GUIDE SPECIFICATION FOR NANO-SHIELD™ OSP:

ORGANIC SOLIDS PROTECTON

SECTION 07 16 13

POLYMER-MODIFIED CEMENT WATEPROOFING

Revision Date: February 18, 2022

# GENERAL

## Description

### This specification is for installation of inorganic protective coating, NANO-SHIELD OSP, manufactured by W. R. MEADOWS® OF CANADA, on all surfaces indicated on drawings. NANO-SHIELD OSP is suitable for any of the following structures requiring protection against penetration of solvents:

### industrial wastewater tanks

### saltwater storage

* underground vaults
* footings & foundations
* concrete slab
* elevator pits

### This specification should be read in conjunction with NANO-SHIELD OSP Data Sheets. W. R. MEADOWSoffers comprehensive technical & specification assistance to consultants

### The general conditions, supplementary conditions and general requirements of this document apply to General Contractors, Sub-Contractors, Material Suppliers, and all other persons furnishing labour and materials under this section

### This specification combines Metric and US measurements. Brackets [ ] indicate choice, alternative, data required or need for the specifier to make a decision.

## Work Included

Provide all labour, materials, and equipment necessary to apply NANO-SHIELD OSP in application over concrete surfaces as shown on the contract drawings and specified herein.

## Related Work

Insert list of divisions and sections where related or allied work is specified, such as concrete slab, wall, tanks and other types of concrete waterproofing, finishing and protection. See NANO-SHIELD OSP Product Data Sheet.

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## Quality Assurance

### Installers Qualifications:

### The application must be carried out by an Approved Applicator, whose employees have successfully completed W. R. MEADOWS training for application of CEM-KOTE™ FLEX and NANO-SHIELD.

### The Bidder must be an Approved Applicator at the time of Tender, in order to bid project where CEM-KOTE FLEX or NANO-SHIELD OSP are specified.

### A company that is not an Approved Applicator at the time of tender must use an Approved Applicator to install CEM-KOTE FLEX or NANO-SHIELD OSP in order for a materials warranty to be issued.

### Prepare a site sample approximately 1200mm x 1200mm (4' x 4'). This sample will be regarded as the minimum standard of workmanship acceptable for this project.

### Maintain a record of the batch numbers of all materials supplied for this project.

## Submittals

### Provide owner with manufacturer’s literature, including Specification Guides, Product Data Sheets, and installation instructions for all products.

### Submit documentation that Quality Assurance criteria have been met.

## Product Delivery, Storage and Handling

### Deliver materials to the site in original, unopened, and undamaged packaging with manufacturer’s identification and labels intact.

### Store NANO-SHIELD OSP in a clean, dry area protected from direct sunlight, weather, and other damage.

### Safety Data Sheets (SDS) shall be available at the jobsite.

## Alternates

The alternate product must document a minimum 5-year successful history of use in applications, where the organic solvent protection is required.

Obtain written permission from the owner's representative at least ten days prior to close of tender. The alternate material must have been in use for a minimum of eight years.

## Standards

### ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (use 2 in (50 mm) Cube Specimens

### ASTM C321 - Standard Test Method for Bond Strength of Chemical-Resistant Mortars

### ASTM C348 - Standard Test Method for Flexural Strength of Hydraulic Cement Mortars

### ASTM C596 - Standard Test Method for Drying Shrinkage of Mortar Containing Portland cement

### ASTM 944 - Standard Test Method for Abrasion Resistance of Concrete or Mortar Surfaces by the Rotating-Cutter Method.

## Job Site Conditions

### NANO-SHIELD OSP materials must be applied within 15 to 20 minutes after mixing.

### Do not apply if ambient temperatures cannot be kept above 5o C (40o F) during, and for at least 48 hours before and after application, or when rain is imminent.

### Do not apply NANO-SHIELD OSP to frozen or frost filled surfaces.

### The proper surface preparation is essential for successful bond of NANO-SHIELD OSP.

### Protect surrounding surfaces from damage due to work of this trade.

### Coordinate installation of waterproofing with work in related sections and trades.

G. Contact W. R. MEADOWS for bonding of NANO-SHIELD OSP to oil contaminated surfaces.

## Co-ordination/Scheduling

The work in this section requires close co-ordination with related sections and trades.

# PRODUCTS

## Manufacturers

### Manufacturer's materials are specified by brand name to establish a standard quality, by general description of product and by performance requirements. The Engineer will consider substitutions for brand name products specified, if the procedures set out for substitutions are followed. The Engineer reserves the right to reject any material, which, in his opinion, will not produce the quality of work, specified herein.

### The following are acceptable manufacturers: W. R. MEADOWS or approved equal.

## Materials - General

### NANO-SHIELD OSP- supplied as a one component dry premix packaged in 22.7 kg (50 lbs.) bags manufactured by W. R MEADOWS.

### CEM-KOTE BARRIER COTE 100 - supplied as a Kit comprising of dry Component A + Liquid Component B, as manufactured by W. R. MEADOWS.

### REINFORCING FABRIC HD - supplied in rolls 9 ½” (24.1 cm) wide for crack treatment, or 48” (122 cm) wide for application on the entire surface, supplied by W. R. MEADOWS.

### CEM-KOTE FLEX ST - supplied as a Kit comprising of dry Component A + Liquid Component B, as manufactured by W. R. MEADOWS.

