



**TECH CERAMIC**

## Aluminum Titanate Products

Aluminum titanate ( $\text{Al}_2\text{TiO}_5$ ) is a ceramic material consisting of a mixture of alumina ( $\text{Al}_2\text{O}_3$ ) and titania ( $\text{TiO}_2$ ) doped with  $\text{MgO}$ ,  $\text{SiO}_2$  and  $\text{ZrO}_2$  in order to stabilize the structure and avoid decomposition reactions. It is featured with low thermal expansion coefficient, low Young's modulus, high melting point, low thermal conductivity and outstanding thermal shock resistance.

### Features

- Very low thermal conductivity ( $0.9 - 1.5 \text{ Wm}^{-1}\text{K}^{-1}$ )
- Very high thermal shock resistance
- Very low coefficient of thermal expansion ( $0.2 - 1 \times 10^{-6} \text{ K}^{-1}$ )
- Low wettability to aluminum and non-ferrous metal melts

## AL<sub>2</sub>TiO<sub>5</sub> RISER TUBE

Aluminum titanate is a composite of alumina and titanium dioxide in a certain chemical ratio, the structure is orthorhombic, Al<sub>2</sub>TiO<sub>5</sub> has a higher melting point (1860°C ± 10°C), a lower coefficient of thermal expansion (at RT – At 1000°C,  $\alpha < 2.0 \times 10^{-6} / ^\circ\text{C}$ ), and has excellent thermal shock resistance. In addition, it has the property of not wetting with many metals (especially non-ferrous metals) melts and glass melts. Therefore, aluminum titanate ceramics can be widely used in harsh environments. Aluminum titanate is an ideal material for riser tubes due to its low thermal expansion, good thermal shock resistance and non-wetted aluminum.



## SPECIFICATIONS

PROPERTY		RESULT
Composition	%	Al <sub>2</sub> O <sub>3</sub> +TiO <sub>2</sub>
Bulk Density	g/cm <sup>3</sup>	≥3.2
Apparent porosity	%	≤7
Flexural Strength R.T.	MPa	≤50
Coefficient of thermal expansion	10 <sup>-6</sup> /°C	1.15
Thermal conductivity	w/(m·k)	0.86

## AL<sub>2</sub>TiO<sub>5</sub> SPRUE NOZZLE

The sprue nozzle is an important part of the aluminum alloy wheel low pressure casting system. It forms a low pressure runner for the aluminum liquid to enter the mold cavity. Sprue nozzles produced by Tech Ceramic have less strength than sprue made of metal but they have much longer service life.

## SPECIFICATIONS

PROPERTY		RESULT
Composition	%	Al <sub>2</sub> O <sub>3</sub> +TiO <sub>2</sub>
Bulk Density	g/cm <sup>3</sup>	≥ 3.2
Apparent porosity	%	≤ 7
Flexural Strength R.T.	MPa	≤ 50
Coefficient of thermal expansion	10 <sup>-6</sup> /°C	1.15
Thermal conductivity	w/(m·k)	0.86



## AL<sub>2</sub>TiO<sub>5</sub> AUTO LADLES

Aluminum titanate ladle is mainly used to transport aluminum melt, can withstand higher temperature, has good heat preservation performance, and has the characteristics of non-wetted aluminum. Aluminum titanate ladle has a higher melting point (1860°C±10°C), a lower thermal expansion coefficient (at RT—1000°C,  $\alpha < 2.0 \times 10^{-6}/^{\circ}\text{C}$ ) and excellent thermal shock resistance.

## SPECIFICATIONS

PROPERTY		RESULT
Composition	%	Al <sub>2</sub> O <sub>3</sub> +TiO <sub>2</sub>
Bulk Density	g/cm <sup>3</sup>	≥3.2
Apparent porosity	%	≤7
Flexural Strength R.T.	MPa	≤50
Coefficient of thermal expansion	10 <sup>-6</sup> /°C	1.15
Thermal conductivity	w/(m·k)	0.86

