

TBS SPECIFICATION MANUAL

TECHNICAL BARRIER SYSTEMS INC.

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Division 07100

Specification Manual

Kelmar® T.E. System

Note To Specifiers

The specification information below is intended for use by Architects, Engineers or other Specifiers in defining the criteria needed to install Kelmar® T.E. System.

Kelmar® T.E. System is a multi-layered, polymer system intended for use in traffic bearing installations such as parking garages, plaza decks, stadiums and areas requiring abrasion resistance combined with a flexible membrane.

1. This document has been prepared to assist Specifiers in the preparation of specifications for the installation of the Kelmar® T.E. System.
2. This document was prepared to be included as part of a complete specification for new construction or can be used as a stand-alone document for existing structures.
3. There are several areas in this document that, at the discretion of the Specifier, will require values to be inserted, as appropriate for the type of placement being specified. Physical properties for Kelmar® T.E. are listed in Appendix A.
4. Kelmar® T.E. System can be specified and installed in a variety of exposures, depending on its intended use.
5. Also refer to related documents, Technical Data Sheets & Installation Procedures.

Questions regarding the selection, installation or intended use of Technical Barrier Systems Inc. Kelmar® T.E. System should be directed to TBS Inc.

1.0 General

1.1 Scope

The contractor shall furnish all materials, tools, equipment, appliances, transportation, labor and supervision required during the preparation and installation process.

1.2 Pre-Qualification

1. Material to be applied as a membrane, traffic bearing deck coating must possess a Class "A" Rating as in accordance with ASTM E 84 "Steiner" tunnel test rating for building interiors with public access. ULI fire ratings for alternative materials are not acceptable if they were not tested to the ASTM E 84 rating.
2. Contractor and his installer(s) shall have satisfactorily completed a program of instruction in proper methods of preparation of the substrate, patching of spalled and delaminated areas, crack and joint repair and traffic deck coating installation. The applicator shall have in writing, a certificate of approval from the manufacturer.
3. Contractor(s) seeking approval of substitute materials shall have a minimum of five (5) years experience installing this type of surfacing in similar size projects. They must also submit their request in writing to the Architect/Engineer at least seven (7) days before closing of bids.

Include samples, testing laboratory reports regarding conformity with specifications, and list of completed successful installations, including phone number of responsible person to contact to enable accurate appraisal of the system. Bidders shall be notified of acceptable substitute materials by written addendum or amendment.

1.3 Applicable Standards & Test Methods

Please refer to Appendix A for standards and test methods used in their results.

1.4 Project / Site Conditions

1. Minimum concrete surface and ambient temperature of 50°F (10°C) for 48 hours before, during, and after installation, or until cured.
2. Adequate ventilation and clean water supply required during installation.
3. Substrate requirements (see Appendix B).

1.5 Warranty

1. Contractor shall submit a five-year, limited warranty against improper workmanship and defective materials (from date of installation or project completion, whichever comes first).
2. The owner will follow the maintenance guidelines as set forth by the National Parking Association (NPA) in the Parking Garage Maintenance Manual and will notify Technical Barrier Systems Inc. within thirty (30) days of any defect.

2.0 Products

2.1 Acceptable Manufacturer

1. Technical Barrier Systems Inc.
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Canada, L6J 1P5.
Toll Free: (888) 537-2888
Local: (905) 842-9488
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2.2 Materials

1. Traffic coating and membrane shall be Technical Barrier Systems Inc. Kelmar® T.E. System, meeting or surpassing physical property requirements as listed in Appendix A.

3.0 Execution

3.1 Inspection

1. Before starting work, ensure environmental and site conditions are suitable for application and curing.
2. Inspect surface for acceptability of levelness, texture, moisture content (ASTM D 4263), pitch to drains, etc.
3. Any and all deficiencies shall be reported, in writing, to specifying engineer, and copy sent to material manufacturer. Surface must be approved by the manufacturer or approved applicator prior to application of membrane.

3.2 Preparation

1. Surface must be clean and sound, which in all cases, requires some form of preparation. Substrate must be prepared in accordance with manufacturer's printed instructions.
2. Effectively remove concrete laitance by steel-shot blasting (acid etching is not an acceptable method of surface preparation).
3. Pre-fill surface irregularities, holes and cracks per manufacturer's recommendation.

3.3 Protection

1. Advise owner/operator and trades that unfinished surface is to remain free from traffic, and that fixtures, fittings and finishing are not to be installed, until waterproof traffic coating is completed.

2. Protect adjacent surfaces from damage resulting from work of this trade. If necessary, mask and / or cover adjacent surfaces, fixtures, equipment, etc., by suitable means.
3. Traffic control — no individuals are permitted in areas during application and until surface has cured and has been approved for traffic by the applicator and the manufacturer.

