

SPECIFICATION MANUAL R&D TECHNICAL SOLUTIONS LTD

TEL: 905.795.9900 TOLL FREE: 800.387.5703 FAX: 905-795-9912
EMAIL: INFO@RDSOLUTIONS.CA WEBSITE: WWW.KELMAR.COM

KELMAR[®] MERDEK SYSTEM SPECIFICATION MANUAL DIVISION 07 SECTION 07 18 16 Vehicular Traffic Coatings

Note To Specifier

The specification information below is intended for use by Architects, Engineers and other Specifiers in defining the criteria needed to install the KELMAR[®] MERDEK SYSTEM.

The KELMAR[®] MERDEK SYSTEM is an economical, multi-layered system, intended for use in installations such as parking garages, plaza decks, stadiums and areas requiring abrasion resistance combined with a flexible waterproofing membrane.

1. This document has been prepared to assist Specifiers in the preparation of specifications for the installation of the KELMAR[®] MERDEK 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 the KELMAR[®] MERDEK SYSTEM are listed in Section 2.3.
4. The KELMAR[®] MERDEK 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 R&D Technical Solutions Ltd. KELMAR[®] MERDEK SYSTEM should be directed to the manufacturer.

1.1 System Description

The KELMAR® MERDEK SYSTEM consists of a primer, waterproofing membrane, wear course and top coat, creating a seamless waterproof system with slip resistant wear course. The system can be designed for multiple different traffic requirements.

1.2 Summary

1. The contractor shall furnish all materials, tools, equipment, appliances, transportation, labor and supervision required during the preparation and installation process of installing a vehicular traffic coating system as outlined in this specification.
2. The manufacturer's application instructions for each product must be followed at all times.
3. Related sections:
 - a. Section 03 30 00: Cast-in-Place Concrete
 - b. Section 03 40 00: Precast Concrete
 - c. Section 07 90 00: Joint Protection

1.3 Quality Assurance

1. Materials to be used on the project shall consist of the KELMAR® MERDEK SYSTEM as supplied by R & D Technical Solutions Ltd.
2. Material to be applied as a vehicular traffic coating must possess a Class "A" Rating 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.
3. Contractor and 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. The applicator shall have in writing, a certificate of approval from the manufacturer.
4. 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.

1.4 Project / Site Conditions

1. Prior to starting work, applicators should familiarize themselves with application instructions, safety guidelines and other materials related to the installation of the KELMAR® MERDEK SYSTEM.
2. Do not begin installation if precipitation is expected. Minimum substrate and ambient temperature of 50°F (10°C) for 48 hours before, during, and after installation is required, until all materials have cured fully. In elevated temperatures of 100°F (38°C) or higher, care may need to be taken, as working and cure times will be decreased substantially.
3. Adequate ventilation and clean water supply are required during installation.
4. Coordinate work with other trades etc. to ensure that the coating is allowed to cure fully before being opened to foot or vehicle traffic.
5. Allow concrete to cure for a minimum of 28 days prior to application of vehicular traffic coating. Concrete must have a minimum compressive strength of 3000 psi (21 MPa) and be structurally clean, sound and dry in accordance with ASTM D4263.
6. Shot blast concrete to a minimum profile of ICRI CSP-3 to remove laitance, dirt, dust, oil, grease, coatings and other surface contaminants.
7. Concrete to receive membrane traffic coating should be designed and installed to prevent random cracking and deflection. Prepare cracks, joints and detail work according to manufacturer's instructions.
8. Provide sufficient control and expansion joints.

1.5 Warranty

Contractor shall submit a limited warranty against improper workmanship and defective materials (from date of installation or project completion, whichever comes first). Length of warranty shall be dependent upon project requirements.

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 R&D Technical Solutions Ltd. within thirty (30) days of any defect.

2.0 Products

2.1 Acceptable Manufacturer

R&D Technical Solutions Ltd.
7000 Davand Drive, Mississauga ON, Canada
L5T 1J5
Toll Free: (800) 387-5703
Local: (905) 795-9900
Fax: (905) 795-9912
www.kelmar.com
info@rdsolutions.ca

2.2 Materials

1. Vehicular Traffic Coating System and membrane shall be R&D Technical Solutions Ltd. KELMAR® MERDEK SYSTEM, meeting or surpassing physical property requirements as listed in section 1.4 Applicable Standards & Test Methods.
 - a. Primer – Kelmar® Monobond or Kelmar® Dualox Epoxy Primer
 - b. Membrane – Kelmar® Merdek Membrane 100% Solids Epoxy/Urethane Hybrid Membrane
 - c. Wear Course – Kelmar® CWC 100% Solids Epoxy Wear Course
 - d. Top Coat – Kelmar® 1910 UV Resistant Acrylic Top Coat or Kelmar® 1920 UV Resistant 100% Solids Epoxy Top Coat
 - e. Aggregate – Flint Silica Sand or equivalent
 - f. Reinforcing Fabric – Kelmar® Fabric (if required)

