

INDUSTRIAL SAND SYSTEM TDS



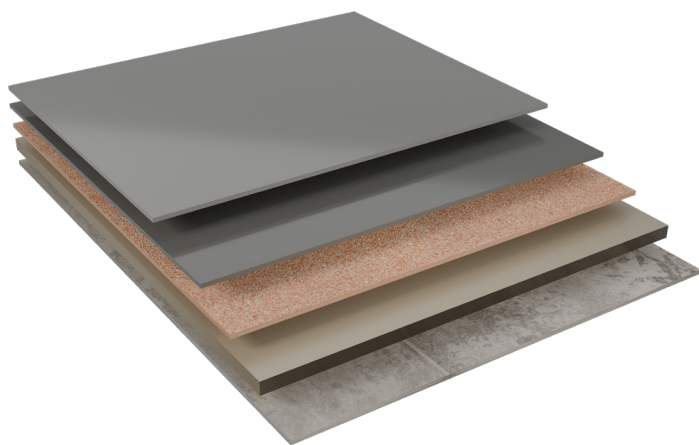
THOUGHTFULLY DESIGNED COATINGS

FLEX-FLEX-FLEX-HP, 35 mils

Top Shelf Epoxy Flex-Resin - Polyurethane HP top coat

Meets USDA, FDA, EPA, and SCAQMD VOC requirements.

KRETUS® INDUSTRIAL SAND FLEX-FLEX-FLEX-HP pairs our 100% solids flex-resin with Polyurethane HP for maximum durability and performance. This flexible system is designed to relieve stress caused by shifting or cracking substrates, keeping your floor protected. This system is great for high-movement floors and acts as a resilient cushion against vibration and movement.



- 1. Top coat:** Polyurethane HP (Gloss or Satin) + pigment + Anti-Slip
- 2. Cap coat:** Top Shelf Epoxy Flex-Resin
- 3. Broadcast:** 30-mesh clean, kiln-dried sand, to refusal
- 4. Base coat:** Top Shelf Epoxy Flex-Resin
- 5. Prime coat:** Top Shelf Epoxy Flex-Resin
- 6. Substrate:** properly prepared concrete (ICRI CSP 3), metal, wood, or non-glazed tile

WHY CHOOSE FLEX-FLEX-FLEX-HP?

- ✓ Movement resistance - Flex-Resin provides high vibration and movement resistance.
- ✓ Industrial sand broadcast - excellent abrasion, scratch, and slip resistance with a full sand broadcast.
- ✓ Polyurethane HP top coat — the hardest-wearing Kretus finish: best abrasion, chemical, and wear resistance, with ADA-compliant traction.

POPULAR COLORS



SHADOW GRAY



LIGHT GRAY



MEDIUM GRAY



LATTE



BEIGE



TILE RED

*colors shown are for Polyurethane HP top coat

IDEAL FOR SPACES INCLUDING...

- commercial kitchens
- food and beverage processing
- manufacturing facilities
- cleanrooms
- hospitals
- automotive service centers
- airport hangars
- heavy-traffic warehouses
- laboratories

SL-PA-HP, 3/16"

UPC self-leveling base coat · Polyaspartic cap coat · Polyurethane HP top coat

This is a quick-reference technical summary. Review all required documents before you start.

NOTES

Concrete moisture tolerance: MVER (ASTM F1869) = up to 25 lbs / 1,000 SF / 24 hr; RH (ASTM F2170) = 99%.

Surface preparation: Concrete mechanically profiled to ICRI CSP 3; new concrete allowed to dry 28 days minimum.

Anti-slip: For best results, add Anti-Slip to top coat. For recommendations, visit kretus.com/anti-slip.

Prime coat: A UPC RC prime coat may be required if outgassing is suspected or if the concrete is in poor or condition.

SYSTEM COMPOSITION

LAYER	PRODUCT	FUNCTION
TOP COAT	Polyurethane HP (Gloss or Satin) + Poly Colorant + Anti-Slip	Wear surface
CAP COAT	Polyaspartic + Poly Colorant	Bond/build coat over broadcast
BROADCAST	30-mesh clean, kiln-dried sand	Profile & strength
BASE COAT	UPC SL (self-leveling) + UPC Colorant	Monolithic self-leveling base
PRIME (AS NEEDED)	UPC RC prime	Outgassing/porous concrete
TOTAL BUILD	3/16" nominal · Applicator's skill level 4	

