

**ISO 9001**

MINERALCOMMERCE JSC	Technical Specification	TS-2014-02
Version 01	Amendment: 1	Page 1 of 3

LIQUID SODIUM SILICATE

This Technical Specification applies to liquid sodium silicate, an aqueous solution of the above-mentioned chemical, commonly known as water glass. It is intended for industrial use as a raw material for various groups of finished products.

This technology is based on the conventional method for producing water glass by adding chemically treated water and heating at high temperature in autoclaves. No chemical transformation occurs during this process.

Water glass has the following principal properties: neutralisation and stabilisation of pH; improved flowability and better dispersion of structuring particles.

Alkali silicates have high but temporary alkalinity, do not damage textile fibres, and are excellent passivators (negative catalysts) of corrosion. This accounts for their wide use in laundry detergents and in products for degreasing and removing deposits from metal and machine parts.

Silicates are used as a raw material for the production of precipitated silica, refractory materials and mixtures, as well as composites with pronounced fire-retardant properties. Silicates are excellent binders for bonding paper, cardboard, etc. They are also used in the production of water-resistant concrete and in the preparation of acid-resistant screeds and hydrophobic coatings.

Depending on the raw materials used and the production technology, the following main types are distinguished:

- 1.1.** Modulus 2.0: higher Na₂O content (low modulus) - SiO₂/Na₂O molar ratio: 2.2-2.5.
- 1.2.** Modulus 3.0: higher SiO₂ content (high modulus) - SiO₂/Na₂O molar ratio: 3.0-3.5.

Parameters	Characteristics and limits
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1.3. Organoleptic properties

Water glass is a liquid, chemically inert product. It is a transparent, non-clear, slightly viscous liquid, colourless and odourless.

1.4. Physicochemical properties

1.4.1. Relative density at 20 °C, g/cm³

- Varies according to customer requirements / ≈ 1.4

1.4.2. pH

- 12.0 ± 0.2

1.4.3. Na₂O content, %

1.4.3.1. Low modulus

- 11.0 ± 1.0

1.4.3.2. High modulus

- 8.00 ± 1.0

1.4.4. SiO₂ content, %

- $27.0 + 7.0$

1.4.4.1. Low modulus

- $26.0 + 2.00$

1.4.4.2. High modulus

Shelf life and storage conditions: 3 years in tanks or tightly closed containers at temperatures above 5 °C.

All products are tested in accordance with approved in-house methods and are accompanied by a Certificate of Analysis for the respective batch.

Modulus 3.0 product

Parameters	Specification limits	Standards
Density at 20 °C	1.35-1.40 g/cm ³	In-house method
SiO ₂ /Na ₂ O molar ratio	3.0-3.5	
Na ₂ O	8-14%	
SiO ₂	25-32%	

**Modulus 2.0 product**

Parameters	Specification limits	Standards
Density at 20 °C	1.40-1.55 g/cm ³	In-house method
SiO ₂ /Na ₂ O molar modulus	2.2-2.5	
SiO ₂ content	23-33%	
Na ₂ O content	10-15%	

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