2.3 Material Performance

Materials comprising the KELMAR® MERDEK SYSTEM pass ASTM C957 testing. The following are results from testing performed by an independent laboratory:

Test Name	Test Method	Requirement	Result
Weight Loss of Base Coat	ASTM D6511	40% Max	1.2%
Crack Bridging	ASTM C1305	No Cracking	Pass
Adhesion in Peel – Concrete	ASTM C794	5.0 lbf Min	24.3 lbf
Adhesion in Peel – Plywood	ASTM C794	3.0 lbf Min	21.4 lbf
Chemical Resistance – Membrane	ASTM D471 Tensile Retention Water Immersion	70% Min	85%
	ASTM D471 Tensile Retention Ethylene Glycol	70% Min	85%
	ASTM D471 Tensile Retention Mineral Spirits	45% Min	80%
Chemical Resistance – Top Coat	ASTM D471 Tensile Retention Water Immersion	70% Min	100%
	ASTM D471 Tensile Retention Ethylene Glycol	70% Min	88%
	ASTM D471 Tensile Retention Mineral Spirits	45% Min	101%
Weathering Resistance and Recovery from Elongation – Full System (no aggregate)	ASTM C957 Recovery from Elongation, Initial	90% Min	100%
	ASTM C957 Tensile Retention	80% Min	110%
	ASTM C957 Elongation Retention	90% Min	105%
Abrasion Resistance CS-17 Abrasion Wheel, 1000 Cycles	ASTM C501	50 mg Max	2 mg
Rapid Chloride Permeability	AASHTO T277 / ASTM C1202	Negligible <100 Coulombs	Negligible 15 Coulombs

3.0 Execution

3.1 Inspection

1. Before starting work, ensure environmental and site conditions are suitable for application and curing. Do not begin work in outdoor areas if precipitation is imminent.
2. Inspect surface for acceptability of levelness, texture, slope to drains, moisture content, etc.
3. Any and all deficiencies shall be reported, in writing, to the specifying engineer, and a copy sent to the material manufacturer. Surface must be approved by the manufacturer or certified contractor prior to application of membrane.

3.2 Preparation

1. Surface must be clean and sound, which in all cases, requires some form of preparation.
2. Concrete must have cured for a minimum of 28 days and have a minimum compressive strength of 3000 psi (21 Mpa).
3. Effectively remove concrete laitance and other surface contamination by shot blasting to meet a surface profile of ICRI CSP 3 or CSP 4.
4. Pre-treat fine surface cracks with Kelmar® LME Healer/Sealer. For larger cracks, fill with Kelmar® Crack Filler. Areas requiring spall repair etc should be resurfaced with Kelmar® RC Resurfacing Compound. Follow manufacturer's installation instructions for all items.

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 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 the surface has fully cured and has been approved for traffic by the applicator and the manufacturer.

3.4 Installation / Application Detail

A. Exposure 1: Light Duty – Pedestrian Areas

1. Primer: Apply 4 wet mils of Kelmar® Monobond or 6 wet mils of Kelmar® Dualox.
2. Membrane: Apply Kelmar® Merdek Membrane at a minimum thickness of 20 wet mils.
3. Wear Course: Apply Kelmar® CWC to a total wet film thickness of 10 wet mils. Immediately begin Step 4.
4. Aggregate: Immediately broadcast aggregate to refusal into wet wear course at the rate of 1 pound per 2 sq. ft. Manufacturer approved aggregate 30-50 mesh size, washed, dried and bagged Flint Silica Sand, having a minimum hardness of six (6) on the Mohs Scale, at the recommended coverage.
5. Once coating has cured sweep off excess aggregate.
6. Top Coat: Apply Kelmar® 1920 or Kelmar® 1910 Top Coat to a total wet film thickness of 10 wet mils. Immediately back roll to level.

B. Exposure 2: Medium Duty – Parking Stalls and Light to Medium Traffic

1. Primer: Apply 4 wet mils of Kelmar® Monobond or 6 wet mils of Kelmar® Dualox.
2. Membrane: Apply Kelmar® Merdek Membrane at a minimum thickness of 20 wet mils.
3. Wear Course: Apply Kelmar® CWC to a total wet film thickness of 14 wet mils. Immediately begin Step 4.
4. Aggregate: Immediately broadcast aggregate to refusal into wet wear course at the rate of 1 pound per 2 sq. ft. Aggregate to be Flint Silica Sand 30-50 mesh size.
5. Once coating has cured sweep off excess aggregate.
6. Top Coat: Apply Kelmar® 1920 or Kelmar® 1910 Top Coat to a total wet film thickness of 10 wet mils. Immediately back roll to level.

