

SECTION 03 35 00 CONCRETE FINISHING

PENETRATING LITHIUM SILICATE / NANO SILICA CONCRETE DENSIFIER

Basis of Design: Bone Dry Li 200 Logistics — Bone Dry Products, Inc.

SPECIFIER NOTE: This guide specification is written in CSI 3-part format for incorporation into project manuals. Edit bracketed selections and delete this note before issue. Coordinate with Section 03 30 00 for concrete placement and finishing tolerances. Li 200 Logistics assists in evenly curing the slab in the same manner as a curing compound; a separate curing compound is not necessary. Where a curing compound is nonetheless required, apply it after Li 200 Logistics.

PART 1 — GENERAL

1.1 SUMMARY

- A. Section Includes: Penetrating, water-based, high-solid-content lithium silicate and nano silica liquid densifier for exposed interior and exterior concrete surfaces in high-traffic and heavy-traffic environments.
- B. Related Sections:
 - 1. Section 03 30 00 — Cast-in-Place Concrete.
 - 2. Section 03 35 43 — Polished Concrete Finishing.
 - 3. Section 03 39 00 — Concrete Curing.
 - 4. Section 03 05 59 — Post-Applied Concrete Treatments (Concrete Densifiers).

1.2 REFERENCES

- A. ASTM International:
 - 1. ASTM C39 — Compressive Strength of Cylindrical Concrete Specimens.
 - 2. ASTM C157 — Length Change of Hardened Hydraulic-Cement Mortar and Concrete.
 - 3. ASTM C666 — Resistance of Concrete to Rapid Freezing and Thawing.
 - 4. ASTM C672 — Scaling Resistance of Concrete Surfaces Exposed to Deicing Chemicals.
 - 5. ASTM C1543 — Determining the Penetration of Chloride Ion into Concrete by Ponding.
 - 6. ASTM D4060 — Abrasion Resistance of Organic Coatings by the Taber Abraser.
 - 7. ASTM D7234 — Pull-Off Adhesion Strength of Coatings on Concrete.
- B. DIN 1048 — Testing Concrete: Water Penetration.
- C. Alberta Transportation B388 — Concrete Sealer Performance.
- D. USGBC LEED Version 4, BD&C and ID&C; The WELL Building Standard; ANSI/GBI 01 Green Building Assessment Protocol.

1.3 SUBMITTALS

- A. Product Data: Manufacturer's specifications and technical data including product description, attributes, spread rates, application instructions, and storage requirements.
- B. Test Reports: Test data demonstrating compliance with performance criteria specified in Article 2.3.
- C. Safety Data Sheets (SDS).
- D. Warranty: Sample copy of manufacturer's 25-year limited product warranty.

1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in the manufacture of penetrating concrete densifiers and moisture mitigation products.
- B. Field Sample (Mockup): Apply densifier to a minimum 100 sq. ft. test area of representative substrate to confirm spread rate, appearance, and drying time. Approved test area may remain as part of the Work.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in original, unopened containers with manufacturer's labels intact.
- B. Store in conditions above freezing (32°F) and below 90°F.
- C. Shelf Life: 2 years in original sealed container.

1.6 PROJECT CONDITIONS

- A. Substrate shall be clean and porous. Existing coatings shall be mechanically removed prior to application.
- B. Freshly poured concrete shall be hard enough for foot traffic prior to application.
- C. Protect adjacent finished surfaces from overspray; excessive overspray may discolor surfaces.

1.7 WARRANTY

- A. Manufacturer's Warranty: 25-year limited product warranty stating that the treated surface will remain water-resistant, dustproof, hardened, and abrasion resistant for 25 years from the application date.

PART 2 — PRODUCTS

2.1 MANUFACTURER

- A. Basis of Design: Bone Dry Products, Inc.; 9009 58th Pl, Kenosha, WI 53144; Phone: 262-694-9748; Email: info@bonedryproducts.com; Web: bonedryproducts.com.
- B. Substitutions: [Not permitted.] [Submit in accordance with Section 01 25 00 — Substitution Procedures.]