3.4 Installation / Application

1. Prime entire surface with recommended primer.
2. Install elastomeric membrane at a total minimum dry film thickness of twenty (20) mils.
3. Install elastomeric membrane at an approximate height of 3 to 4 inches (75 to 100 mm) to columns, curbs and walls, or as directed by specifying authority.
4. Apply epoxy wear course surfacing and manufacturer-approved aggregate (i.e. sized, washed, dried and bagged), having a minimum hardness of six (6) on the Moh Scale, at the recommended coverage.
5. Epoxy surfacing to be applied as a total system according to exposure codes and nominal thickness, as recommended by the manufacturer and Specifiers.

Exposure Recommendations

Exposure 1 Thickness 41 mils	Parking Stalls: Apply epoxy wear course surfacing to a total dry film thickness of 18 mils minimum. (Approximately 41 mils for the entire system; includes primer, membrane, wear-course and topcoat).
Exposure 2 Thickness 45 mils	Level Traffic Aisles and Ramps: Apply epoxy wear course surfacing to a total dry film thickness of 22 mils minimum. (Approximately 45-mils for the total system).
Exposure 3 Thickness 55 mils	For Steep Ramps, and Areas Adjacent to Cashiers, Helix Ramps, Disposal Bins, Storage Areas, etc.: Apply epoxy wear course surfacing in multiple coats, if necessary to a total dry film thickness of 32 mils minimum. (Approximately 55 mils for the total system)
Exposure 4 Thickness 75 mils	Heavy traffic in Shipping and Receiving Areas. Apply epoxy wear course surfacing in multiple coats to a total dry film thickness of 55 mils minimum. (Approximately 75 mils for total system)

Appendix A - Physical Properties For Kelmar® T.E. System

Property	Test Method	Test Results	*
Tensile Strength	ASTM D 412	1,160 psi (8 MPa)	M
Tensile Elongation	ASTM D 412 @ 70 ⁰ F (21 ⁰ C)	600 %	M
Adhesion to Concrete (prepared)	ASTM D 903 (Peel)	17 pli with 0.3 kg/mm width Exceeds 1MPA	M
Adhesion to Plywood	ASTM D 903 (Peel)	20-30 pli with 0.36-0.54 kg/mm width	M
Adhesion of Epoxy to Membrane	Elcometer	315 psi (2 Mpa)	
Water Vapor, Transmission	ASTM D 1653, E 96 Method 2	1.35 perms 0.88 metric perms	M
Test for Surface Burning Characteristics	ASTM E 84	Flame Spread: 14 Fuel Contribution: 0 Class 1 or A	FS
Chloride Ion	W.J.E. 840055	No significant increase @ 1" penetrating depth	FS
Low Temperature	ASTM C 957 (4.4)	No Failure after 10 cycles	FS
Adhesion in Peel	ASTM C 957 (4.5)	Min. 15 to 17 pli after water immersion on concrete	FS
Weathering Resistance & Recovery from Elongation	ASTM C 957 (4.7)	After Exposure min. tensile retention 90%, min. elongation retention 95%, recovery 100%	FS
Adhesion to Concrete	Elcometer	300-350 psi (2.0-2.4 Mpa)	FS
Tensile Strength	ASTM D 412	1600 psi (11 Mpa)	FS
Water Absorption	ASTM D 570	0.7%	FS
Impact Resistance	Gardner Test	160 in/lb	FS
Abrasion Resistance	ASTM C 501	0.069 gm/1000 cycles	FS
Tear Strength	ASTM D 1004	350 pli	M
Hardness, Shore D	ASTM D 2240	71	FS

- M Membrane
- FS Full System

Appendix B - General Substrate Requirements

CONCRETE

1. Concrete to receive membrane traffic coating should be designed and installed to prevent random cracking and deflection. Provide sufficient control and expansion joints.
2. Concrete should be air-entrained as established by ASTM C 260, and properly cured in accordance with ACI recommendations, to meet structural requirements.
3. Concrete shall have a steel trowel finish.
4. Concrete shall be free from metallic fibers.
5. Concrete design and placement shall ensure proper slope to drains, etc.
6. Allow concrete to cure twenty-eight (28) days minimum before applying membrane traffic coating. For concrete patches, the minimum cure time will vary depending on the depth of the patch, temperature, water-cement ratio, etc.
7. Concrete to be clean, sound (minimum compressive strength of 3,000 psi/20 MPa) and dry (ASTM D 4263).
8. Concrete to be free from curing compounds, membrane curing agents, metallic hardeners, or foreign matter.