

## SILICADOL<sup>®</sup> INORGANIC MATERIALS SILICIC ACID AND SILICATES

"SILICADOL" is a colloidal solution of very fine silica ( $\text{SiO}_2$ ) particles, generally called silica sol. Depending on the grade, it has a particle size of 10 to 50 nm, and various types are available according to applications.

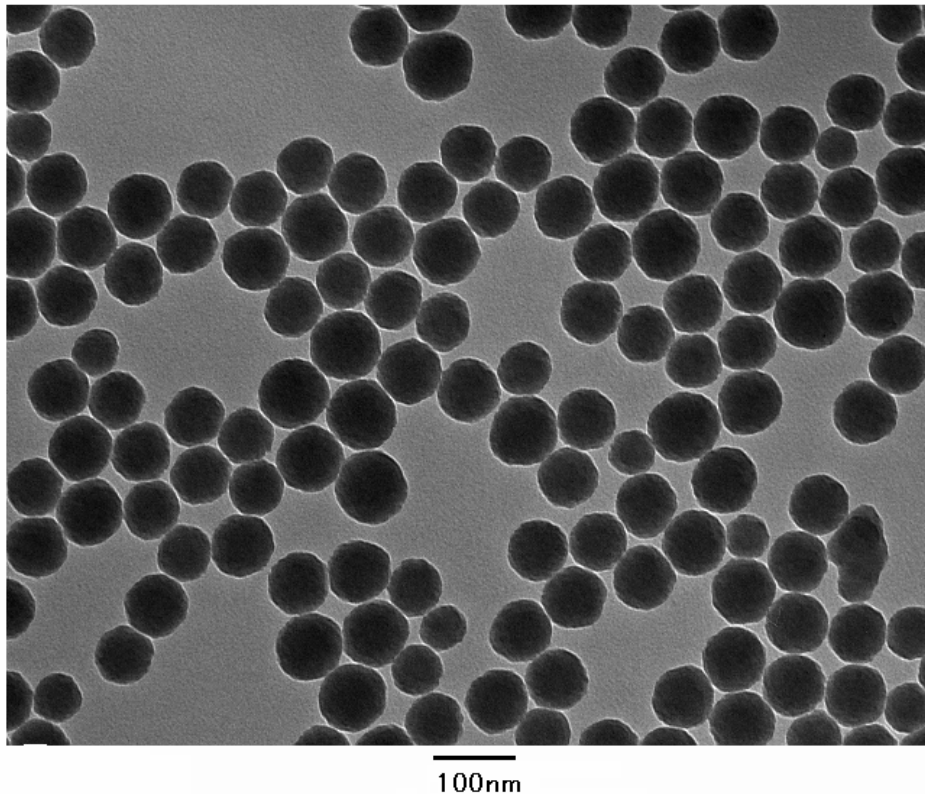


Fig.1 TEM photograph of SILICADOL 30G-50.

### Applications

#### 1. Casting

- In the lost wax process for precision casting, ethyl silicate has conventionally been used, but use of SILICADOL serves for cost reduction and improvement in the working environment.
- In other casting-related fields, use of SILICADOL in a mold wash for a sand mold improves extendability, increases the strength of the sand mold, and provides a superior casting surface finish.

#### 2. Refractories

- It is used not only as a binder for high-class refractories but also as a binder for various types of heat-retaining and heat-insulating materials. In addition, if it is blended with refractory aggregate such as fused silica and applied onto the surface of steelmaking-related platens and ladles, SILICADOL exhibits excellent characteristics as a heat-resistant coating material.

### 3. Papermaking

- Addition of SILICADOL to a photosensitive paper processing liquid smoothes the paper surface and clearly finishes photographs, etc.
- Application of SILICADOL on the surface of card boards and paper bags exhibits an antislip effect and serves for improvement in moisture resistance and reinforcement of paper strength.

### 4. Inorganic Fiber-related Fields

- Materials with excellent heat resistance and chemical stability are demanded as binders for glass fibers, ceramic fibers, etc., and SILICADOL is best suited to these applications.

### 5. Fiber

- Use of SILICADOL for spinning and processing of natural and synthetic fibers causes fine silica particles to collect between fibers and improves the spinnability and increases the tensile strength. Further, it is expected to improve the texture, the elastic recovery and the bulkiness.

### 6. Catalyst

- SILICADOL is ideal as a carrier raw material and a binder for catalysts because it provides no salt produced as a by-product and contains little impurity.

### 7. Coating Material- and Adhesive

- Addition of SILICADOL to emulsions for coating materials and for adhesives provides excellent products with improved properties such as adhesivity, abrasion resistance, weather resistance, and heat resistance.

### 8. Surface Treatment of Metals

- It can be used for manufacture of electromagnetic steel sheets, etc. by carrying out the surface treatment of the steel sheets using SILICADOL together with chromium salts, etc. in addition to common surface treatment.

### 9. Other Fields

- As other applications, it can be used broadly in battery-related fields and in a wide variety of industries such as floor waxes, abrasives for electronic materials, binders for building materials, coating of pigments, etc.

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