

Tetra-Needle like ZnO Whiskers

Properties:

*Super High Strength: Tetra-Needle like ZnO Whisker as single crystal wurtzite structure, has almost no structural defects, belonging to the ideal crystal which has high mechanical strength and elastic modulus. The Tensile strength reached 1.0×10^4 mPa, while elastic modulus reached 3.5×10^5 mPa. Both of them are closing to the theoretical strength value.

*Isotropic: Special stereo Tetra-Needle structure, make it's having the enhancement and the modified effect in fully isotropic. It ensures the isotropic of materials and product in the mechanical properties, size uniformity, thermal shrinkage, thermal deformation and other performance etc.

*Excellent Heat Resistance: Since the melting point of ZnO is higher than 1800°C , Tetra-Needle like ZnO Whisker could resist the high temperature of 1720°C . In atmosphere pressure of the air, the portion of the tip of Nano structure might be damaged in the temperature over 1000°C .

*Adjustable Electrical Properties: ZnO belongs to N-Type semiconductor. It could control electrical properties of conductive, piezoelectric and varistor by the way of doping.

*Nanometer Semiconductor Active: The special structure shows the special tip nano activity. The semiconductor properties of non-strict stoichiometric, has released active oxygen. Its macro performance is to anti bacterial and purificate environment of high efficient, broad-spectrum, and lasting.

Applications:

*Polymer Antistatic agent (White, High Efficiency, Permanent, and Enhance, Abrasive Resistance).

*Wear non slip material (such as high-grade rubber tires, brake, resistant gear, rubber conveyor belts).

* Microwave absorbing material (absorbing stealth, microwave thermal conversion, anti electromagnetic interference, anti microwave radiation).

* Vibration and noise reduction material (structural damping, industry damping, sound insulation and noise reduction material).

*Ceramic toughening materials (craft ceramics, structural ceramics, and special ceramics).

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*Composite materials (improve the mechanical properties, process ability, strength and modulus of elasticity).

*Antibacterial algae proof composite (household electrical appliances, daily necessities, textiles, paint).

*Formaldehyde and various organic compounds decomposition material (decoration materials, indoor air treatment).

Key Technical Parameters:

Appearance	White Loose Powder
Microstructure	Tetra needle, Nano Tip
Needle Length	10~50 μ m
Needle Diameter	0.5~5 μ m
Appearance Density	0.2 \pm 0.1 g/cm ³
Real Density	5.3 \pm 0.2 g/cm ³
whiteness	80% min.
Powder Resistance	10 ⁵ ~10 ⁸ Ω .cm
Thermal Expansion coefficient	4.0 \times 10 ⁻⁶ %/ $^{\circ}$ C
Heat Resistance	1000 $^{\circ}$ C min.