Silica Nanoparticles Powder

Product Overview

Silica Nanoparticles (commonly known as **nano fumed silica**) refers to silica powder with particle sizes ranging from **1–100 nm**, belonging to a new class of inorganic nanomaterials.

Due to its remarkable **quantum size effect, surface effect, and macroscopic quantum tunneling effect**, nano silica exhibits unique optical, electrical, magnetic, and thermal properties. It demonstrates **high strength, high toughness, and excellent stability**, particularly in high-temperature environments, making it an indispensable functional additive in advanced material applications.

Process Characteristics & Technical Barriers

SIOResin has long been dedicated to R&D in this field and possesses proprietary technologies.

- High-quality raw materials: Self-produced silica sol with low impurities and dense structure is used as the core raw material.
- Precise surface modification: Through proprietary processes including colloidal protective agent addition, hydroxyl group blocking, and special extraction technology, the common industry challenges of nanoparticle agglomeration and difficult dispersion are effectively solved without affecting material activity.
- Ease of use: The product can be well dispersed using ordinary stirring equipment. Its dispersibility and controllable thickening performance are significantly superior to comparable products.

Physical & Chemical Properties

Parameter	Specification (Dry Basis)	Remarks
SiO_2 Content	≥97.0%	High purity, low impurities
Primary Particle Size	≤30 nm	Nano-scale microstructure
Specific Surface Area	≥200 m^2/g	High surface activity
Tapped Density	≤0.07 g/cm^3	High bulk fluffiness
Loss on Ignition	≤2%	Excellent thermal stability
Free Moisture	≤5%	Good storage stability

Product Series & Customization Services

Leveraging strong **surface engineering technology**, we offer a full range of products:

- Hydrophilic series: Designed for waterborne systems with excellent dispersibility.
- Low oil absorption hydrophilic series: Reduces viscosity in resin systems and decreases the need for plasticizers.
- Hydrophobic series: Ideal for organic solvent systems, rubber, and plastics.
- Low oil absorption hydrophobic series: Customized for high-end coatings and composite materials requiring low viscosity.
- Deep customization: Surface functional groups can be specifically tailored according to customer system requirements.

Applications

Silica Nanoparticles is widely used in:

- Electronic information materials
- Polymer composites
- Advanced rubber materials
- High-performance plastics
- High-end coatings
- Printing inks
- Sealants
- Fine ceramics