PERFORMANCE PROPERTIES

PROPERTY	RATING
ABRASION RESISTANCE (W/ ANTI-SLIP)	best — 4 mg loss
CHEMICAL RESISTANCE	best
WEAR RESISTANCE	best
FLEXIBILITY	best
TEAR STRENGTH	375 PLI
TENSILE STRENGTH	2,400 psi
TRACTION WITH ANTI-SLIP	meets ADA (0.6)
THERMAL SHOCK RESISTANCE	yes
TEMPERATURE — CONSTANT	5–140°F
TEMPERATURE — INTERMITTENT (3/16")	-13 to 176°F
ODOR	low
INDOOR/OUTDOOR	both
FOOT TRAFFIC READY	24–48 hrs.
VEHICLE TRAFFIC READY	7 days

Disclaimer: This document is intended for Kretus-trained professionals. It is not legally binding and does not remove the user's or specifier's responsibility to ensure materials are used appropriately for the project and job site. Always follow the most current industry standards and Kretus technical guidelines. Note: Subject to change without notice. For the latest version, visit kretus.com.



THOUGHTFULLY DESIGNED COATINGS

SECTION 09 67 23
RESINOUS FLOORING – INDUSTRIAL SAND SYSTEM

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Resinous Flooring and Coatings: Industrial Sand System.
 - 1. Single Broadcast: Nominal Thickness: 35 mils. Industrial Sand FLEX-FLEX-FLEX-HP.
 - a. A low-odor, 2-component flexible resin system.
 - b. A low-odor, 2-component flexible resin system.
 - c. A low-odor, 2-component flexible resin system.
 - d. High-Performance, 95 percent Solids, UV-Resistant Polyurethane Top Coat.

1.2 RELATED SECTIONS

- A. Section 03 30 00: Cast-in-Place Concrete.
- B. Section 03 39 00: Concrete Curing.
- C. Section 07 95 00: Expansion Control.

1.3 REFERENCES

- A. ASTM International (ASTM):
 - 1. ASTM D7234: Standard Test Method for Pull-Off Adhesion Strength of Coatings on Concrete Using Portable Pull-Off Adhesion Testers.
 - 2. ASTM F710: Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring.

1.4 SUBMITTALS

- A. Submit under the provisions of Section 01 30 00.
- B. Product Data: Submit Manufacturer's data sheets and supporting information for each product and specified process including:
 - 1. Approved Applicator.
 - 2. Completed Jobsite Checklists and Reports (kretus.com/pre-and-post-job-checklists).
 - 3. Certificate of Compliance (quality control document for the goods specified herein).
 - 4. Technical Data Sheets (kretus.com/technical-data-sheets).
 - 5. Safety Data Sheets (kretus.com/safety-data-sheets).
 - 6. Installation Guides (kretus.com/installation-guides).
 - 7. Maintenance and Cleaning Guide (kretus.com/project-planning).
 - 8. Warranty Information.
 - 9. Meeting Minutes: Preinstallation Conference.
- C. Samples: A 12-inch square sample of the proposed system. Color, texture, and thickness shall be representative of the overall appearance of the finished system as described in section 1.1A.
- D. Test reports of cured products showing VOC Emission compliance with USGBC LEED Version 4, performed.

- E. Shop Drawings: Include details of materials, construction, and finish. Include relationship with adjacent construction.

1.5 **QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with a minimum of 15 years' documented experience.
 - 1. Manufacturer may provide a trained installation professional with knowledge of each product listed herein or any material that has been specified or provided.
- B. Applicator Qualifications: Manufacturer-trained professional applicator. The approved applicator must have no less than five years' experience with similar projects and complexity and be capable of handling installations of similar nature in all phases: surface preparation, product application, finishing procedure, safety, and work ethic.
 - a. Manufacturer-Trained Professional Applicator:
 - 1) Company: _____.
 - a) Contact Name: _____.
 - 1) Phone: (____) ____-____.
 - 2) Email: _____.
 - 2. If concrete slabs have a history of existing floor failures, identify the cause of failure. Identifying the causes may require core samples to be taken and to be analyzed by a qualified laboratory. The Manufacturer must be consulted for core extraction procedures and results.
- C. Source Limitations: Provide each type of product from a single manufacturing source to ensure uniformity.
 - 1. Materials used must be manufactured, approved, and distributed by KRETUS; Email: info@kretus.com; Tel: 714-694-2061; Web: <https://www.kretus.com>. No other parties shall be allowed without written approval.
- D. Mock-Up: Construct a mock-up with actual materials in sufficient time for Architect's review and to not delay construction progress. Locate mock-up as acceptable to Architect and provide temporary foundations and support.
 - 1. Use the mock-up to demonstrate the quality and finished look of the system.
 - a. A minimum of 50 SF unless otherwise specified by Manufacturer or Architect.
 - b. Employ the same materials, tools, and methods used in the installation.
 - c. Product direct-to-concrete adhesion needs to be verified per ASTM D7234. Before proceeding with the installation, the results must be greater than 200 psi with concrete failure. The Manufacturer reserves the right to request additional mockup and testing.
 - 2. If the mock-up is not acceptable, rebuild it until satisfactory results are achieved.
 - 3. Keep mock-up on-site to compare with finished work.
 - 4. Do not alter or remove mock-up until work is completed or removal is authorized.

