



www.cenotec.com

Grinding Media & Advanced Ceramic Material

CENOTEC Co., Ltd. a company that believes in the harmonious coexistence of humanity and nature, are proud to take on our corporate responsibilities as a part of society, and promise to fulfill our duties to those who are less fortunate.

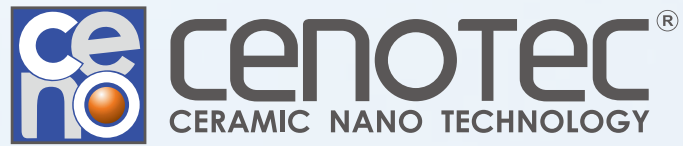
We appreciate your interest and support in the efforts and passion of CENOTEC Co., Ltd. the company of Human Technology.

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COMPANY INTRODUCTION



HISTORY

Since our establishment in 1999, CENOTEC CO., Ltd. has grown to be the world's top expert in Grinding Media, through innovative R&D and persistent efforts in Quality Management.

- 1999. ● Established as intramural venture company
(Ceramic Research and Development co., Ltd)
 - 2000. ● Beads, paint/ink market supply
 - 2001. ● Company name change to CENOTEC
 - 2003. ● First supplied to CaCO₃ industry
 - 2006. ● Head Office relocation And expansion
 - 2009. ● Beads supplied to silver mine, Turkey
 - 2010. ● Powder Division established
● Flux Division established
 - 2012. ● 2nd and 3rd plants and R&D CENTER established
● Flux supplied to market oversea
 - 2015. ● World's Best Products Certification
● Nano powder commercialization
● Ultra-small bead commercialization
 - 2016. ● 4th Plant established
● Listed in KOSDAQ
 - 2019. ● Main office & plant established
- Patents ● No. 0262141 : Product for small Ceramic Beads
● No.0522460 : Utility for production of small size bead

GRINDING MEDIA

CERAMIC NANO TECHNOLOGY



CENOTE[®]

CAS30



CAS37



CAZ40



	CAS30	CAS37	CAZ40
Specific Density (g/cm ³)	≥ 3.00	≥ 3.70	≥ 4.00
Bulk Density (g/cm ³)	≥ 1.80	≥ 2.30	≥ 2.30
Hardness (HV)	≥ 950	≥ 1300	≥ 1230
Sphericity(%)	≥ 98	≥ 98	≥ 98
Packing(kg)	25kg Plastic Pails, 1,000kg or 2,000kg Big bag		
Size(mm)	0.4 – 7.0	0.4 – 30.0	0.4 – 7.0

CZS40



CZS45



CZA45



	CZS40	CZS45	CZA45
Specific Density (g/cm ³)	≥ 4.00	≥ 4.50	≥ 4.50
Bulk Density (g/cm ³)	≥ 2.40	≥ 2.70	≥ 2.70
Hardness (HV)	≥ 900	≥ 1000	≥ 1180
Sphericity(%)	≥ 98	≥ 98	≥ 98
Packing(kg)	25kg Plastic Pails, 1,000kg or 2,000kg Big bag		
Size(mm)	0.4 – 7.0	0.4 – 7.0	0.4 – 7.0

CZA50



CZC60



CZY60



	CZA50	CZC60	CZY60
Specific Density (g/cm ³)	≥ 5.00	≥ 6.10	≥ 6.00
Bulk Density (g/cm ³)	≥ 2.70	≥ 3.70	≥ 3.60
Hardness (HV)	≥ 1050	≥ 1050	≥ 1250
Sphericity(%)	≥ 98	≥ 92	≥ 98
Packing(kg)	25kg Plastic Pails, 1,000kg or 2,000kg Big bag	25kg Plastic Pails, 1,000kg Big bag	
Size(mm)	0.4 – 7.0	0.4 – 7.0	0.05 – 30.0



PRODUCTS

Grinding Media
For
**Mining
Application**



© CERAMIC-NO TECHNOLOGY CENOTECH



CENOTECH

■ **General**

Cenotec has been providing mining customers, located in over 70 sites in the world, with grinding media, technical assistance and experience. located in over 70 sites in the world, with grinding media, technical assistance and experience.