C. Exposure 3: Heavy Duty – Heavy Traffic, Ramps, Turning Areas, Areas Adjacent to Cashiers, Entry and Exit Areas

1. Primer: Apply 4 wet mils of Kelmar® Monobond or 6 wet mils of Kelmar® Dualox.
2. Membrane: Apply Kelmar® Merdek Membrane at a minimum thickness of 20 wet mils.
3. First Wear Course: Apply Kelmar® CWC to a total wet film thickness of 14 wet mils. Immediately begin Step 4.
4. Aggregate: Immediately broadcast aggregate to refusal into wet wear course at the rate of 1 pound per 2 sq. ft. Aggregate to be Flint Silica Sand 30-50 mesh size.
5. Once coating has cured sweep off excess aggregate.
6. Second Wear Course: Apply Kelmar® CWC to a total wet film thickness of 14 wet mils. Immediately begin Step 7.
7. Aggregate: Immediately broadcast aggregate to refusal into wet wear course at a rate of 1 pound per 2 sq. ft. Aggregate to be Flint Silica Sand 30-50 mesh size.
8. Once coating has cured sweep off excess aggregate.
9. Top Coat: Apply Kelmar® 1920 or Kelmar® 1910 Top Coat to a total wet film thickness of 10 wet mils. Immediately back roll to level.

D. Exposure 4: Extra Heavy Duty – Extra Heavy Traffic, Shipping & Receiving Areas, Heavy Truck/Bus Traffic, Helix Ramps, Roof Decks

1. Primer: Apply 4 wet mils of Kelmar® Monobond or 6 wet mils of Kelmar® Dualox.
2. Membrane: Apply Kelmar® Merdek Membrane at a minimum thickness of 20 wet mils.
3. First Wear Course: Apply Kelmar® CWC to a total wet film thickness of 20 wet mils. Immediately begin Step 4.
4. Aggregate: Immediately broadcast aggregate to refusal into wet wear course at a rate of 1 pound per sq. ft. Aggregate to be Flint Silica Sand 30 – 50 mesh size.
5. Once coating has cured sweep off excess aggregate.
6. Second Wear Course: Apply Kelmar® CWC to a total wet film thickness of 20 wet mils. Immediately begin Step 7.
7. Aggregate: Immediately broadcast aggregate to refusal into wet wear course at the rate of 1 pound per 2 sq. ft. Aggregate to be Flint Silica Sand 30 – 50 mesh size.
8. Once coating has cured sweep off excess aggregate.
9. Top Coat: Apply Kelmar® 1920 or Kelmar® 1910 Top Coat to a total wet film thickness of 10 mils. Immediately back roll to level.

E. Vapour Barrier System: Slab On Grade, Unvented Metal Pan Decks etc.

1. Vapour Barrier: Apply Kelmar® MVB Moisture Vapour Barrier to a total wet film thickness of 16 wet mils.
2. Membrane: Apply Kelmar® Merdek Membrane at a minimum thickness of 20 wet mils.
3. Wear Course: Apply Kelmar® CWC according to traffic and wear requirements. This may include single or double wear course applications. Immediately begin Step 4.
4. Aggregate: Immediately broadcast aggregate to refusal into wet wear course at the rate of 1 pound per 2 sq. ft. Aggregate to be Flint Silica Sand 30 – 50 mesh size.
5. Once coating has cured sweep off excess aggregate.
6. Top Coat: Apply Kelmar® 1920 or Kelmar® 1910 Top Coat to a total wet film thickness of 10 mils. Immediately back roll to level.

Exposure Recommendation Summary

Recommended Use	Areas of Application	Primer	Membrane	Wear Course	Topcoat
Exposure 1 - Light Duty	Pedestrian Areas	4-6 Mils	20 Mils	10 Mils	10 Mils
Exposure 2 - Medium Duty	Parking Stalls and Light to Medium Traffic	4-6 Mils	20 Mils	14 Mils	10 Mils
Exposure 3 - Heavy Duty	Heavy Traffic, Ramps, Turning Areas, Areas Adjacent to Cashiers, Entry and Exit Areas	4-6 Mils	20 Mils	14 Mils 14 Mils	10 Mils
Exposure 4 - Extra Heavy Duty	Extra Heavy Traffic, Shipping & Receiving Areas, Heavy Truck/Bus Traffic, Helix Ramps, Roof Decks	4-6 Mils	20 Mils	20 Mils 20 Mils	10 Mils
Vapour Barrier System	Slab On Grade, Unvented Metal Pan Decks etc.	16 Mils	20 Mils	According to traffic requirements	10 Mils