

## Composition

Zirconia + Hafnia (ZrO <sub>2</sub> + HfO <sub>2</sub> )	65.0~66.0%	
Silica (SiO <sub>2</sub> )	32.5~33.5%	
Alumina (Al <sub>2</sub> O <sub>3</sub> )	< 2.0%	
Titania (TiO <sub>2</sub> )	< 0.3%	
Ferric Oxide (Fe <sub>2</sub> O <sub>3</sub> )	< 0.2%	

## Typical Physical Constants

Chemical Formula	ZrSiO <sub>4</sub>
Molecular Weight (g/mol.)	183.1
Bulk Density (lbs./fr. <sup>3</sup> )	1.20~1.50, 1.50~1.80
Specific Gravity	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

	YoungsSilicate <sup>®</sup> (Premium)	YoungsSilicate <sup>®</sup> (Ultra Premium)	YoungsFlour <sup>®</sup>
Particle Size(D <sub>50</sub> )	1.50±0.1µm	1.00±0.1µm	12~18µm

## Application of YoungsSilicate<sup>®</sup> (Premium) & YoungsSilicate<sup>®</sup> (Ultra Premium)

- Opacifier for pottery and porcelain glazes, wall tiles, roofing tiles, sanitary ware, electrical porcelain etc.
- Admixture for ceramic body.(Improvement of property and Opacification of color.)
- Special Zircon porcelain.
- In frit for glaze & enamel.
- Opal glass, TV tubes, etc.
- Fire bricks and special refractories. Zircon bricks, castable refractories, etc.
- Filler for resin and paint. Epoxy resin, Special paints, etc.

## Application of YoungsFlour<sup>®</sup>

- Primary source for ceramic, ceramic colors.
- Investment casting shell molds, foundry cores, foundry flux
- Metal chills, ladle brick, welding rod coatings, abrasive cleaning and mold washes.

# YoungsSilicate<sup>®</sup> (Premium), YoungsSilicate<sup>®</sup> (Ultra Premium) & YoungsFlour<sup>®</sup>

## 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<sub>4</sub> opacified and whitened by ZrO<sub>2</sub> 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<sub>4</sub> to be distributed within the narrow range.
3. Thanks to high-quality and low-cost characteristics, as an emulsifying agent, ZrSiO<sub>4</sub> 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<sub>4</sub> has been applied to the ramming materials for glass furnaces and casting materials in the form of powder or emulsion.

## Product Classification - Powder and Flour

In order for the stable production of highly-qualified ZrSiO<sub>4</sub>, 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<sup>®</sup> - Zircon Flour
- CenoSilicate<sup>®</sup> (Premium) - Zirconium Silicate Powder
- CenoSilicate<sup>®</sup> (Ultra Premium) - Zirconium Silicate Powder

## Properties

The chemical formula of our Zirconium Silicate is 'ZrSiO<sub>4</sub>' with its stable characteristics of ;

- a. refractive index : 1.93~2.01
- b. density : 4.2~4.8
- c. thermal expansion coefficient :  $4.5 \times 10^{-6}$  (20~1,400 °C)
- d. melting point : 2,200~2,550°C
- e. non-toxic, odorless, white-colored powder

Our products have been chosen by the customers, who are looking for cost efficient ceramic glaze opacifier, brighteners, anti-seepage, stabilizer around the world.

## Applications

### 1. YoungsSilicate<sup>®</sup>

: Milky Agent - Tiles, Dishes, Sanitary Ceramics and Glaze Opacifier for Ceramics (and Porcelains)

### 2. YoungsFlour<sup>®</sup>

: Investment Casting(Lost Wax) : No. 3



: Frit    a ceramic composition that has been fused in a special fusing oven, quenched to form a glass, and granulated. Frits form an important part of the batches used in compounding enamels and ceramic glazes; the purpose of this pre-fusion is to render any soluble and/or down very hot glass is widely used in glass manufacture.

### Frit Applications

- Wall Tiles - Single and Double Fast Fire
- Floor and Glazed Porcelain Tiles
- Sanitary ware and Bone China ware Frits

: Refractory Raw Materials

: Filler, Paint