**Dural 50 LM**

**Ultra-Low viscosity, low modulus, acrylated epoxy penetrating healer/sealer for treatment of hairline cracks in concrete bridge decks and parking decks**

***{Note to Specifier: The paragraphs below are meant to be incorporated into Parts 1, 2 and 3 of a standard CSI 3 Part Format specification, project’s General Structural Notes or directly onto the plans. They must be carefully reviewed by a qualified design professional and edited to meet the particular requirements of the project at hand, assure compliance with any governing building codes, and coordinate with other specification sections and drawings.}***

PART 1: GENERAL

*{Note to Specifier: Insert the following paragraph and sub paragraphs as required for your project. Euclid’s recommended products are shown in italics. More info can be found on these products at* [*www.euclidchemical.com*](http://www.euclidchemical.com) *or by clicking on the product links.}*

1.01 RELATED WORK:

A. Joint Fillers – [Eucolastic](http://euclidchemical.com/products/construction-products/joint-fillers-sealants/polyurethane-sealants/), [Tammsflex](http://euclidchemical.com/products/construction-products/joint-fillers-sealants/polysulfide-sealants/), [Dural 340](http://euclidchemical.com/products/construction-products/joint-fillers-sealants/epoxy-fillers-sealants/dural-340-nssl/), [Qwikjoint UVR](http://euclidchemical.com/products/construction-products/joint-fillers-sealants/polyurea-joint-fillers/euco-qwikjoint-uvr/)

B. Concrete Repair:

1. Vertical and Overhead: [Euco V-100](http://euclidchemical.com/products/construction-products/repair/verticaloverhead-repair/eucorepair-v100/), [Tamms Structural Mortar](http://euclidchemical.com/products/construction-products/repair/verticaloverhead-repair/tamms-structural-mortar/)

2. Horizontal: [Express Repair](http://euclidchemical.com/products/construction-products/repair/horizontal-repair/cementitious-mortars/express-repair/), [VersaSpeed](http://euclidchemical.com/products/construction-products/repair/horizontal-repair/cementitious-mortars/versaspeed/)

3. Form and Pour: [Eucocrete](http://euclidchemical.com/products/construction-products/repair/horizontal-repair/cementitious-mortars/eucocrete/)

C. Crack Repair/Injection: [Dural 452 LV](http://euclidchemical.com/products/construction-products/bonding-agents-adhesives/epoxy-based/dural-452-lv/), [Dural Fast Set Epoxy Gel](http://euclidchemical.com/products/construction-products/bonding-agents-adhesives/epoxy-based/dural-fast-set-gel/)

D. Bonding Agents: [Duralprep A.C.](http://euclidchemical.com/products/construction-products/bonding-agents-adhesives/epoxy-based/duralprep-ac/), [Dural 452 MV](http://euclidchemical.com/products/construction-products/bonding-agents-adhesives/epoxy-based/dural-452-mv/)

E. Waterproofing/Dampproofing : [Tamoseal](http://euclidchemical.com/products/construction-products/waterproofing-dampproofing/waterproofing-dampproofing/tamoseal/), [Vandex Super](http://euclidchemical.com/products/construction-products/waterproofing-dampproofing/vandex-waterproofing/crystalline-waterproofing/vandex-supersuper-white/), [Hey’Di K-11](http://euclidchemical.com/products/construction-products/waterproofing-dampproofing/waterproofing-dampproofing/heydi-k-11/), [Vandex BB75](http://euclidchemical.com/products/construction-products/waterproofing-dampproofing/vandex-waterproofing/cementitious-slurry-coatings/vandex-bb-75/)

F. Architectural Coatings: [Tammscoat](http://euclidchemical.com/products/construction-products/coatings/architectural-wall-coatings/tammscoat/), [Tammolastic](http://www.euclidchemical.com/products/construction-products/coatings/architectural-wall-coatings/tammolastic/)

