POLYMER GROUP LTD
SOLUTIONS FOR EXTREME ENVIRONMENTS

Application Bulletin

ELASTOMERIC POLYURETHANE COATING OR LINING FOR OLD CONCRETE

1. SCOPE

The purpose of these recommendations is to provide general guidelines regarding installation of a spray-applied elastomeric polyurethane coating or lining system for old, relatively smooth, concrete surfaces. Unless indicated otherwise, application to any other substrate is not intended. This recommendation principally covers the following system:

ENDURACOAT TANKGUARD WW Elastomeric Polyurethane Coating at dry film thickness 3.00 mm

2. SURFACE PREPARATION

2.1 Protection of Surfaces not to be Coated

During surface preparation and coatings application, all nearby equipment, vehicles, structures, etc shall be protected from blasting grit, dust and overspray, dropped or spilled materials. Surfaces adjacent to a proposed leading edge of coating application shall be taped-off or otherwise protected.

2.2 Rigging and Scaffolding

Rigging and/or scaffolding, if required, shall be set up to permit ease of operation of surface preparation and application equipment, and shall provide safe and clear access to all surfaces to be coated.

2.3 Curing of Concrete

Concrete shall be fully cured before surface preparation or coating application. Minimum cure time is 28 days for typical Portland Cement ASTM Type I or 7 days for ASTM Type III – High-Early Strength.

2.4 Decontamination

Before abrasive cleaning, all oil, grease, dirt, loose matter and other contaminants shall be removed by high-pressure water blasting, steam cleaning or any other acceptable method, to satisfy ASTM D-4258 “Surface Cleaning Concrete for Coating”. Environmentally acceptable, biodegradable detergents may be used; however, they shall be completely rinsed off with plenty of fresh, clean water.

2.5 Abrasive Cleaning

Concrete shall be abrasive blast cleaned to satisfy ASTM D-4259 “Abrading Concrete”, producing a surface with a roughened texture resembling 60 grit sandpaper. Concrete shall be free of crusts, soft or weak matter, loose aggregate, and all other contaminants. All sharp edges shall be rounded or trimmed by chipping, wire brushing, or any other acceptable method.

At expansion joints, if any, filler compound shall be toughly flush with or lower than concrete surface. Wet abrasive blasting shall be allowed provided that water produced does not hinder application of materials. Water blasting alone shall not be allowed, except for decontamination. Acid etching is not acceptable.

2.6 Removal of Existing Coatings

If present, existing coatings shall be removed by abrasive cleaning or any other acceptable method. Only small sections of existing coatings that are very firmly adhered and greatly resist removal may remain, however, these sections shall be thoroughly abraded to provide a roughened surface.

2.7 Substrate Moisture

If present, all leaks and infiltrations shall be repaired and eliminated as directed by an Engineer. Concrete surfaces may be damp to the touch, but shall be free of condensation and visible moisture, prior to application of product.

2.8 Final Cleaning

All surfaces to be coated shall be free of dust, moisture, and condensation. Nearby surfaces shall be cleaned to prevent wind-blown contamination of substrate or freshly applied coatings.

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3. RESURFACING

3. Materials and Application

Depending on project-specific needs for repair or resurfacing of concrete, Applicator may select and use any of a number of pre-approved products. Consult Polymer Group Ltd for approval before using any surfacing material. Resurfacing products shall be mixed, applied, allowed to cure, and treated per their manufacturer's recommendations, before they are coated. In lieu of the use of surfacers, pitting exposed aggregate, etc may be filled with the **ENDURACOAT Tankguard WW** Material as the **ENDURACOAT Tankguard WW** is applied to the surface.

4. ENDURACOAT TANKGUARD WW COATING

4.1 Material

Enduracoat Tankguard WW, manufactured by Polymer Group Ltd, is a chemical cure, 100% solids, elastomeric, aromatic polyurethane with no sand fillers or extenders added.

It shall be classified in accordance with ANSI/NSF Standard 61 for direct contact with potable water. The coating shall be a two-component system in a 2 parts resin (Part A) to 1 part catalyst (Part B) volume ratio (2A:1B), capable of being spray-applied at specified film thickness in a single application. It shall produce a monolithic, flexible membrane with Shore D hardness of 61 to 65 at 25°C; 2,878 psi tensile strength and 52% elongation (ASTM D-412); abrasion resistance as measured by weight loss of 37 mg (ASTM D-4060, CS-17 wheel, 1 kg x 1,000 cycles); impact resistance > 16 in.-lbs (ASTM D-2794); and water vapour transmission rate of 0.016 g/100 in^2/24 hrs (ASTM F-1249, 75 mils, 22°C, 100% RH gradient). Part A shall be white, Part B shall be dark brown, and the mixed material shall be tan.

