INFORMATION/INSTRUCTIONS

ECO LINER

Last updated April 2015

Description

NanoTech Coatings ECO Liner is a high performance, low cost system for lining water/chemical tanks, tankers, pipes, storage batteries and more. It has been independently tested and certified by CSA International as a product suitable for use in drinking water tanks, piping systems and related structures and surfaces as a lining or coating.

Key differences in comparison to other coatings:

- This **thicker system** (20 to 100 mils) gives greater long term performance than similarly tested systems.
- Since product **polymerizes into itself**, it facilitates easy and effecting repairs to previously installed areas.
- 1/3 Lower cost than similarly tested urethane or epoxy systems.

Surfaces

NanoTech Coatings ECO Liner bonds to steel, concrete, itself, wood, asphalt, tar, paints and more.

Characteristics

Recommended Coat Thickness:
0.020"-0.100" (0.5mm - 2.5mm)

Durability:
ASTM C627 [16,000 passes of an average sized car]
(HBT AGRA) [no debonding or deterioration occurred]

Estimated Tensile Strength:
ASTM D412 (HBT AGRA)
900 Psi (6 MPa)

Pull-off strength from steel (Charter):
ASTM D4541-09 AT 23° C / 73° F:
1000 psi - with 95-100% cohesive

Knife Adhesion Test (charter):
PDO SP-2095 App B.2 / ASTM D6677
0 mm (2 mm allowed) - Rating 10 (ASTM D6677)

Estimated Elongation (HBT AGRA):
ASTM D412 - 50 - 100%

Flexibility (Charter):
-CSA Z245.20-10 Section 12.11m @-30° C / -22° F
Shoe Radius 95mm, Chord 152mm, Arc 178mm
>4.07 degree Bend/PD

Chemical Resistance Test (Attached Cell Method) (Charter):
(40% MEG & 60% Oilfield formation water)
for 7 days @93° C/200° F
No defects. No blisters, delamination, cracks. No adhesion loss.

Electrical Impedence Spectroscopy:
(EIS) (Charter) ISO 16773-2; 2007
96 hours @ 23°C with 5% NaCl followed by 7 day attachment cell method chemical test (see above test result)
Log Z value at 0.1 Hz:9.19 ohms-cm2 before chemical test and 9.46 ohms-cm2 after chemical test - results higher than 9, indicating good barrier and corrosion protection properties that remained excellent after chemical resistance test.

Cathodic Disbondment - EN 10288 (Charter):
48 hours @ 65° C / 149° F
@ -1.5V in 3% NaCL electrolyte
6mm (avg. of 6 tests)
7mm allowable for oil & gas
12mm allowable for water

Crack Bridging (HBT AGRA):
1/16" (1.6mm)

Estimated Impact Resistance (IZOD) (HBT AGRA):
(Drops sharply at -20° C)
2 FT-LBSf/inch (11 Kgf-mm/mm)

Hardness - Shore Durometer (HBT AGRA):
D 50+/-10

Heat Resistance – Continuous :
212° F (100° C)

Minimum Service Temperature:
-20° to -40° F (-30° to -40° C)

Water Absorption:
- ASTM D570 (1993) (HBT AGRA) - ASTM D570-98 (2005) (Charter)
0.3 %
30 g/m2 @ 85° C / 185° F - 30 days

Rapid Chloride Permeability (AGRA)
ASTM C1202
17 (NIL) coulombs [after 6 hours]

Tensile Bond Strength to Concrete (HBT AGRA):
5 cycles freeze/thaw & water immersion:
200 - 300 PSI (1.5 - 2.0 MPa)

Coefficient of Slip Resistance (HBT AGRA):
Rubber test surface wet/dry CAN/CGSB-75.1-M88
0.92 / 0.95

GOOD GENERAL SOLVENT, ACID & BASE RESISTANCE WITH A FEW EXCEPTIONS. REFER TO CHEMICAL COMPATABILITY CHARTS. SPECIFY TYPE OF CHEMICAL BEING CONTAINED AND CONDITIONS PRIOR TO ORDERING TO DETERMINE PARTICULARS.

This information is from independently certified tests performed by HBT AGRA, Charter Coating Services and CSA International. Since conditions of use are beyond our control, we do not assume any liability except to replace that quantity, in containers, of the product which is defective and for which we are responsible.

CERTIFIED NSF/ANSI-61 COMPLIANT BY CSA INTERNATIONAL FOR USE IN POTABLE WATER STORAGE TANKS 5 GALLONS OR GREATER AND POTABLE WATER PIPES WITH NOMINAL PIPE SIZES 4 INCHES OR GREATER.

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Surface Preperation

Surface Preparation for Steel:
• NACE-2 / SSPC-SP10 (near white blast)
• NACE-3 / SSPC-SP6 (commercial blast) acceptable in certain approved case-by-case situations.

Surface must be clean, dry, and in sound condition. Remove all oil, dust, grease, dirt, loose rust, and other foreign material, using NanoTech Coatings Surface Prep.

Application Instructions

Stir each container thoroughly (separately) prior to use.
Weigh out 4 parts ECO Liner Part A Catalyst to 1 part ECO Liner Part B Resin. Mix the two parts together thoroughly.

Spraying
Special equipment and procedures are required for spray applications. Consult certified spray applicators for additional information on spraying application of NanoTech Coatings ECO Liner.

Brush
Apply to clean, dry surface using notched squeegee to build to 0.020" - 0.100" total thickness in a single coat or a two coat combined application.

For non-skid, broadcast silica or similar hard material evenly over coated surface to achieve specified non-skid requirements. Optional: roller apply more product after non-skid has been applied to encapsulate grit.

Cure
Cure until tack free [approximately 24 hours at 65°F (23°C)]

Notes
- No primers/sealers required. Cross roll or air blast to remove surface air bubbles during first hour of cure
- Subsequent coats can be applied to partially or fully cured surface
- For filling large holes or voids, simply trowel up to 2 inches thickness of product into the holes/voids.

Storage

Store in a cool, dry place above 15° C.
Mosture: ECO Liner Part B must be kept free of moisture. Keep can closed because the resin absorbs moisture from the air over time. Moisture in the resin causes it to produce CO2 gas which may cause pressure build-up inside a sealed container.
Shelf Life: unopened containers have an undetermined shelf life. At this time, 1 year is the recommended maximum.

Coverage Chart

Thickness	Gallons per sq/ft
15 mils	0.01
20 mils	0.0137
30 mils	0.02
40 mils	0.0274
50 mils	0.0335
60 mils	0.04
70 mils	0.047
80 mils	0.0537
90 mils	0.06
100 mils	0.0667
125 mils	0.0833
250 mils	0.1666