The Science of Tomorrow, Providing Solutions Today

Exclusive manufacturer of Nano Insulation Paint in the Middle East.
How Nano Silica improves Dust Proofing of waterproofing coating?

**Improved paint properties**

- Nano-Silica is an efficient open time extender in waterborne coating systems. However, its efficiency strongly depends on the paint composition, and more specifically the thickening agent that is used.
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Improved paint properties

✓ • Colloidal silica dispersions consists of very small particles of amorphous silicon dioxide (SiO2), dispersed in water.
✓ • The dispersions are considered safe for both humans and the environment.
✓ • Because the particles are very small and so numerous, the total surface area is very large
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Improved paint properties

✓ • The silicon dioxide particles in the dispersion are usually electrically charged and are attracted to other charged particles, helping them bind to one another or to other substances.
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Improved paint properties

- The properties of colloidal silica dispersions can be varied in many ways:
  - Concentration: 7–50% silicon dioxide
  - Particle size distribution
  - Structure: Discrete particles (high S-value) or chains (low S-value)
  - Particle diameter: 2–100 nm
  - Surface area: 30-1100 m²/g
  - pH: 2–12
  - Modifications: ammonium, aluminate, chloride, silane, deionized
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Product properties
Nano-Silica, is a unique water-based epoxy silane modified colloidal silica dispersion.

Specific parameter, Unit measure:
SiO2 wt% 30
pH 8
Density g/cm3 1.2
Viscosity mPas 5
Average particle size nm 7
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Mole structure
How Nano Silica improves Dust Proofing of waterproofing coating?

Functions and applications

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Drying time

In addition to open time, the drying time of paint is also slightly affected by the presence of 10% Nano-Silica.

Drying time was determined according to ASTM D5895 standard.

![Presence of 0-10% Nano-Silica](image)
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Drying time

Addition of silica to a coating formulation results in a surface enrichment of silica particles. This improves the dirt pick-up resistance.
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SEM analysis
Surface enrichment of Nano-Silica on the paint surface is likely the cause of surface hardening and the modification of properties such as open time, hardness development and dust and dirt pick-up resistance.

Paint surface

Paint surface with Nano-Silica
The small particles covering larger ones - the smaller is the better

The enrichment of Nano-silica in the surface and at the interfaces gives benefits such as:

- Better substrate adhesion
- Increased pore plugging
- Reduced tackiness
- Increased hardness
The enrichment of Nano-silica in the surface and at the interfaces gives benefits such as:

- The small particles covering larger ones- the smaller is the better
- This results in improved dust-dirt pick-up
- The coating formulated with Nano-Silica

Figure: the coating will maintain its appearance, hence reducing the need for manual cleaning or recoating
More Information

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