G. Anti-Graffiti Coatings: AG 100, [AG-400](http://euclidchemical.com/products/construction-products/coatings/architectural-wall-coatings/tamms-ag-400/)

H. Traffic Deck Coatings: [Tammsdeck](http://euclidchemical.com/products/construction-products/coatings/traffic-deck-coatings/urethane-based/tammsdeck-system/), [Flexdeck](http://euclidchemical.com/products/construction-products/coatings/traffic-deck-coatings/urethane-based/flexdeck-system/)

I. Decorative Floor Coatings: [Duraltex](http://euclidchemical.com/products/construction-products/coatings/decorative-floor-coatings/epoxy-based/duraltex/)

J. Epoxy Chemical Resistant Coatings: [Duralkote 240](http://euclidchemical.com/products/construction-products/coatings/industrial-coatings/epoxy-based/duralkote-240/), [Duralkote 500](http://euclidchemical.com/products/construction-products/coatings/industrial-coatings/epoxy-based/duralkote-500/), [Duraltex 1705/07](http://euclidchemical.com/products/construction-products/coatings/industrial-coatings/epoxy-based/duraltex-1705-1707/), [Duraltex 1805/07](http://euclidchemical.com/products/construction-products/coatings/industrial-coatings/epoxy-based/duraltex-1805-1807/)

K. Penetrating Water Repellents:

1. Horizontal and Vertical: [Baracade WB 244](http://euclidchemical.com/products/construction-products/penetrating-sealersliquid-densifiers/penetrating-sealers/baracade-wb-244/), [Baracade 100C](http://euclidchemical.com/products/construction-products/penetrating-sealersliquid-densifiers/penetrating-sealers/baracade-silane-100c/), [Baracade Silane 40 IPA](http://euclidchemical.com/products/construction-products/penetrating-sealersliquid-densifiers/penetrating-sealers/baracade-silane-40-ipa/)

2. Vertical: [Chemstop WB Regular/Heavy Duty](http://euclidchemical.com/products/construction-products/penetrating-sealersliquid-densifiers/penetrating-sealers/chemstop-wb-regularheavy-duty/)

L. Penetrating Epoxy Sealer: [Euco #512 VOX Epoxy Sealer](http://euclidchemical.com/products/construction-products/penetrating-sealersliquid-densifiers/penetrating-sealers/euco-512-vox-epoxy-sealer/)

M. Cathodic Protection: [Sentinel Galvanic Anodes](http://euclidchemical.com/products/construction-products/repair/cathodic-protection/sentinel-galvanic-anodes/)

1.02 QUALITY ASSURANCE

A. Penetrating Epoxy Sealer Mock-Up:

1. Prior to commencing Penetrating Epoxy Healer/Sealer application, prepare a minimum **<<insert size>>** full scale, reference mock-up of each type, **[and][ texture]** of Penetrating Epoxy Healer/Sealer surface for approval by Owner.Said reference mock-up shall be constructed in location designated by owner/architect, using the same equipment, tools, personnel and methods for installing all materials as will be used for the remaining work to be performed.

2. Once accepted by owner or owner’s representative, mock-up is to remain, and is to be protected from damage. It shall become the standard for acceptance.

3. When Architect determines that mockup does not meet requirements, demolish and remove it from the site and cast another until the mockup is accepted.

1.03 JOB SITE CONDITIONS

A. Penetrating Epoxy Healer/Sealer shall be stored indoors at temperatures between 50 and 90 deg F. Protect from freezing.

B. Surface, ambient and material temperatures at time of Penetrating Epoxy Healer/Sealer installation shall be between 50 and 90 deg F.