■ **Features & Application**

CENOBEAD is the best grinding media in terms of wear-resistance and grinding efficiency for mining industries.

- Superior strength and hardness
- Uniform size and shape with excellent sphericity
- High grind efficiency
- Requires less energy than steel or iron balls
- Reduces equipment wear and maintenance costs
- Special product and application for mining

■ **Characteristic**

	CAS30	CAS37	CAZ40	CZA45	CZA50	CZC60	CZY60
Specific Density (g/cm ³)	≥ 3.00	≥ 3.70	≥ 4.00	≥ 4.50	≥ 5.00	≥ 6.10	≥ 6.00
Bulk Density (g/cm ³)	≥ 1.80	≥ 2.30	≥ 2.30	≥ 2.70	≥ 2.70	≥ 3.70	≥ 3.60
Hardness (HV)	≥ 950	≥ 1300	≥ 1230	≥ 1180	≥ 1050	≥ 1050	≥ 1250
Sphericity(%)	≥ 98	≥ 98	≥ 98	≥ 98	≥ 98	≥ 92	≥ 98
Packing(kg)	25kg Plastic Pails, 1,000kg or 2,000kg Big bag						
Size(mm)	0.4 – 7.0	0.4 – 30.0	0.4 – 7.0	0.4 – 7.0	0.4 – 7.0	0.4 – 7.0	0.05 – 30.0



PRODUCTS

Grinding Media
For
Paint / Ink
Application

®

CENOTECH



■ **General**

Cenotec has been providing paint/ink customers, located in all around the world, with grinding media, technical assistance and experience.

■ **Features & Application**

- Superior strength and hardness
- Uniform size and shape with excellent sphericity
- High grind efficiency
- Production of large–capacity
- Vertical type mills
- High–efficiency horizontal mills
- Special product and application for paint/ink

■ **Characteristic**

	CZS40	CZC60	CZY60
Specific Density (g/cm ³)	≥ 4.00	≥ 6.10	≥ 6.00
Bulk Density (g/cm ³)	≥ 2.40	≥ 3.70	≥ 3.60
Hardness (HV)	≥ 900	≥ 1050	≥ 1250
Sphericity(%)	≥ 98	≥ 92	≥ 98
Packing(kg)	25kg Plastic Pails, 1,000kg Big bag		
Size(mm)	0.4 – 7.0	0.4 – 7.0	0.05 – 30.0



PRODUCTS

Grinding Media For Paper Application



CENOTECH



■ General

Cenotec has been providing paper application's customers, located in all around the world, with grinding media, technical assistance and experience.

■ Features & Application

- Superior strength and hardness
- Uniform size and shape with excellent sphericity
- Large capacity vertical mills
- High efficiency horizontal mills
- Production of high–viscosity products
- High wear–resistance
- High grind efficiency
- Special product and application for paper

■ Characteristic

	CAS30	CAS37	CZS40	CZS45	CZC60	CZY60
Specific Density (g/cm ³)	≥ 3.00	≥ 3.70	≥ 4.00	≥ 4.50	≥ 6.10	≥ 6.00
Bulk Density (g/cm ³)	≥ 1.80	≥ 2.30	≥ 2.40	≥ 2.70	≥ 3.70	≥ 3.60
Hardness (HV)	≥ 950	≥ 1300	≥ 900	≥ 1000	≥ 1050	≥ 1250
Sphericity(%)	≥ 98	≥ 98	≥ 98	≥ 98	≥ 92	≥ 98
Packing(kg)	25kg Plastic Pails, 1,000kg Big bag					
Size(mm)	0.4 – 7.0	0.4 – 30.0	0.4 – 7.0	0.4 – 7.0	0.4 – 13.0	0.05 – 30.0



PRODUCTS

Grinding Media
For
**Electronic
Application**



Cenotec



■ **General**

CENOBEAD CZY60 is a grinding media of the highest quality that meets with customer's needs.

