



SPECIFICATION

FOR THE APPLICATION OF

ASTEK MARINECOAT

POTABLE WATER TANK LINING SYSTEM

ON STEEL SURFACES

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Rev: 06/09/17

SECTION 07145 – CEMENTITIOUS WATERPROOFING

SECTION 09800 – SPECIAL COATINGS

Rev: 06/09/17

PART 1 - GENERAL

101 General

This specification describes the work of applying ASTEK MarineCoat Potable Water Tank Lining System. All work shall be performed using materials manufactured and supplied by ASTEK Composites Inc., Orillia, Ontario, Canada (phone 905-399-1632), email info@astekcomposites.com) and shall be installed by an ASTEK approved applicator or under the close monitoring of an ASTEK representative. In accordance with the best practices of the trade, an Astek representative will be on site during the application. He or she will be an advisor to the applicator and Astek does not warrant the completed work. Fees for the Astek representative are separate from the Application Contract and are available upon request.

Whenever the words "approved by", "equivalent" or similar phrases are used in this specification, they shall be understood to mean that the material, process or items referred to shall require the written approval of ASTEK Composites Inc.

This specification shall be read in conjunction with the other contract documents and/or drawings indicating the precise extent of work and the use and location of specific materials.

102 Definitions

"ASTEK MarineCoat Potable Water Tank Lining System" shall mean a system of coatings consisting of Astek LB141 acrylic polymer, Lafarge Portland cement type GUL and White Lightning #25 sand all supplied by Astek in a 20 liter pail as a preproportioned kit.

103 Work Included

Provide all labor, materials and equipment to complete the coating work including:

- (a) Erection of scaffolding, hanging platforms, work stations and preparation of structure to receive same.
- (b) Removal of pipes, machinery, equipment or other obstruction which would prevent complete or proper application of coatings (to be done by others).
- (c) Installation of lights and ventilation equipment.
- (d) Examination of all surfaces to receive MarineCoat.
- (e) Removal of all loose rust and/or existing coatings from steel. This work may be included in the shipyard's contract if desired. Approval of the surface preparation shall be performed by the Astek representative.
- (f) Application of MarineCoat.
- (g) Curing of MarineCoat.

- (h) Flushing of tank and final cleaning of work area.

104 Quality Assurance

Contractor Qualifications

All ASTEK products shall be installed by ASTEK approved applicators or under the supervision of ASTEK Composites Inc. or its Representative in strict accordance with this specification unless otherwise approved in writing by ASTEK Composites Inc.

When an approved applicator is not available, a representative of ASTEK Composites Inc. shall monitor and advise during the execution of all work under this specification to the extent deemed necessary by ASTEK.

105 Maintenance Data

Under normal circumstances no maintenance is required. If the system is damaged by impact or abrasion, small repair kits are available from Astek upon request.

107 Delivery, Storage and Handling

All MarineCoat kits shall be stored in closed containers at all times. They shall be kept between 1 degree Celsius (34 degrees F.) and 60 degrees Celsius (140 degrees F.) at all times. Kits must be warmed to 10 degrees Celsius (50 degrees F) prior to using.

Store packaged products in original and undamaged condition with manufacturer's seals and labels intact. Do not remove from packaging until required in the work.

Handle and store materials in a manner to prevent damage, adulteration, deterioration or soiling and in accordance with manufacturer's instructions when applicable.

Store materials subject to damage from weather in weatherproof enclosures.

Before mixing, the temperature of all material ingredients shall not exceed 27 degrees Celsius (80 degrees F.).

108 Climatic Requirements

With respect to humidity, to not apply MarineCoat if condensation forms on the inside of the tank. Test for condensation using blotting paper. Eliminate condensation by ventilating the inside of the tank with warm, drier air. Maintain the internal surface temperature of the tank at least 2 degrees above the dew point for at least 2 hours before coating and until the end of the curing period.

Follow Cold Weather Precautions below when either ambient or subsurface temperature is expected to fall below 10 degrees Celsius (50 degrees F.) during application and curing of MarineCoat work.

Follow Hot Weather Precautions when either ambient or subsurface temperature is expected to rise above 26 degrees Celsius (80 degrees F.) during application and curing of MarineCoat work.

Cold Weather Precautions (near or below 10 degrees C)

When the ambient or surface temperature is expected to fall below 10 degrees C. (50 degrees F. during application or curing of MarineCoat work implement precautions as follows:

Standard curing times shall be extended by 96 hours (4 days)

When the ambient or subsurface temperature falls below 10 degrees C. (50 degrees F.) enclose the work area and supply heat until the ambient and surface temperatures exceed 10 degrees C. (50 degrees F.) during the work and for 3 consecutive days after installation. The heating system shall:

- ensure that a supply of fresh air is maintained in accordance with any applicable health and safety regulations
- maintain a positive air flow and pressure with distribution ducts near the floor level
- exclude construction heaters burning organic fuel placed inside the work area
- be installed so as not to interfere with the material installation

Hot Weather Precautions (over 30 degrees C)

All materials shall be kept cool by storing in a shaded area out of sun exposure or by keeping in refrigerated or cooled enclosures. Ice water shall be used in mixes where ice is readily available.

