

# Colloidal Silica Dispersion

Nano Silica Chemistry | Strength Enhancing Agent in Cementing

## Product Overview

Colloidal silica plays a pivotal role in the Oil and Gas industry, offering a range of benefits and applications. It is a suspended nano-sized particle of amorphous silica in a liquid medium, typically water, with unique properties, including high surface area, stability at various pH levels, and the ability to form thixotropic gels.

In the Oil and Gas industry, colloidal silica is primarily utilized for its rheological properties and as an essential component in drilling fluids. These fluids are crucial in lubricating and cooling the drill bit, transporting drill cuttings, and maintaining hydrostatic pressure in the wellbore. Adding colloidal silica to drilling fluids improves their performance by enhancing lubrication, reducing friction, and increasing drill cuttings' removal efficiency.

Another key application of colloidal silica in this industry is in cementing operations. It assists in strengthening the cement used in well casings, ensuring better bonding to the surrounding rock and improved sealing capabilities. This is critical for preventing leaks and maintaining the well's integrity.

Furthermore, colloidal silica plays a significant role in enhancing oil recovery (EOR) techniques. It can be injected into reservoirs to modify the properties of the reservoir fluids, making it easier to extract the remaining oil. This is particularly useful in mature oil fields where traditional extraction methods become less effective.

## Specifications

Composition.....	Slica
Appearance.....	Transparent liquid
pH.....	7-9
Active.....	28-30
Carrier.....	Water
Particle size.....	9-15nm
Na <sub>2</sub> o Content.....	0,55-0,65
Surface Area.....	230 m <sup>2</sup> /g
Viscosity.....	10 max.

## Benefits using Sodium gluconate

**Enhanced Drilling Fluid Properties:** Colloidal silica is added to drilling fluids to improve their rheological properties. It enhances the viscosity of these fluids, providing better control over their flow and stability.

**Improved Lubrication and Friction Reduction:** The incorporation of colloidal silica in drilling fluids can significantly reduce friction between the drill bit and the geological formations.

**Cementing Operations:** In cementing applications, colloidal silica acts as a pozzolanic material, reacting with calcium hydroxide to form additional cementitious compounds. This reaction enhances the strength and integrity of the cement, ensuring better bonding with the well casing and surrounding formations.

**Enhanced Oil Recovery (EOR):** In EOR processes, colloidal silica can be used to alter the properties of reservoir fluids, making it easier to mobilize and extract remaining oil.

**Environmental and Safety Applications:** Colloidal silica can play a role in environmental protection and safety in the Oil and Gas industry. Its use in spill control helps in containing and cleaning up hydrocarbon spills, thus minimizing

**Temperature and Chemical Stability:** Colloidal silica is known for its stability under a wide range of temperatures and pH levels.

**Non-Toxic and Safe to Handle:** Being a non-toxic and inert material, colloidal silica is safer to handle compared to some other chemical additives used in the industry.

## Packaging

1200 Kg IBC totes

240 Kg Barrel

## Safety & Handling

Handling colloidal silica involves several important steps to ensure safety and maintain the quality of the material. Here are some general guidelines:

**Personal Protective Equipment (PPE):** Always wear appropriate PPE, including gloves, safety goggles, and a lab coat. Colloidal silica can be irritating to the skin and eyes.

**Storage:** Store colloidal silica in a cool, dry place. The container should be tightly closed and properly labeled. Avoid freezing and extreme heat, as these conditions can affect the stability of the colloids.

**Handling:** Handle colloidal silica with care to avoid spills. If you need to transfer the material, use clean, dry equipment to prevent contamination.

**Mixing:** If dilution or mixing with other substances is required, do it slowly and carefully to avoid agglomeration or precipitation of the silica particles.

**Disposal:** Dispose of colloidal silica according to local regulations. Do not pour it down the drain without neutralizing or diluting it as per guidelines.

**Spill Response:** In case of a spill, contain and clean it up promptly using appropriate absorbent materials. Avoid creating dust and dispose of the waste properly.

**Ventilation:** Work in a well-ventilated area or use local exhaust ventilation to avoid inhalation of any vapors or aerosols that might be generated.

**First Aid Measures:** In case of contact with skin or eyes, rinse immediately with plenty of water. Seek medical attention if irritation persists.

## Shelf Life

8 months.

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