

HUNAN ATCERA Co. Ltd

Address: Building 1, 508 JiaYu Road,
Changsha, Hunan Provice, China

Website: <https://www.atcera.com/>

Tel: 0086-0731-84428843

Email: info@atcera.com