

**General description:** Lithium water glass is limpid or lightly murky low-viscose liquid which can be miscible with water at any ratio.

**Qualitative parameters of the product:**

Water glass	2,5 – 2,7	M 3,0 – 3,5	M 4,5 - 5	M 5,6 – 6,3	M 7,4 – 7,7
pH	10 - 11	10 – 11	10-11	10 – 11	10 – 11
Content SiO <sub>2</sub> % hm. min.	16,5	19,0	20,7	18,0	19,5
Content Li <sub>2</sub> O % hm. min.	3,15	3,1	2,1	1,45	1,31
Molar ratio SiO <sub>2</sub> / Li <sub>2</sub> O	2,5 – 2,7	3,0 – 3,5	4,5 – 5,0	5,6 – 6,3	7,4 – 7,7
Density g.cm <sup>-3</sup> min.	1,18	1,190	1,190	1,150	1,150
Viscosity mPa.s min.	3	3	3	1,5	1,5

We produce lithium water glass with the molar ratio 10 – 50, potassium-lithium, sodiumlithium and additive paintings on the basis of lithium silicates for concrete and concrete flooring Litosil.

**Packing:** Lithium water glass is packed to plastic barrels with the content of (200l), IBC containers (1 000l), other packaging as agreed before with the client.

**Applications:**

1) Binding agents for anticorrosive protective coatings Contrary to silicates of alkali metals (Na,K) they form aqueous solutions of lithium silicates which when drying with films are more difficultly soluble in water but they can be hardened at lower temperatures. The mechanism of hardening process is not completely known. The film properties change within the time which shows that there sets in the hardening process. The substantial part of the hardening process is the reaction of metal zinc with silicate ions by which there comes into existence the complex of zinc silicates. The powder zinc can be replaced with powder lead, powder aluminium or zinc oxides etc. Main advantages by using lithium water glass are: - excellent adherence to the metal surface - low viscosity even at high molar ratio.

2) Temporary protective coatings for metal and other surfaces Against the damage during the transport or assembling process there is sometimes necessary to create a temporary protective coating on the metal or on the other surfaces. Such coating can be easily formed by spreading, painting or by soaking in lithium water glass which is followed with drying outdoors. The elasticity of coated films can be increased by adding some lubricates e.g. by mica, graphite, molybdenum disulphide to the coating solution. The protected object can be shaped or formed without damaging the protective surface. Such formed coatings can be easily removed by washing or by steam cleansing. For forming more durable coatings it is necessary to perform the film hardening. The hardening can be made by warming to the temperature of 95 to 260 o C or chemically by adding some hardening agents (borax or potassium bromide).

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3) Protective coatings for organic surfaces Lithium water glass can be performed by brush painting, spreading or by soaking on the paper, fabric etc. By forming the protective surface the object becomes resistance against dampness and non-flammable. The wooden surfaces are even effectively protected against decay, ants, woodworms and other destructive insects. By adding water-soluble dye-stuff there can be continuously performed the dyeing of the object.

4) Lithium water glass as glue Lithium water glass can be used in combinations with hardening agents (borax, potassium bromide) and by inert filling agents as glue by which it is possible to use for sticking wood, paper, cardboard, fabric, plastic substances, glass, porcelain, metals, concrete and bricks. The joint is resistant against water.

5) Welding electrodes and powders Lithium water glass can be used as binding agent when making the welding electrodes and powders determined for special steel, nickel etc. They are low-emission.

6) Coatings resistant against water Lithium water glass in the mixture with the dispersion of metal dust and with a low amount of alkali metal dichromates provides an efficient protective coating with excellent adherence, stiffness and damp resistance. Its application is possible for boat or ship bottoms, external walls of water reservoirs etc.

7) Surface adaptations of concrete, masonry etc. Lithium water glass when combined with polymer emulsion (e.g. polyvinyl acetate or latex of butyl caoutchouc etc.), inert filling agents, pigments, creates very good coating for concrete and masonry. The resulting permanent coating provides the protection against erosion and dampness. The ratio of polymer emulsion to lithium water glass will change according to its application and it varies in the amount of 1:1 up 4:1 the mass proportion of polymer emulsion to lithium water glass. Lithium water glass can be used separately into concrete mixtures for improving chemical and mechanical resistance and possibly as the painting for concrete or for concrete flooring.

**Storage:** Lithium water glass can be stored and transported at the temperatures over +1°C in closed packing.

**Protection and working safety:** Lithium water glass is according to the legislation No.356/2003 Coll. classified as **irritant** with risky factors: **R 38-it irritates the skin R 41- Danger of serious eyesight damage.** By working with it it is necessary to protect the skin with protective gloves, the face has to be covered with the face mask, the body with working dress, rubber apron and rubber boots.

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