Precooling of subsurface shall be carried out by alternately wetting the surface and allowing the water to evaporate for at least one hour before placing materials.

If practical, blow cool air into the tank.

202 Mixing

Place polymer into mixing container and slowly add cement component into polymer under good agitation using a standard paddle type mortar mixer or a slow speed propeller type power stirrer (Jiffy mixer). Mix for at least 3 minutes until a well dispersed mix is achieved. The slurry mix shall be smooth, creamy and free of grit. If grit and lumps are present in the Slurry mix strain the Slurry through a sieve with 1.00 mm sieve openings (No. 18 US ASTM sieve) and discard the retained materials.

Follow immediately with the White Lightning sand component. The mix shall be a gritty slurry free of lumps. Do not mix longer than 5 minutes. Allow to stand (slake) for 5 minutes and then remix for 5 minutes. Take precautions to avoid entrapping excessive amounts of air during mixing.

If the wet mix is left in the mixer or a container for a period longer than 30 minutes remix for at least 2 minutes before use.

Pot life varies considerably with environmental conditions. Do not mix more materials than can be placed in 30 minutes. For longer pot life, keep mix cool.

PART 3 - EXECUTION

301 Preparation of Surfaces to be Coated

The completed surface shall conform to SSPC-SP10 / NACE 2 ½ / SSI-Sa1 grit blast cleaning. That

includes the removal of all visible oil, grease, dirt, dust, mill scale, paint oxides, corrosion products and other foreign matter by compressed air abrasive blasting, except for very light shadows, very light streaks or discolorations caused by rust stains, mill scale oxides or slight, tight residues of paint or coating. At least 95% of each square inch of surface area shall be free of all visible residues and the remainder shall be limited to the light discolorations mentioned above. From a practical standpoint, this is probably the best quality surface preparation that can be achieved for current tank maintenance work.

302 Installation

Avoid placing any Astek materials when the ambient temperature exceeds 30 degrees C.

All installations shall be performed by tradesmen with a minimum of 5 years related experience.

All equipment, footwear and other items which are required to carry out MarineCoat work shall be continually kept clean in order to avoid depositing dirt, excess materials or other contaminants on work surfaces.

Several multidirectional spray passes may be required to obtain proper and uniform coating thickness. During spray application the spray gun operator shall wear a dust mask and safety goggles.

The final coating must be uniform, free of pin holes and voids. It may be trowel finished to provide a smoother finish for easier cleaning. Use paint brushes to coat areas where spraying is not practical

Verify material quantity consumed to achieve proper thickness and integrity of coating for each particular application and check with wet film thickness gauge as work progresses. The Dry Film Thickness shall be verified by the Astek representative.

303 Curing

Under normal conditions, ASTEK MarineCoat will air cure. At room temperature, we recommend that the tank cure for 5 days before filling. When filling with tap water, fill at a rate of 1" per hour during the summer and fall seasons and ½" per hour during winter and spring seasons.

304 Inspection and Testing (If required)

Inspection and testing of MarineCoat work shall be carried out a testing laboratory designated by ASTEK Composites Inc.

Verify mix proportions and wet density of mix. Determine solids content of polymer in accordance with test procedures recommended by ASTEK Composites Inc.

Verify coating thickness. The thickness shall not deviate more than +15% to -5% from the nominal DFT of 2.1 mm and shall not be less than the minimum specified of 2 mm.

By tapping the surface of the system (not before 3 days after the installation) verify that the MarineCoat work has bonded properly to the subsurface.

Cost of testing will be paid for from the cash allowance specified in the Tender Documents.

305 Flushing and Cleaning

Flushing of the tank shall be performed after curing is complete. It may be more practical to have the shipyard staff perform this work due to this time delay. Flush the tank until there is no white color to the rinse water. The rinse water is environmentally safe but has a higher pH than tap water. Dispose of into a sanitary waste water system.

Patch any damage to the coating caused by testing or from damage by other trades before the final inspection.

Cost of repairs shall be borne by the trades responsible for the damage as assessed by ASTEK Composites Inc.

Upon completion of work, sweep or scrape all exposed finished walls and floor areas where excess coating has been deposited. Remove hardened coating from surfaces by grinding.

Keep tools clean at all times by washing in clean water.

Keep the MarineCoat application area clean at all times to prevent dust from blowing over the work area and after completion of work leave the site in broom clean condition.

END OF SECTION