1.6 **PRE-INSTALLATION CONFERENCE**

- A. Convene a conference approximately two weeks before the scheduled commencement of the Work. Attendees shall include Applicator, General Contractor, Facility Owner, Manufacturer or Manufacturer Representatives, Designer, Architect, and any responsible parties discussed for clarification of this specification. Include supporting documents relating to this specification or the project itself. The agenda shall include schedule, responsibilities, critical path items and approvals.

1.7 **DELIVERY, STORAGE, AND HANDLING**

- A. Packing and Shipping:

1. All components delivered to the site shall be clearly marked with the product name and batch number, free of damage, and in the original Manufacturer's packaging.
 2. All product safety data sheets, bills of lading, and any dangerous goods declaration documents must be included with product and project documents.
- B. Storage and Protection:
1. The jobsite shall provide a storage location for all components. The area shall be clearly marked, dry, out of direct sunlight and inclement weather, free of obstruction, and kept between 60 degrees F and 80 degrees F.
 2. Copies of Safety Data Sheets (SDS) for all components shall be kept on site for review by the EH and S, department of health, or responsible party.
- C. Waste Disposal:
1. There shall be adequate disposal on the jobsite for non-hazardous waste generated during the project.
- D. Handling:
1. All Safety Data Sheets shall always be adhered to.
 2. All materials are to be treated as dangerous substances without firsthand knowledge. No untrained personnel shall touch, relocate, or use the materials without proper training or supervision.
 3. No congregating, eating, smoking, or drinking of any kind is allowed on or near the materials.

1.8 PROJECT CONDITIONS

- A. If any of the following requirements are not met, the Manufacturer must be consulted before the installation begins.
- B. Site Requirements:
1. The installation may proceed only when the ambient relative humidity of the site is less than 85 percent, the temperatures of the air, material, and substrate are between 40 degrees F and 90 degrees F, and the substrate temperature is at least 5 degrees F above the dew point.
 2. The site shall be free of other trades during and for 24 hours after installation.
 3. The Approved Applicator shall be supplied with adequate lighting equal to the final lighting level during the preparation and installation of the system.
 4. The Approved Applicator shall ensure that the site is properly ventilated and shall provide its own power and any necessary equipment to get the job done correctly and in a timely manner.
- C. Safety Requirements:
1. All open flames and spark-producing equipment shall be removed from the work area prior to the commencement of installation.
 2. "No Smoking" signs shall be posted at the entrances to the work area.
 3. The Facility Owner shall be responsible for removing foodstuffs from the work area.
 4. Non-related personnel in the work area shall be kept to a minimum.
- D. Existing Concrete Substrate Requirements:
1. Measure compressive strength according to ASTM C805. Acceptable results: Minimum 3,000 psi.
 2. Measure pH according to Test Method ASTM F710. Acceptable Results: 8-14.
 3. If contamination is present or suspected, test the concrete and analyze compounds that may affect the coating's ability to bond. Acceptable methods include but are not limited to petrographic examination according to ASTM C856.

4. The Facility Owner, Engineer, and/or General Contractor must be notified and advised of potential costs of testing to meet Manufacturer specifications.
- E. Moisture Testing Requirements:
 1. Perform an anhydrous calcium chloride test, ASTM F1869-98. The installation may proceed only when the MVER (moisture vapor emission rates) is less than or equal to TK lbs/1,000 SF/24 hrs.
 2. Perform RH (relative humidity) test using in situ probes, ASTM F2170. The installation may proceed only when the RH level is less than or equal to TK percent.
 3. If vapor emission exceeds the Manufacturer's specified RH or MVER requirements, the Facility Owner, Engineer, and/or General Contractor must be notified of potential additional costs to lower moisture values to meet Manufacturer's specifications.