C. Do not apply Penetrating Epoxy Healer/Sealer if surface temperature is within 5 deg F. of the dew point in work area.

D. Do not mix or apply Penetrating Epoxy Healer/Sealer if rain is expected within 12 hours.

PART 2 PRODUCT

2.01 PENETRATING EPOXY HEALER/SEALER

A. Penetrating Epoxy Sealer: (2) Component, water based, 20% solids, clear, penetrating epoxy healer/sealer with the following properties:

1. VOC’s 68 g/l

2. Mixed Viscosity: 80 to 120 cps @ 75 deg F.

3. Gel Time: 45 mins @ 75 deg F.

4. Tack Free: 3 to 5 hrs @ 75 deg F.

5. Tensile Strength: 800 psi per ASTM D638

6. Tensile Elongation: 65% per ASTM D638

7. Slant Shear: >2,000 psi @ 14 days per ASTM C882

8. Reduction in Chloride Ion Penetration, AASHTO T 260, 90 Days

100% at ½” depth

100% at 1” depth

9. 89% improvement in water absorption at 7 days per ASTM C413

10. Improvement in Abrasion Resistance per ASTM C779 at 7 days

100% Improvement @ 30 minutes

92.4% Improvement @ 45 minutes

90.0% improvement @ 60 minutes

11. Product:

1. Euclid Chemical Company (The): Dural 50 LM [www.euclidchemical.com](http://www.euclidchemical.com)

B. Manufacturer shall have ISO 9001 Quality Certification.

PART 3 EXECUTION

3.01 SURFACE PREPARATION

A. New concrete surfaces must be a minimum 28 days old at time of application.

B. Surface shall be structurally sound, clean, dry, free of dust, dirt, paint, efflorescence, laitance curing compounds and other contaminants that will prevent the proper penetration of penetrating Epoxy Healer/Sealer.

C. Roughen surface by mechanical means to create open absorptive surface with Concrete Surface Profile (CSP) of 2 to 5 in accordance with ICRI Guideline 310.2R-2013.

D. Blow debris and residue out of cracks and from the surface with a moisture-free and oil-free air jet.

E. Mask expansion joint sealants to prevent adhesion of Penetrating Epoxy Healer/Sealer to the joint surface.

F. Surfaces and cracks must be completely dry before application of Penetrating Epoxy Healer/Sealer.

***{Note to specifier: The strength of the prepared concrete surface can be tested. Insert the following sub paragraph if quantitative results are required.}***

**G. [Following surface preparation the cleaned concrete shall be tested for compliance with the following:]**

1. **[Minimum surface tensile strength of 250 psi when tested with a “Elcometer” or similar pull tester per ASTM C 1583]**

H. Begin Penetrating Epoxy Healer/Sealer application only after unsatisfactory conditions have been corrected, and after surfaces are dry

3.02 PENETRATING EPOXY HEALER/SEALER APPLICATION:

A. Mix and apply **[1][2]** evencoat**[s]** per manufacturer’s published recommendations.

1. Pour or pump properly mixed Penetrating Epoxy Healer/Sealer onto the properly prepared surface in a wave form, and spread uniformly with a squeegee or a short nap roller to fill voids, cracks, and porous areas. Allow epoxy to penetrate into the surface, re-applying to cracks and porous areas to refusal. Before the epoxy becomes tacky, use a squeegee (on a smooth surface) or a broom (on a textured or tined surface) to remove any excess epoxy that has not penetrated the surface.

2. Broadcast clean, oven-dried silica sand into the wet epoxy to provide a skid-resistant surface, or where subsequent toppings or coatings will be applied. Broadcast the silica sand at rate of 0.2 to 0.8 lbs/ ft2 (0.68 to 2.7kg/m2) and/or until there are no wet spots. Wait until at least 20 minutes have elapsed since Penetrating Epoxy Healer/Sealer application before broadcasting aggregate, but broadcasting must be completed before Epoxy has become tack free.

3. Where two coats are to be applied allow first coat to dry tack free (but no more than 24 hours) before second coat is applied. Remove all excess silica sand and apply second coat.

4. Upon completion allow epoxy to dry completely and remove excess silica sand from surface.

5. Coverage shall be as recommended per manufacturer, and shall be dependent on surface porosity and cracks to be filled.

END OF SECTION