



SiOO:X

WOOD PROTECTION

Application Guidelines

Application of SiOO:X in industrial environments.

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<p>WOOD PROTECTION:</p> <p>SiOO:X WOOD PROTECTION INDUSTRY</p>	<p>SURFACE PROTECTION:</p> <p>SiOO:X SURFACE PROTECTION INDUSTRY</p>
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APPLICATION DESCRIPTION

Applying SiOO:X silicon-based product systems is generally more accessible than most other products. The method is adapted to the innovative nature of SiOO:X as a penetrant working in the wood structure instead of forming a film on the wood surface as traditional oil coatings, acrylates, and acrylics do. SiOO:X is a durable, environmentally friendly, water-based technology with low viscosity (as water) that can be applied in most machines. It dries quickly, and the treated wood can be packed and stored easily.

It is essential to have enough time after the application for drying and reaction to enable the unique penetration and reaction with the wood. Following instructions for drying times will allow the penetration and first reaction with the wood.

When designing new industrial equipment, we consider subjects such as the choice of wood species, profiles, surface texture, and needed level of protection. However, most existing types of equipment can also be used efficiently.

You consider the type of machinery for application, the line for transporting the board, and the method for drying and packing.

THE APPLICATION PROCESS IS GUIDED BY SIOO BUT IS DONE INDEPENDENTLY. THERE ARE GUIDELINES FOR:

- Choice of machines for application,
- How to dry the wood
- Min and max application. Gram / m2.
- Distribution on the surface.
- Level of absorption/penetration into the wood.
- Drying times.
- Temperatures at application and drying.
- Choice of surface texture: Micro grooves, Fine sawn, paintbrush or sanding, etc.
- Choice of wood species, quality, and profiles.
- It is essential to register data from production to improve quality control, etc.
- Information to the customer.

1. MACHINES FOR APPLICATION

Industrial applications of SiOO:X are often done by spraying, flooding, or using vacuum boxes. Still, other application methods, such as dipping and complementary application with rollers, hand spray, or brushing, can also be used.

1.1 SPRAYING

Spraying is a well-regarded standard application method in Europe. Then, several spray guns, often 3-5, point at the wood from different angles. Adjusting the spray nozzle can decide the jet's amount and width. You can choose to treat 1-3 sides of the wood. It is difficult but possible to treat the backside pointing downward. If it is wanted to protect the downside adequately, you turn the board around and arrange a second treatment. An advantage is that you can regulate the exact amount applied.

Spraying is a good modern choice for applying SiOO:X. Since SiOO:X is a penetrant and natural variations in the wood make the take-up vary, Sioo recommends applying a copious amount. Then, using rollers 1-3 seconds after spraying, you distribute the SiOO:X fluid evenly on the board and remove the surplus, possibly for recycling, into the container.

1.2 FLOODING

Flooding is a spray method often used in North America. In this method, quite a bit of fluid is sprayed over the board, flooding it, covering it well, and improving the penetration and coverage. Rollers often remove surplus and can be circulated or reused. *Many applicators use flooding successfully with SiOO:X.*

1.3 VACUUM BOXES

A Vacuum box is a popular application method that is often used for acrylates. The board is transported through a small box where some spray guns insert fluid, often vigorously, treating all sides of the board. Ultimately, the wood is often passed through a vacuum cylinder, removing surplus fluid.

The method is effective since all sides are covered simultaneously, and surplus is removed efficiently. A disadvantage is that there are fewer possibilities to regulate the

amount of fluid applied than with modern spray machines.

The method can be used with SiOO:X when the vacuum is right, not to high removing too much fluid.

2. CONDITIONS AT APPLICATION

2.1 GENERAL CONDITIONS

The SiOO:X fluid can be applied industrially at temperatures between 15°-30° C. The wood shall be dry and clean, having an open wood structure. Applying SiOO:X on wood with 12-23 % moisture content is possible. The preferred moisture content is 18-22%. Forced drying of the first application of SiOO:X Wood Protection shall be done under 30° C. The board should be left after drying for at least 2-4 hours. Agitate the first container well enough before filling it in the machine. Keep on agitating during the application. Clean the machine well before and after application and when you change the product. It is essential not to allow any residues from the Product Step 1 Wood protection to be mixed into Step 2 Surface protection.