1.9 WARRANTY

- A. Manufacturer's standard materials warranty unless indicated otherwise.
- B. Approved Applicator shall furnish a warranty for workmanship.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Kretus Inc., which is located at: 1055 W. Struck Ave., Orange, CA 92867; Tel: 714-694-2061; Email: info@kretus.com; Web: <https://www.kretus.com>.
- B. Additional Contacts:
 1. For English: Michael Mulnix, Senior Technical Product Manager. Email: michael@kretus.com; Phone: 916-757-4075.
 2. Para Espanol: Jaime Monarres, Senior Product Manager. Email: jaime@kretus.com; Phone: 424-348-5127.
- C. Substitutions: Not permitted.

2.2 RESINOUS FLOORING

- A. Basis of Design: Single Broadcast Industrial Sand FLEX-FLEX-FLEX-HP manufactured by Kretus.
 1. Total Nominal Thickness: 35 mils.
 2. Prime Coat: KRETUS FLEX-RESIN.
 - a. A low-odor, 2-component flexible resin system.
 3. Base Coat: KRETUS FLEX-RESIN.
 - a. A low-odor, 2-component flexible resin system.
 - b. Broadcast: 30-mesh, clean, kiln-dried sand.
 - 1) Yields 0.75 lb/sf.
 4. Cap Coat: KRETUS FLEX-RESIN.
 - a. A low-odor, 2-component flexible resin system.
 5. Top Coat: KRETUS POLYURETHANE HP.
 - a. High-Performance, 95 percent Solids, UV-Resistant Polyurethane Top Coat.
 6. Product Requirements: Typical Values.
 - a. Abrasion Resistance (ASTM D4060): 10 mg loss.
 - b. Abrasion Resistance with Anti-Slip (ASTM D4060): 4 mg loss.
 - c. Adhesion Strength (ASTM D4541): 400 psi, concrete failure.
 - d. Coefficient of Friction (ASTM D2047): Based on top coat texture (see [kretus.com/anti-slip](https://www.kretus.com/anti-slip)).
 - e. Compressive Strength (ASTM D695): 13,700 psi.

- f. Flame Spread/Critical Flux (ASTM E648): Class 1.
- g. Flame Spread/Rate of Burning (ASTM D635): Self-extinguishing.
- h. Flexural Strength (ASTM D790): 9,000 psi.
- i. Gloss, 60° (ASTM D523): Satin: 50 / Gloss: 80+.
- j. Hardness, König (ASTM D4366): 170.
- k. Impact Resistance (ASTM D2794): 120 in-lbs.
- l. Indoor Air Quality (CA 01350): Compliant.
- m. Microbial Resistance (ASTM G21): Passes, 0 growth.
- n. UV Resistance (ASTM D4587): Level 2.
- o. Water Absorption (ASTM D570): <0.05%.
- p. Yellowing Resistance (ASTM G154): < 3.0 ΔE, gray (color tested for visible changes).

2.3 AUXILIARY MATERIALS

- A. Repair Materials: To repair surface imperfections before installation.
 - 1. Shallow Fill and Patching: Less than 1/4 inch deep.
 - a. KRETUS TOP SHELF EPOXY.
 - b. KRETUS URETHANE POLYMER CONCRETE RC.
 - c. KRETUS URETHANE POLYMER CONCRETE SL.
 - 2. Deep Fill and Patching: Greater than 1/4 inch (6.35 mm) deep.
 - a. 30-mesh, clean, kiln-dried sand.
 - b. KRETUS TOP SHELF EPOXY PATCH.
 - c. KRETUS TOP SHELF EPOXY.
 - d. KRETUS URETHANE POLYMER CONCRETE SL.
 - e. KRETUS URETHANE POLYMER CONCRETE MF.
- B. Joint and Crack Fill Materials: For use after installation.
 - 1. Color: Match adjacent finished surfaces.
 - 2. Shallow Fill / Patching: Less than 1/4 inch deep.
 - a. KRETUS POLY PATCH or JOINT FILLER.
 - b. KRETUS TOP SHELF EPOXY.
 - c. KRETUS URETHANE POLYMER CONCRETE RC.
 - d. KRETUS URETHANE POLYMER CONCRETE SL.
 - 3. Deep Fill / Patching: Greater than 1/4 inch deep.
 - a. 30-mesh, clean, kiln-dried sand.
 - b. KRETUS TOP SHELF EPOXY PATCH.
 - c. KRETUS TOP SHELF EPOXY.
 - d. KRETUS URETHANE POLYMER CONCRETE SL.
 - e. KRETUS URETHANE POLYMER CONCRETE MF.
- C. Application Tools:
 - 1. Seymour Midwest Rake; <https://www.seymourmidwest.com>.
 - a. Blades/squeegee.
 - b. Loop roller.
 - c. Spiked roller.
 - d. CAM set and gauge rake.
 - e. Trowel.