4.2 Handling and Mixing

Part A and B components shall be delivered to job-site in their original unopened steel drums with labels intact. Drums shall be stored indoors, off the floor, in cool and dry conditions, protected against excessive moisture, heat, or cold, in accordance with manufacturer's recommendations.

Part B shall be thoroughly mixed with drum mounted air-driven agitator for 30 minutes immediately before each use. Agitation of Part A is not be required, unless colour tint is used, in which case tint shall be added directly to the drum while agitating, then used immediately. For potable water applications, colour tint shall not be added.

4.3 Application

Coating shall be spray-applied by qualified technicians, using plural-component, high-pressure, airless spray equipment, approved by Polymer Group Ltd, that automatically proportions the Part A and B components, blends them via in-line static mixers and sprays the mixed coating material at a fluid pressure of 2,500 psi.

Coating materials shall be maintained between 27°C to 32°C. Ambient temperatures shall be between 4° to 49°C, and substrate temperatures shall be between 4° and 60°C ***and at least 3°C above dew point, and rising.*** Relative humidity shall not exceed 85%. Suspend application if conditions are not within above parameters, when snowing, raining or foggy, or when precipitation is imminent.

Each coat shall be applied at specified film thickness in a single application, which may consist of several increments, accomplished by one or more passes of the spray gun, all applied within recommended recoat times to a specific area. High profile areas shall be coated using 4-way passes of the spray gun to ensure complete coverage. If necessary, film thickness may be increased as needed, until a holiday-free membrane is achieved.

To minimise the creation of pinholes due to outgassing of air from porous concrete surfaces, coating shall be applied during a cooling trend in the concrete's surface temperature, in multiple increments of 20 to 30 mils (0.5 to 0.75 mm) per coat.

4.4 Embedding of Geotextile Fabric – Bonded Geo-membrane

This option may be utilised on suitable vertical surfaces (walls), as an alternative to resurfacing before coating.

GEOTEXTILE FABRIC MATERIAL – Non-woven, 100% polypropylene fabric, needle punched, and "heat-set" on one side, as manufactured by Carthage Mills of Cincinnati, OH, or pre-approved equal. Fabric shall weigh 250 to 313 g/m², or as appropriate for the intended use.

EMBEDDING THE FABRIC – Pre-cut fabric panels shall be firmly pressed and embedded "heat-set" side facing out, into the **Enduracoat Tankguard WW** basecoat while it remains in a semi-liquid state. Fabric shall be evenly pressed with a non-stick roller, squeegee or trowel to ensure that it is adhered flat against the basecoat in all locations. Over irregular surfaces, fabric shall be pressed by hand (use suitable protective gloves) to maximize contact with basecoat. Adjoining panels shall be overlapped by 5 cm and bonded together with **Enduracoat Tankguard WW**, spray-applied between the overlapping fabric.

ANCHORING THE EMBEDDED FABRIC – Embedded fabric panels shall be mechanically fastened to the concrete substrate using ¼" diameter x 2" long suitable stainless steel anchor bolts with 1½" diameter washers, installed at 36" centres, or as appropriate for intended use.

COATING THE FABRIC – **Enduracoat Tankguard WW** topcoat shall be spray-applied directly to the exposed "heat-set" side of the embedded fabric to produce complete coverage in all locations. Exposed fabric fibres or edges, or any other discontinuities shall not be acceptable. If necessary, applied film thickness shall be increased as needed (beyond specified thickness) to produce complete coverage.

4.5 Recoating / Transitions

Fresh coating may be sprayed over previously applied coating as long as undercoat remains wet or tacky to the touch, or has not exceeded 4 hours at 21°C since application. Higher temperatures shorten the recoat window, and colder temperatures extend the recoat window.

If recoat time is exceeded, undercoat shall be brush blasted to remove gloss, then vacuumed or solvent-wiped to dust-free condition, allowing all solvent to dry, before application of fresh coating.