SHEPROS®

Safety, Heath & Environment Product Solutions

The Impregnation
of
Wood Surfaces

NANO WATER REPELLENT

SHEPROS GROUP OF COMPANIES

Timber Surface Protection Without Compromises:

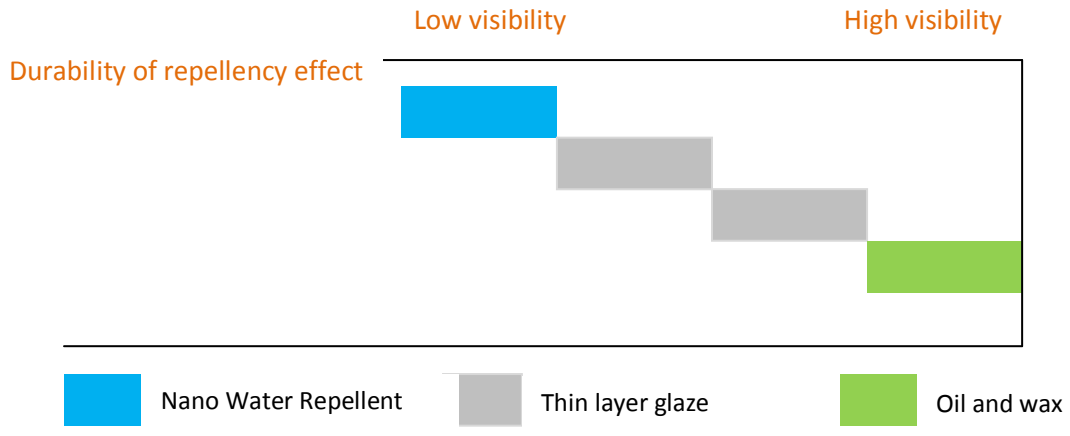
Nano Water Repellent

SHEPROS has succeeded in developing a particularly effective surface protection agent for wood: Nano Water Repellent. This water based, solvent free system has outstanding properties:

- Repels dirt and water
- Protects the surface from the effects of weathering, does not influence the natural change in color of wood or timber caused by UV light
- Lower sensitivity of wood or timber surface to the attack by microorganisms
- Breathable
- Almost invisible due to nano thickness
- Odorless
- Long period of protection up to three years (depending on the concentration)
- Easy application
- Non VOCs

Nano Water Repellent is suitable for virtually all wood and timber surfaces. Regardless of whether the wood or timber is untreated or already impregnated, weathered or unweathered, and originally waxed, or vanished, Nano Water Repellent does not affect the expansion or contraction behavior of the wood or timber and is suitable for even for outdoor objects without ground contact.

Technical Positioning of Nano Water Repellent



Compared with conventional systems such as oils, waxes, and thin layer varnish, Nano Water Repellent has considerably greater durability while leaving appearance of the wood surface virtually unchanged. Nano Water Repellent protects wood and timber almost invisibly.

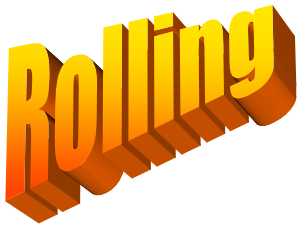
With Nano Water Repellent, wood or timber retains its permeability to water vapor

	S_d (The lower the S_d value, the better is the water vapor permeability)						
System	0 m	0.05 m	0.1 m	0.5 m	1.0 m	1.5 m	2.0 m
Nano Water Repellent	0.003						
Polyurethane coatings							
Acrylic coatings							
Epoxy based coatings							
	Permeable to water vapor		Permeable		Inhibitory		Impermeable

Impregnation ⟶ ⟵ Coating

S_d = water vapor diffusion equivalent air-layer thickness in meters

Methods of applying Nano Water Repellent



Product Information

Product Name: Nano Water Repellent (NWR)

Manufacturer's Code: NWR51-1/9

Description:

Nano Water Repellent (NWR) is a nano coating emulsion. It is used as a water repellent for wood and timber. **NWR** is a non-caustic, environment and user-friendly product, which is designed to penetrate into the capillaries of wood and timber substrates forming a water repellent zone and strengthening the surface of the wood and timber. This water repellent zone significantly reduces the absorption of water or other water-borne staining materials which are responsible for the bulk of the deterioration of substrate.

Application:

Nano Water Repellent (NWR) can be applied using brush, roller or spray. However, the product is preferably applied by saturation application using a hand pressure spray or airless spray equipment to avoid direct contact of application equipment with the surface. Sufficient amount of **NWR** should be applied onto the surface. For the vertical surface, a second application should follow immediately after the first coat of **NWR** is absorbed into surface. This is termed a "wet-on-wet" application. The object is to saturate the surface to allow better absorption and penetration. For horizontal surfaces, one coat by flood application may be enough. If the **NWR** is instantly absorbed by the substrate, a second coat may be required but should be applied immediately while the surface is still wet. Any remaining liquid on the surface which has not been absorbed by the surface for 5 minutes should be removed. This is to avoid excessive accumulation of the **NWR** in some local surface areas which may cause an uneven finish or contamination in the areas. The number of applications depends on the permeability of the wood and timber substrates. Generally, for dense surfaces, one or two "wet-on-wet" application is enough but for very porous wood or timber, two or more coats "wet-on-wet" may be required. Stir or shake **NWR** before use. Mask off any areas you do not wish to treat. If splashing occurs the product should be removed with a damp cloth immediately to avoid possible contamination.

Consumption rate:

The consumption depends on the permeability of substrate. For porous wood or timber, it may consume about 0.5 – 5.0 m^2 per liter per coat. For highly porous substrates, it may vary from 5 to 20 m^2 per liter per coat or could vary even more.

After application:

Instant surface beading will be immediately developed after dry; however, full surface water repellent effect will develop in 24 hours and could take up to 7 days for full curing. Avoid heavy traffic for 24 hours. Wash the equipment immediately in water.

Pilot testing and quality control:

Due to the variation porosity of substrates, it is strongly recommended that a pilot test on a small area on site should be conducted prior to application to determine the suitability of this product for the purpose.

Typical Data:

Appearance:	White emulsion
Solids content:	50% by weight
Specific Gravity:	1.0 g/ml at 20 ^{o}C (approx.)
pH value:	7-9
Solubility in water:	Dispersible in water
VOC content:	None
Flash point:	None

Important Note:

Nano Water Repellent (NWR) penetrates into the capillaries and renders the surface water repellent property while still leaving most of the capillaries open to allow water vapor to pass through. It reduces water absorption by capillary action. However, it has a limited resistance to water penetration particularly under prolonged contact or hydrostatic pressure. Therefore, in some cases where the substrate is very permeable or there is extreme wind driven rain, resistance to water penetration or water-borne staining may not be adequate.

Handling & Storage:

Nano Water Repellent (NWR) is a water-based, non-caustic and user-friendly product which is classified as a non-hazardous material. However, as with all chemical products, good industrial hygiene procedures should be followed when using this product. The product should be stored in closed containers in a cool dry place away from any fire sources. The product has a shelf life of 12 months in a sealed container stored at a temperature below 25^{o}C. Use under sufficient ventilation and keep out of reach of children!

Packaging:

Nano Water Repellent (NWR) is available in 20 liter and 200 liter HDPE containers.

Disclaimer:

The information given in this data sheet is based on many years of experience and is correct to the best of our knowledge. As the storage, handling and application of this material is beyond our control; we can only be responsible for the quality of our product at the time of dispatch. We reserve the right to alter certain product parameters within the spectrum of properties in order to keep abreast of technical.