MANTA

Technical Data Sheet

Version: 1.0

Manta WS130

Nano-Silane Concrete Protective Impregnation

Description

Manta WS130 is a nanoscale silane-based hydrophobic impregnation, supplied as a clear, deeply penetrating liquid. Designed specifically for the heavy-duty protection of reinforced concrete, it meets the requirements of Chinese industry standards for highway and port engineering (JTG/T B07-01-2006 and JTJ 275-2000).

Due to its very low molecular weight, the active nano-silane deeply penetrates the concrete substrate (achieving a penetration depth of 3 to 12 mm). Upon contact with atmospheric moisture and alkaline components within the cementitious matrix, it chemically reacts to form a permanent, deeply embedded hydrophobic barrier.

This treatment significantly reduces capillary water absorption and provides superior chloride-ion screening and UV resistance. By effectively mitigating moisture ingress, WS130 prevents rebar corrosion, freeze-thaw damage, spalling, and efflorescence caused by de-icing salts, acid rain, and marine exposure, thereby significantly extending the service life of the structure without altering its original visual appearance or breathability.

Typical Physical Properties

Technical Index	Specification
Penetration Depth, mm	≥ 3.0
48h Water Absorption Ratio, %	≤ 10
Chloride Absorption Reduction Effect, %	≥ 90
Concrete Electric Flux after Treatment	≤300 coulombs
Frost Resistance -20~20°C	20 cycles no surface change
Heat Resistance 180°C, 4h	No surface change
Alkaline Saturated Calcium Hydroxide Solution Immersion 168h	No surface change
Acid Resistance 1% Hydrochloric Acid Solution Immersion 168h	No surface change
Steel Bar Corrosion	No rust

Application

WS130 is designed for the heavy-duty protection of reinforced concrete structures subjected to aggressive marine environments, airborne chlorides, de-icing salts, and severe freeze-thaw cycles. Ideal applications include:

- Seaports and marine terminals
- Highway bridges and urban viaducts
- Railway infrastructure and tunnel networks
- Exposed architectural concrete and power plant cooling towers
- Airport aprons

Design basis:

Manta WS130 is designed in accordance with the following anti-corrosion specifications:

JTG/T B07-01-2006: Technical Specifications for Anti-corrosion of Concrete Structures in Highway

Engineering.
JTJ 275-2000: Technical Specifications for Anti-corrosion of Concrete Structures in Port Engineering.

Application Guidelines & Surface Preparation

1. Substrate Preparation
Proper surface preparation is critical for optimal penetration.
Mechanical Cleaning: Utilize suitable power tools or wire brushes to thoroughly remove laitance, friable concrete, dirt, marine growth, and loose debris.
Chemical Cleaning: Remove oil, grease, and curing compounds. Formwork release agents must be completely removed.
Defect Repair: Structurally repair deep honeycombing. Dynamic or static cracks wider than 0.2 mm must be routed and properly sealed prior to treatment.
Rinsing & Drying: Flush the cleaned surface with potable water. The substrate must dry under ambient conditions for at least 72 hours before application to ensure capillary pores are free of moisture.

2. Application Prerequisites
Curing Time: New concrete must cure for a minimum of 28 days. Repaired areas must cure for at least 14 days.
Ambient Conditions: Substrate and ambient temperatures must be between 5°C and 45°C during application. Avoid application in strong sunlight or high winds; cover the treated surface if rain occurs.

3. Application Procedure
Apply the impregnation continuously using low-pressure spraying equipment or a brush to ensure uniform flooding of the surface.
Coverage Rate: Apply at a rate of 200–300 g/m² per coat until the substrate is fully saturated.
Coats: A total of two coats is strictly recommended. Apply the second coat after a 6-hour interval.
Protection: Avoid contact of the silane with chloroprene rubber, asphaltic sealants and other materials that may be attacked. Protect freshly treated surfaces from rain for at least 6-12 hours.

Quality Assurance & Verification (QA/QC)

1. On-Site Test Patch & Core Extraction
Prior to full-scale application, a representative test area (1-5 m²) must be treated. Seven days post-application, concrete core samples shall be extracted to verify capillary water absorption, penetration depth, and chloride screening.
2. Lot Inspection
For stringent quality control, every 500 m² of treated surface constitutes a single inspection lot. Should any core metric fail, the entire inspection lot must undergo supplemental silane re-impregnation until full compliance is achieved.

Packaging

In 20L and 200L containers.

Safety and Storage

The shelf life is 2 years at temperatures above 0°C and not exceeding 25°C. It is forbidden to store with acids, alkalis, amines and heavy metals or their compounds, and it cannot be placed in places contaminated by them.

Precautions

1. This product is flammable and safety precautions should be taken. Keep the construction site well ventilated and away from sparks, heat sources and open flames.
2. Do not use this product in a humid environment, at a temperature below 5°C or in windy weather.
3. Construction workers must wear goggles and protective gloves as required during construction. If accidentally inhaled, move immediately to a place with fresh air. If it comes into contact with the skin, wash it immediately with water; if it comes into contact with the eyes, wash it immediately with water, take off the contaminated clothes and shoes and seek medical attention in time.
4. Do not use on electrical equipment or hydraulic structures.

Contact Information

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