2.2 MATERIALS

- A. Penetrating Densifier: Bone Dry Li 200 Logistics — high-solid-content lithium silicate and nano silica densifying solution formulated to penetrate deep into concrete and dry clear without brooming or removal after application. Product is not membrane-forming and is intended to densify exposed concrete surfaces.
- B. Physical Characteristics:
 - 1. Water based; VOC content: less than 1 g/L (calculated from formulation raw material data).
 - 2. Suitable for interior and exterior use.
 - 3. Breathable and UV stable.
 - 4. Compatible with reactive and resin bond breakers.
- C. Performance Attributes: Densifies and hardens concrete; eliminates dusting; improves water and stain resistance; protects against efflorescence (ASR); increases abrasion resistance; fills microcracks and increases sheen; increases compression strength; assists in evenly curing the concrete slab in the same manner as a curing compound.

2.3 PERFORMANCE CRITERIA

A. Densifier shall demonstrate the following performance when tested per the referenced standards:

Test Method	Property	Duration / Age	Result — Li 200 Logistics
ASTM C672	Scaling resistance (deicing chemicals)	25 cycles	Rating 1 (Very Slight); Control: Rating 3 (Moderate)
ASTM C672	Scaling resistance (deicing chemicals)	50 cycles	Rating 2 (Slight); Control: Rating 5 (Severe)
Alberta B388	Water loss	—	79% reduction
Alberta B388	Waterproofing performance	—	70% increase
ASTM C39	Compressive strength	4 days	2% increase over control
ASTM C39	Compressive strength	7 days	12% increase over control
ASTM C39	Compressive strength	14 days	16% increase over control
ASTM C39	Compressive strength	28 days	30% increase over control
DIN 1048	Water penetration	—	23% improvement
ASTM C157	Length change (drying shrinkage)	—	40% reduction
ASTM C666	Freeze/thaw resistance	—	48% improvement
ASTM D7234	Pull-off adhesion	—	650 psi
ASTM C1543	Chloride ion penetration	at 1 in. depth	0.064%
ASTM D4060	Taber abrasion resistance	—	29% increase

2.4 SUSTAINABILITY

A. Product supports USGBC LEED Version 4 (BD&C, ID&C), The WELL Building Standard, and ANSI/GBI 01 Green Building Assessment Protocol.

PART 3 — EXECUTION

3.1 EXAMINATION

- A. Verify substrate is clean, porous, and free of coatings, curing compounds, sealers, and contaminants that inhibit penetration. Mechanically remove existing coatings.
- B. For freshly poured concrete, verify slab is hard enough for foot traffic prior to application.
- C. Do not proceed until unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Protect adjacent finished surfaces from overspray.

3.3 APPLICATION

- A. Equipment: Apply using a pump or battery-powered sprayer with a cone or wide fan spray tip.
- B. Apply by fully wetting the concrete slab; avoid puddling. Slab shall remain wet for 10 to 15 minutes.
- C. Allow slab to become dry to the touch (typically 2 to 3 hours) prior to resuming traffic.
- D. If dust appears on the surface due to heavy puddling, broom sweep once dry.
- E. Where curing compounds are required by other Sections, apply curing compound after application of Li 200 Logistics, once all visible puddling has absorbed into the concrete surface. Surface may remain wet to the touch; drying to the touch is not required prior to curing compound application.

3.4 APPLICATION RATES

- A. Hard troweled surfaces: 400 to 800 sq. ft. per gallon.
- B. Broom finished concrete: 200 to 400 sq. ft. per gallon.
- C. Actual coverage varies with surface texture and porosity; confirm with field sample per Article 1.4.

3.5 FIELD QUALITY CONTROL

- A. Verify application rate by monitoring material usage against treated area; adjust application to maintain specified spread rates.
- B. Inspect treated surfaces for uniform coverage and complete absorption of visible puddling prior to demobilization.

3.6 CLEANING

- A. Clean sprayers, brooms, and application equipment with water immediately after use.
- B. Remove overspray from adjacent finished surfaces immediately.

3.7 PROTECTION

- A. Protect treated surfaces from traffic until dry to the touch (typically 2 to 3 hours after application).

END OF SECTION 03 35 00