### GEM-PLAST™ TC - thin set concrete restoration mortar, manufactured by W. R. MEADOWS.

### FIBRE-PATCH™ OV/FIBRE-PATCH ST or MEADOW-CRETE® OV/MEADOW-CRETE H - restoration mortar for coving of corners, thin to thick repairs, OV (overhead, vertical) and ST/H (horizontal), manufactured by W. R. MEADOWS.

### FIBRE-PRIME™ or PATCH-PRIME™ - cement-based rustproofing manufactured by W. R. MEADOWS.

# EXECUTION

## Inspection

### Inspect surfaces to which NANO-SHIELD OSP will be applied.

### Report to owner's representative, in writing, any defects in previously prepared work or unsatisfactory site conditions. Proceed with work under this section only when such defects have been entirely corrected.

### Starting work under this section means acceptance of the surface and previously prepared work.

## Preparation

### **Surface Preparation**: High-pressure wash [5000 - 7000 psi (24.1 – 48.3 MPa)] with sand brought to the nozzle, or wet or dry sandblast to thoroughly clean the surface and remove soft concrete surface and any bond inhibiting material, such as form oil. Wash the surface thoroughly with water prior to the application and allow to dry off to achieve saturated surface damp condition. When in doubt do a bond test to assure proper surface preparation is being done, or if any additional cleaning is required. When dealing with oil contaminated concrete surfaces, each individual projects and the surface preparation must be discussed and approved by W. R. MEADOWS.

### **Surface Repair**: All active water leaks must be stopped using FIBRE-PATCH WP (water plug).

### Use GEM-PLAST TC Premix or MEADOW-PATCH® T1 to patch honeycombing and air pockets.

### Use FIBRE-PATCH OV Premix, MEADOW-CRETE OV, or MEADOW-CRETE H (overhead & vertical) for deeper patching. The surface of FIBRE-PATCH OV should be left rough (bristle finish) and washed thoroughly with high-pressure water before application of NANO-SHIELD OSP.

### Remove all loose rust from any exposed reinforcing steel and apply two coats of FIBRE-PRIME or PATCH-PRIME rustproofing.

### **Treatment of Existing Cracks & All Non-Structural Joints:** Identify all the existing cracks, construction joints and apply a layer of CEM-KOTE FLEX ST, approximately 25 cm (10”) wide and 1 mm (40 mils) thick, by trowel or squeegee. Embed REINFORCING FABRIC HD over the entire area of CEM-KOTE FLEX ST and work into the CEM-KOTE FLEX ST, using trowel, to assure complete embedment of REINFORCING FABRIC HD. Apply an additional coat of CEM-KOTE FLEX ST, to build up a min. total thickness of 2 mm (80 mils), over the entire area.

### **Corners & Protruding elements (pipes):** Form a cove min. 2” x 2” (5 x 5 cm), using FIBRE-PATCH OV or MEADOW-CRETE OV in the corner using CEM-KOTE BARRIER COTE 100 as a bonding agent. The following day, clean the surface with steel brush and pressure wash, and apply two coats of CEM-KOTE FLEX ST.

## Mixing

### Mix the content of the bag, 22.7 kg (50 lbs), with approximately 4.6-5.0 L (1.2-1.3 USG) of water. Use a drill (400-600 rpm) with a correct mixing paddle. Gradually add the dry material into the water and mix until a smooth and lump free mix is obtained. Do not over mix. Adjust the water for brushable consistency or a stiffer consistency for trowel application.

## Application

### **Application:** Apply NANO-SHIELD OSP by brush, in two consecutive coats, to achieve the specified rate of application [typically 2 -3 mm (80 - 120 mils)]. No wetting is required between the coats. The recoating must be done within 1/2 hour. When layers over 3 mm (1/8”) are required, apply a thin layer of CEM-KOTE CW PLUS first, as a bonding agent by brush or broom. Apply second coat of CEM-KOTE CW PLUS into the wet slurry. Keep wet edge. Do not build up a layer thicker than 6 mm (1/4”).

### **Finishing:** NANO-SHIELD OSP can be left with “brushed” surface. In application where a smooth surface is required, e.g., wastewater treatment facilities, swimming pools the surface must be “closed” using a steel trowel.

### **Hot Weather Application:** Protect the surface against rapid evaporation of water between the finishing and the final set time. Use water misting or apply a surface evaporation retarder.

### **Cold Weather Application:** Apply in temperatures above the freezing point and protect the material against freezing for a minimum of 48 hours. Use electrical, (**NOT propane)** heaters to avoid carbonation and carbonation cracking.

### **Combustion engines must NOT be used in a confined space where NANO-SHIELD OSP is being applied.** All gasoline/diesel/propane equipment should be shut off during placing of concrete or other cementitious materials.

# CURING

1. Moist cure NANO-SHIELD OSP for 3 days.
2. Protect surfaces from rapid drying and rain and frost.

# PREPARATION FOR COATING & TILING:

1. Surfaces, treated with NANO-SHIELD OSP, must be allowed to air-dry for 1 week after 3 day moist cure, before application of any coating, paint, or tiles.
2. At the end of the curing period, saturate surfaces with water and neutralise with a 1:8 solution of muriatic acid.
3. Rinse waterproofed areas thoroughly with water.

# CLEANING

## Job Site Cleanup

All excess and waste materials are to be removed from the job site by the contractor in accordance with contract provisions. Surrounding areas where the material has been applied will be left free of debris.