2.2 BEFORE THE APPLICATION

- Check your requirements for wood species, profile, and surface texture.
- Check that the machine is clean. Agitate the SiOO:X container and check that all pigments and sediments are dissolved and that no residual sediments are left. Fill the container belonging to the machine.
- Apply indoors in dry conditions. Use adequate clothing and gear for protection.
- Check that you have the wood's recommended air temperature and moisture content.
- Check that there are rollers to distribute the SiOO:X evenly on the board and that all wood parts get enough fluid and pigments.
- Prepare for end grain sealing.
- Prepare the application by studying the SiOO:X regulations for SiOO:X to be applied, gram / m². Adjust your equipment to reach the prescribed amount of SiOO:X.
- Use a plan for measuring and registering data from the application. Follow up and, if necessary, adjust so the application will bring good products according to instructions.

The character of the wood texture enables the proper adhesion of SiOO:X and the fixing of pigments in SiOO:X paint systems. See recommendations. A micro-structured/grooved surface is the best for SiOO:X clear or pigmented paint systems, especially for darker colors. It brings good adhesion needed on knots and the marrow in the center of the board. Good adhesion is accomplished with 9-12 rills per cm. The rills are established by molding with iron, looking like a "comb." Contact Sioo and experts for more info. Fine-sawn surfaces are also a good choice, but the best for colors on, (the darker the more Important) knots, etc., is to use micro-structured surfaces.

Wire-brushed wood surfaces often have a too rough texture. SiOO:X binds better on microstructure surfaces. Thorough sanding can also, together with right wood species, create an acceptable surface. Use 40-60 grid paper.

2.3 DURING APPLICATION

Check the surfaces during application and ensure that the distribution of SiOO:X is even, penetrates well, and has pigments covering the whole board.

Weigh the boards regularly, before and after application, register, and check that the amount is within the prescribed interval. Compare the result visually with a masterpiece and register the result.

3. AFTER APPLICATION, DRYING, ETC.

Traditionally, many smaller applicators handle their boards manually and dry them one by one on racks. This is entirely possible and enables reasonable quality control when using SiOO:X.

Many larger producers transport their boards on lines to speed up production, and some use automatic drying with airflow and heat.

SiOO:X is also suitable for such scale-up and high-volume use in lines. An advantage is that SiOO:X does not form a film, which is often sticky and leaves marks on other boards. SiOO:X does not just dry with the air but also inwards with the wood itself, meaning that drying/hardening is continuous after packing and after the surface is touch dry.

Consequently, it is essential that step 1 SiOO:X Wood Protection, first application, is not exposed to heat over 30° C during the first 2-4 hours after application. During these 2-4 hours, SiOO:X Wood Protection opens the wood surface, penetrates, and reacts in depth with the cellulose; heat over ca 30° C will cause reactions that will reduce this critical penetration/reaction. You can use drying processes with air and a max of 30° C for the Wood Protection. Step 2 Sioo Surface protection can be dried with air and full heat, and then the wood can be packed directly and automatically without problems. Consider well known problems with the surface by heating, as risk for a patchy, skinny surface etc. For more information, contact Sioo Woodprotection AB.

RESPONSIBILITY AND MAINTENANCE

It is the responsibility of the supplier, contractor, timber company, and applicator to inform the customer about which SiOO:X treatment has been applied to the wood and to inform the customer about how to correctly maintain the SiOO:X surface to ensure the longest-lasting, and thereby the most sustainable, results. This includes the need for a maintenance coat of Surface Protection after the recommended period and the need to treat all new end grains, cuts, and rips during installation.

INFO

- Storage of liquid: +5°C to +30°C
- Application and drying: +15°C to +30°C . Preferred +16°C to +22°C
- Stir before use
- Correct industrial application:
- Two coats of Wood Protection
- One coat of Surface Protection
- End grain sealer
- Moisture content of wood during application:
- Wood Protection coat 1: Preferred 18-22%
- Wood Protection coat 2: Dry
- Surface Protection coat 1: Dry
- Drying times:
- >2h between Wood Protection Coat 1 and 2
- >4 h between Wood Protection Coat 2 and Surface Protection
- EPD's are available upon request.
- Viscosity: Low
- Water-based products that are water-soluble.
- **IMPORTANT!** Do not forget your responsibility to inform the customer.

At sioox.com you find all the information you need. Alternatively, contact customer service or your dealer.

* All references to durability and other information apply to correctly SiOO:X treated fine sawn/micro grooved spruce cladding. 'Fine sawn/micro grooved' surface as defined in Sweden. Differences in terminology can exist between countries. For information, see SwedishWood.com, or if you have questions, contact customer service at Sioo. Information is subject to change without notice. Sioo retains the right to update the data sheet as it deems appropriate, and the user is responsible to check for updates at sioox.com before using the product. It is not possible for Sioo to warn the user about every possible danger related to use of the product and the user must use common sense and good judgment. Please contact Sioo with any questions or concerns before using the product.