2. The Wooster Brush Company; <https://www.woosterbrush.com>.
 - a. Non-shed nap rollers.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until the substrates have been properly constructed and prepared.
 1. Verify project site conditions under Section 01 00 00.
- B. If substrate preparation is the responsibility of another installer, notify Architect in writing of unsatisfactory preparation before proceeding.
- C. Coordinate with adjacent trades to ease construction process.

3.2 PREPARATION

- A. Prevent damage to substrate during preparation.
- B. Prepare surface in accordance with manufacturer's instructions.

3.3 MIXING

- A. Follow Manufacturer's printed instructions. Careful measurements and thorough mixing are essential for a proper cure.
- B. Review KRETUS Mixing Station Guide for general handling, storage, and preparation procedures.

3.4 INSTALLATION

- A. Install in accordance with manufacturer's instructions, approved submittals, and in proper relationship with adjacent construction.
- B. Industrial Sand Resinous System: FLEX-FLEX-FLEX-HP, 35 mils.
 1. Prime Coat:
 - a. Mix coating according to Manufacturer instructions.
 - b. Apply with 15-20 WFT-mil blade. Smooth application with 3/8-inch non-shed nap roller.
 - 1) Yields 100 sf/gal.
 2. Base Coat with Broadcast:
 - a. Mix coating according to Manufacturer instructions.
 - b. Apply with 8-12 WFT-mil blade. Smooth application with 3/8-inch non-shed nap roller.
 - 1) Yields 150 sf/gal.
 - c. While the coat is still wet, broadcast 30-mesh, clean, kiln-dried sand to refusal.
 - 1) Yields 0.75 lb/sf.
 - d. When dry, sand uneven surfaces. Remove all dust, debris, and loose particles.
 3. Cap Coat:
 - a. Mix coating according to Manufacturer instructions.
 - b. Apply with flat stiff blade. Smooth application with 3/8-inch non-shed nap roller.
 - 1) Yields 90 sf/gal.
 4. Top Coat:
 - a. Mix coating according to Manufacturer instructions.
 - b. Apply with 3/8-inch non-shed nap roller.
 - 1) Yields 400 sf/gal.

3.5 AUXILIARY MATERIAL INSTALLATION

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- A. Repair Materials: Install in accordance with Manufacturer's recommendations.
- B. Joint and Crack Fill Materials: Install in accordance with Manufacturer's recommendations.
- C. Prime Coat: Install in accordance with manufacturer's recommendations.
- D. Integral Cove Base (only if specified): Follow Manufacturer's preparation and application guidelines to provide an integral cove base at height indicated.

3.6 FIELD QUALITY CONTROL

- A. Field Inspection: Coordinate field inspection in accordance with appropriate sections in Division 01.
- B. Manufacturer's Services: Coordinate manufacturer's services in accordance with appropriate sections in Division 01.
- C. The following tests and reporting are to be conducted by the Approved Applicator:
 - 1. Condition of the area being installed.
 - 2. Temperature: Date, time, air temperature, concrete surface temperatures, dew point.
 - 3. Product installed and coverage rates.
 - 4. Batch number of all materials.
 - 5. Project report shall be submitted upon completion of the work.
- D. Adhesion tests of the first coat applied to the concrete per ASTM D7234 must show substrate failure with a minimal pull of 200 psi.
- E. Replica of the system as installed must be provided to Manufacturer for approval and warranty.
- F. Facility Owner reserves the right to invoke material testing procedures at any time and any number of times during the application process.
- G. Facility Owner may engage service of an independent testing laboratory to sample materials being used on the jobsite. Samples of material may be taken, identified, and certified in the presence of the Approved Applicator.

3.7 CLEANING, CURING, AND PROTECTION

- A. Cleaning:
 - 1. Perform detailed cleaning at floor termination to leave a cleanable surface for subsequent work of other sections.
 - 2. Remove any spillage of cured and uncured materials from the site with a suitable solvent. Dispose of any temporary floor covering and leftover materials in accordance with federal, local, and building requirements.
- B. Curing and Protection:
 - 1. After completion of an application, do not allow traffic on coated surfaces for a period of 24 hours.
 - 2. Allow material to cure in compliance with Manufacturer instructions, taking care to prevent contamination during the installation and curing process.
 - 3. "Return to Service" means the system can be walked on. However, typical resinous coatings require 7 days at 70 degrees F to reach full cure. During this period, standing water, caustic chemicals, cleaning, or heavy traffic should be avoided as it may cause permanent damage to the finish.

END OF SECTION