■ **Features & Application**

- Superior strength and hardness
- Uniform size and shape with excellent sphericity
- High density and hardness
- High wear–resistance and no contamination
- High grind efficiency
- Special product and application for electronic

■ **Characteristic**

	CZY60
Specific Density (g/cm ³)	≥ 6.00
Bulk Density (g/cm ³)	≥ 3.60
Hardness (HV)	≥ 1250
Sphericity(%)	≥ 98
Packing(kg)	25kg Plastic Pails, 1,000kg Big bag
Size(mm)	0.05 – 30.0



PRODUCTS

SUPER WHITE TOTAL SOLUTION

Cenoflour Cenosilicate



14 CERAMIC TECHNOLOGY cenotec

®

cenotec

■ Zirconium Silicate

1. The chemical and Physical stability of Zirconium Silicate under firing circumstances enhances the binding property of ceramic glaze and the hardness of the glazed-ceramic bodies.
2. $ZrSiO_4$ opacified and whitened by ZrO_2 that was formed after firing causes ceramics to scatter incident light and to be opaque. In order to ramp up the whitening effect, its production process needs to maintain the size of $ZrSiO_4$ to be distributed within the narrow range.
3. Thanks to high-quality and low-cost characteristics, as an emulsifying agent, $ZrSiO_4$ has been preferred to produce tiles, sanitary ceramics, porcelains and the other various products, and is widening its applicable fields even further.
4. The high melting point of $ZrSiO_4$ has been applied to the ramming materials for glass furnaces and casting materials in the form of powder or emulsion.

■ Physical Properties

In order for the stable production of highly-qualified $ZrSiO_4$, Cenotec thoroughly implements its quality control system from the incoming raw materials to the outgoing end-products, which are branded by two powders and one flour, timely responding to a variety of customers' needs.

- Cenoflour – Zircon Flour
- Cenosilicate (Premium) – Zirconium Silicate Powder
- Cenosilicate (Ultra Premium) – Zirconium Silicate Powder

■ Composition

Zirconia + Hafnia ($ZrO_2 + HfO_2$)	> 62.0%
Silica (SiO_2)	< 36.5%
Alumina (Al_2O_3)	< 3.0%
Titania (TiO_2)	< 0.8%
Ferric Oxide (Fe_2O_3)	< 0.2%

■ Typical Physical Constants

Chemical Formula	$ZrSiO_4$
Molecular Weight (g/mol.)	183.1
Bulk Density (lbs./fr. ³)	1.20~1.50, 1.50~1.80
Specific Gravity (g/cm ³)	4.2~4.8
Solid Specific Heat	0.132
Melting Point (°C)	2,200~2,550
Mohs Hardness @ 20°C	7.5~8
Color	off-white

■ Particle Size Distribution

Brand	Cenosilicate (Ultra Premium)	Cenosilicate (Premium)	Cenoflour
Particle Size (D50)	$1.0 \pm 0.2 \mu m$	$1.3 \pm 0.3 \mu m$	10~30 μm (adjustable)
Packing(kg)	25, 1000	25, 1000	25, 1000, 2000

PRODUCTS

High Functional
Welding Flux

Cenoflux



CENOTECH



■ General

- Cenoflux specializes in ceramic products and produces all of the welding flux materials for flux cored wire(FCW). Arx welding rod, eta.
- Cenoflux product is able to tailor-made for customer's special needs.

■ H-PT

- High Purity Titanium Dioxide(TiO_2)
- Mineralogical Name : Rutile
- V,Nb free
- $\text{TiO}_2 \geq 99\%$

■ TNS-60

- Sodium Flux Prefused
- $\text{TiO}_2(50\sim 60\%)$, $\text{Na}_2\text{O}(10\sim 15\%)$, $\text{SiO}_2(20\sim 30\%)$

■ BT-75

- Bismuth Titanate
- $\text{TiO}_2(20\sim 30\%)$, $\text{Bi}_2\text{O}_3(70\sim 80\%)$

■ Z-98

- High Purity Zirconium Dioxide (ZrO_2)
- $\text{ZrO}_2(+ \text{HfO}_2) \geq 98\%$

PRODUCTS

Microgrinding Dispersion Mixing R&D Center



KOSDAQ
코스닥 상장법인



세계일류상품





Malvern 3000



SEM



TG-DSC



Gas pycnometer



XRF



XRD



LS 13 320



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